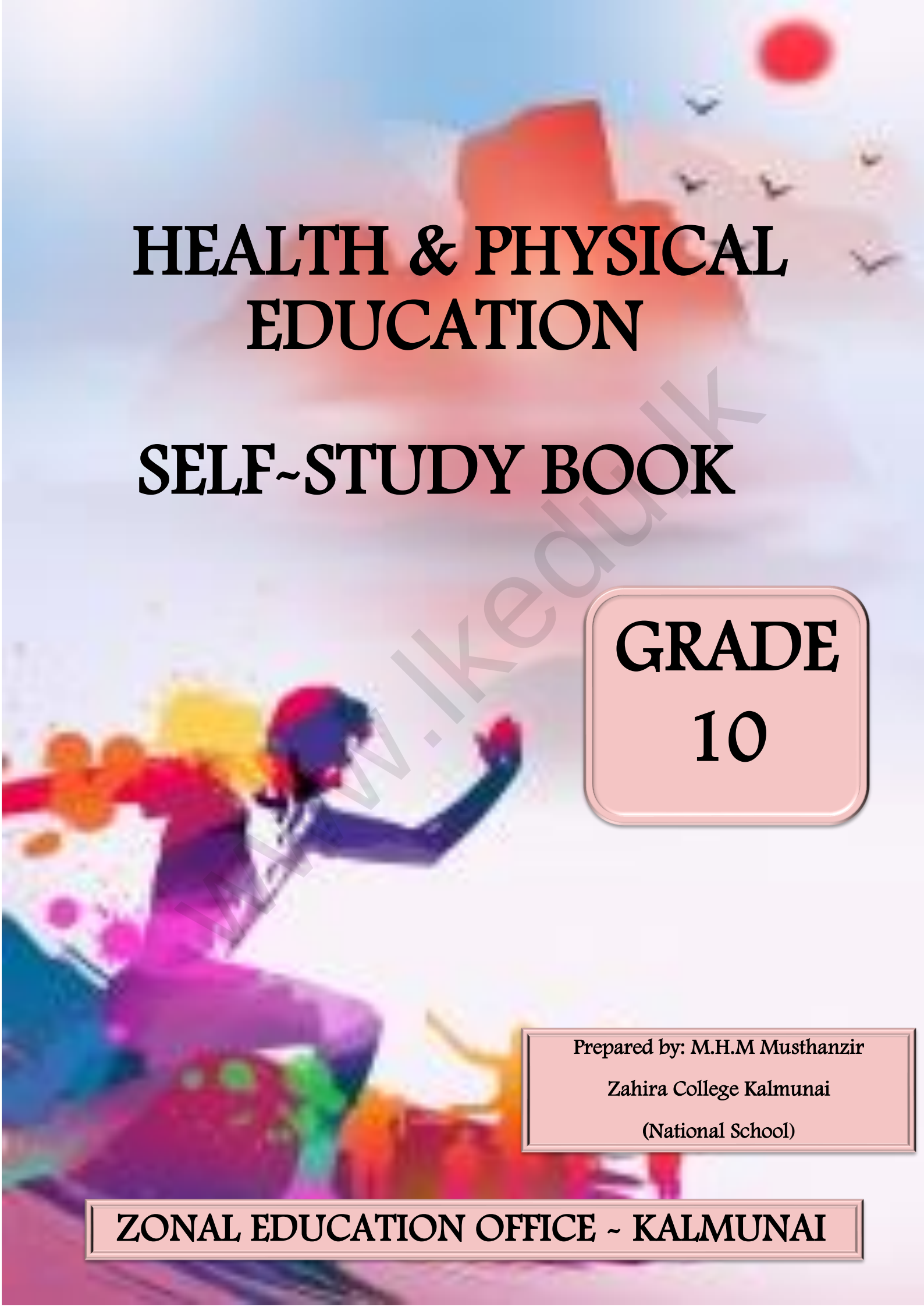
HEALTH & PHYSICAL EDUCATION

SELF-STUDY BOOK



GRADE 10

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Prepared by: M.H.M Musthanzir

Zahira College Kalmunai

(National School)

ZONAL EDUCATION OFFICE ~ KALMUNAI

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Author -M.H.M Musthanzir -0758424573 (Zahira College Kalmunai)

01 Let us build a healthy society

01. Write 04 essential for having a healthy society?

- ✓ Well organized preventive
- ✓ curative health services
- ✓ good social and economic backgrounds
- ✓ a clean environment

02. Write the concept of total health according to the World Health Organization (WHO)?

- ✓ Total health is not only being free from diseases and disabilities, but also having physical, mental, social and spiritual well-being.

03. Write 05 factors that influencing good health?

- ✓ **Health Services**: e.g.: Improving conditions in hospitals, training & recruitment of doctors & other health officers, improvement of maternity and child health services & other special health services
- ✓ **Physical Environment:** e.g.: Good climate, clean water, clean air, well planned
- ✓ urbanization, waste management
- ✓ **Genetic composition:** e.g.: Minimum genes which increase the risk of getting diseases
- ✓ **Person's behavioural patterns:** e.g.: good food habits, having adequate sleep, rest and exercises, avoiding alcohol, drugs and unprotected sexual relationship
- ✓ **Social & economic background**: e.g.: A sound economic condition and educational standard, avoiding alcohol & drugs, good interpersonal relationships, being free from stress.

04. Write 05 suitable life style to maintain total health?

- ✓ Good eating habits
- ✓ Active life style and exercise
- ✓ Maintaining an appropriate BMI
- ✓ Adequate sleep and rest
- ✓ Leading a simple life style



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05. Write the types of food that we should add in our meal?

- ✓ Grains (cereals) and tubers (yams)
- ✓ Vegetables
- ✓ Fruits
- ✓ Fish, meat, eggs and grains
- ✓ Milk and other dairy products
- ✓ Seeds rich in fat

06. Write 04 Non-communicable diseases that can be prevent by engaging in daily physical exercises?

- ✓ cancer, diabetes, high blood pressure, heart disease, stroke

07. Write the time schedule of daily physical exercises to the adult and children respectively?

- ✓ Adult: 30 minutes
- ✓ Children: 60 minutes

08. Write 04 exercises to prevent Non-communicable diseases?

- ✓ Walking briskly, running, cycling, swimming

09. Write the formula to calculate the Body Mass Index (BMI)?

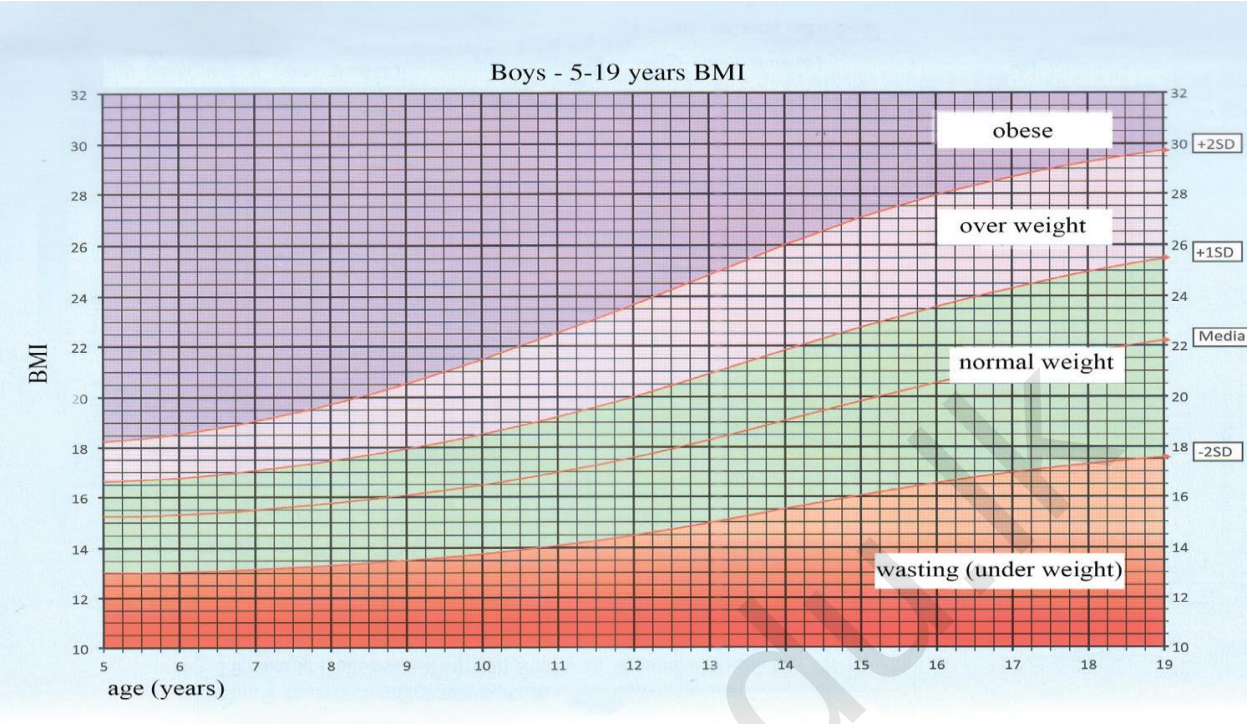
We have learnt, in lower grades how to calculate the BMI.

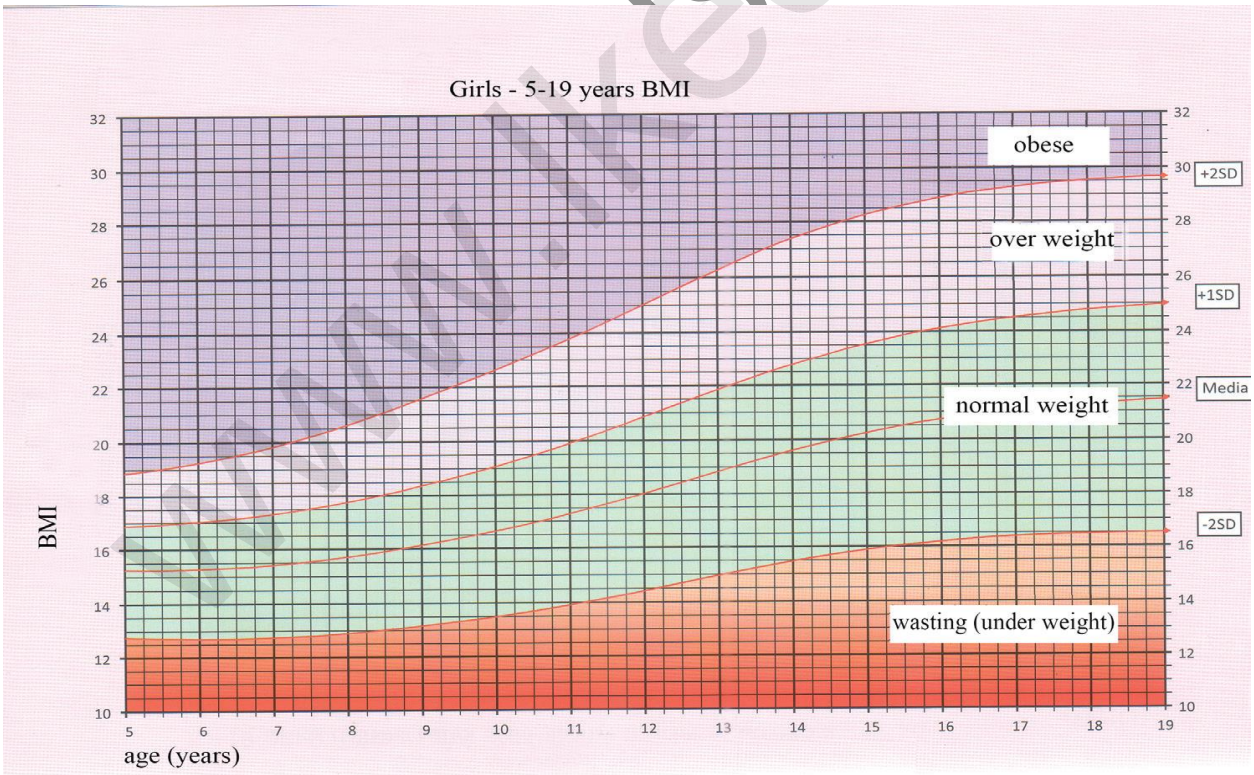
$$\text{Body Mass Index} = \frac{\text{Body weight (Kg)}}{\text{Height (m)} \times \text{Height (m)}}$$



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10. Draw the BMI chart.





11. List out the nutritional status of the individual is determined by the position where the BMI lies.

Below -2SD	- (orange colour)	-	wasting
Between -2SD to +1SD	- (green colour)	-	normal level
Between +1SD to +2SD	- (light purple colour)	-	overweight
Above +2SD	- (dark purple colour)	-	obesity

12. Mention the range of international and Asian BMI values for different nutritional status.

Nutritional status	Asian measurement (kgm^{-2})	International measurement (kgm^{-2})
Wasting	< 18.5	< 18.5
Normal level	18.5 - 22.9	18.5 - 24.9
Overweight	23.0 - 26.9	25.0 - 29.9
Obesity	> 27.0	> 30.0

13. Write the affect if being overweight and obese?



- ✓ diabetes, high blood pressure, strokes, cancer and heart disease.

14. Write the time schedule of adequate sleep and rest to the adult and children?

- ✓ Adult: 8 hours
- ✓ Children: children need more (8-10 hours)

15. Write 04 affect of inadequate sleep?

- ✓ poor concentration, sleepiness, irritability and tiredness



16. What is the meaning of "Simple lifestyle"?

- ✓ A simple life is a way of life that has to be decided by one's self.

17. What is "stress"?

- ✓ Stress is how one reacts to a challenge

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18. Write 02 ways to relieve from stress?

- ✓ Looking for reasons for stress, expressing feelings,
- ✓ looking at the problems in different ways, proper time management

19. Write 04 steps to prevent the use of drugs, alcohol and smoking?

- ✓ Increasing the price of cigarettes and alcohol
- ✓ Limiting the places selling them
- ✓ Advertising of alcohol and cigarettes to be banned
- ✓ Taking effective legal action on the use and trafficking of illicit drugs

20. Write 05 challenges to maintaining total health?



- ✓ Population density
- ✓ Health services and diseases
- ✓ Economy and level of education
- ✓ Ill effects of tourism
- ✓ War, refugee status / natural disaster s

21. Write 04 factors that determined by the economic status of the individual as well as the country?

- ✓ income, nutrition, clean drinking water, sanitation, spacious and well-ventilated houses and availability of medical facilities

22. Write some services that help to improve the health status of Sri Lankan?

- ✓ The national immunization programme,
- ✓ school health services,
- ✓ maternity clinics and the services provided by public health midwife (P.H.M.) and public health inspector (P.H.I.)

23. Write a short note about influence of the media and the concept of global village?

- ✓ The media and the internet have a great impact on our behaviour and beliefs. Commercial advertisements may at times have a bad influence on us. Unhealthy food advertisements can have a bad influence on children. Watching television, using computers and spending more time at computer games can adversely affect the mental and physical health of both children and adults.
- ✓ The media can be used for the betterment of human kind. It can be used to make the public aware of diseases, unhealthy lifestyles and bad practices happening in the society.

24. Write some positive impact of tourism?

- ✓ Tourism helps to build ties between countries and nations, generates foreign exchange and improves infrastructure

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25. Write some negative effect if tourism?

- ✓ environmental pollution, increase in adverse situations like prostitution and spread of sexually transmitted diseases, circulation of illicit drugs and damage the culture.

26. What is “population density"?

- ✓ Population density is a measurement of population per unit area of land

27. Write 04 actions to be taken to overcome challenges faced in achieving total health?

- ✓ Uplifting the educational level of the people. Ex. Making health education compulsory
- ✓ Strengthening both preventive and curative (treatment) sectors of health service.
- ✓ Uplifting the economic status of the people.
- ✓ Uplifting the welfare of the displaced people.





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02 Let us learn about development through childhood

- **The foundation of growth takes place during the pre-natal and infant stages of life**. Studies have shown that **80% of brain cells are formed by the age of 3 years**. At this stage a rapid physical growth is also seen. Physical growth means an increase in height and weight. By measuring growth **parameters (**height and weight) we can determine whether the child is growing adequately. Muscle strength and mobility are developed with physical growth. Mental and social skills are developed through interactions with the environment. This is known as a **child's psycho-social development.**

01. Write the stages of childhood?

- ✓ Prenatal stage - the period inside the mother's womb
- ✓ Neonatal stage - the first 4 weeks after birth
- ✓ Infant stage - from the first to the twelfth month
- ✓ Early childhood - from 1 year to 5 years
- ✓ Late childhood - from 6 years to 10 years

02. Write some points to know before becoming a mother?

- ✓ Although the Sri Lankan law permits a girl to get married once she completes 18 years, it is important to ascertain whether she has adequate physical and mental maturity. She should be mentally and socially stable. The family should be financially stable to bring up a child.
- ✓ It is important to prevent marriages between blood relatives, (e.g.: first cousins or close relatives) as this could lead to some genetic disorders in the off spring, (e.g.: Thalassaemia). This is an important factor to be considered when considering marriage and pregnancy. Bad effects can be prevented by a well-planned marriage.
- ✓ Folic acid is very important for a woman who is planning on becoming pregnant after marriage. Sufficient folic acid levels in her body before and during pregnancy helps to prevent the baby developing brain and spinal cord abnormalities Therefore a woman who is planning a pregnancy should begin taking folic acid supplements weeks before she gets pregnant. (Folic acid is present in green leaves found plenty in Sri Lanka)
- ✓ It is important for every girl who has completed 15 years, to get the rubella vaccination to prevent getting German measles. (If a female has not received this rubella or MMR vaccine before, it is advised to get the vaccination at least three months before getting pregnant.)
- ✓ A woman hoping to get pregnant after marriage, should plan it properly. Medical advice can be sought from health services, attending family health clinics and maternity clinics with proper planning. A girl can have an uncomplicated pregnancy and safe motherhood with proper planning.

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03. What is pre-natal stage?

- ✓ Prenatal stage is the period from the moment the sperm unites with the ovum until the birth.

04. Write some steps that can be taken during pre-natal stage?

- ✓ **Once becoming** aware of the pregnancy, proper medical advice must be obtained. In this regard valuable assistance can be obtained from the public health midwife.

- ✓ **Special attention** should be paid to the food the mother eats, as it will affect the growth of the baby. The expected healthy birth weight of a baby is between **2.5 kg to 3.5 kg.** This weight gain is through the necessary nutrients that are obtained from the mother. So, during this period if the mother does not take a balanced diet, nutritional deficiencies will affect the growth of the embryo. The child will have a low birth weight, be born prematurely, have suboptimal mental functions or be prone to infections.

- ✓ **A pregnant** mother should have a good mental state as it will affect the development of the baby's brain. The mother should be free of physical and mental stress. Other members of the family should share the house hold work and make her comfortable. She should be happy and relaxed



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05. What is Neonatal stage?

- ✓ Neonatal stage is the period from birth to 28 days. In this period the child is exposed to the new environment

06. Write the physical and psycho -social needs in neonatal stage?

Physical needs	Psycho-social needs
1. Nutritional needs • Breast feeding the baby whenever the need arises. This helps the growth and immunity of the baby. **2. Growth** • Adequate amount of sleep and rest is important for the growth of the baby. **3. Protection** • Protect from cold and heat. • Protect from physical injuries such as falls, cuts etc. • To protect from infections avoid crowded places, maintain good hygiene and keep the baby in a well-ventilated room	**1. Love** • While breast feeding hugging and cuddling the baby. **2. Stimulation for mental development** • Petting, talking and singing lullabies to the baby (though the baby does not understand) • Keeping the baby in a well-lit room • Respond to the gestures made by the baby • Keep objects that will make sounds to stimulate the baby



07. Write 05 important of breast milk?

- ✓ Breast feeding strengthens the bond between the mother and the baby.
- ✓ It helps to protect baby from diseases.
- ✓ It helps to prevent obesity in the future.
- ✓ It helps to increase the baby's mental development.
- ✓ It helps develop resistance against allergies.

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08. What is infant age?

- ✓ The period from one month to twelve months is considered as the infant stage.

09. Write the physical and psycho-social needs in infant age.

Physical needs	Psychological needs
1. Nutrition • During the first six months whenever the baby needs milk, breastfeed the baby. • On completion of six months complementary food should be introduced. • If the baby's growth is less or if mother goes to work before first 6 months, complementary food can be started at 4 months. • Avoid giving salt and sugar in the first year of life. • By the end of the first year the baby should be accustomed to family food. **2. Growth** • To monitor growth, it is important to measure the weight every month and height at least three monthly and mark on the given growth chart. • If there is a change in pattern of growth (increase or decrease) get advice from a doctor. **3. Protection** • Follow the immunization programme accordingly. • Pay regular attention to the baby to protect from injuries. • To protect from infections, avoid crowded places and maintain good hygiene	1. Love and affection • It is important to create an environment in and around the house filled with love and peace. • Parents including other members of the family should express love towards the baby. 2. Stimulation for the mental development • Providing the child with colourful toys. • Showing colourful pictures to the child. • Talking, storytelling and singing frequently to the baby. • Creating an environment filled with different sounds which soothes the ear.

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10. What is early childhood?

- ✓ The period from 1 year to 5 years of a child's life is called the early childhood. During this period the child begins to walk and gains experience by exploring the environment.

11. Write the physical and psycho-social needs in early childhood.

Physical needs.	Psycho-social needs
1. Nutrition • Five meals a day - apart from the three main meals two snacks. • Since the child is developing fast, more nutritious food should be given. **2.Growth** • Check the weight and height every three months and record it in the growth chart. **3. Protection** • Follow the immunization programme in order to protect the child. • Keep the child away from unhygienic environment to protect from infections. • Since the child is more active pay regular attention to protect from injuries. • Pay constant attention to the child.	**1. Show love and kindness.** **2. Stimulation for the mental development.** • Provide opportunities to explore the environment. • Allow the child to exhibit his/her abilities. • Help the child to understand his/ her limitations and help to control emotions. • Teach good habits. • Let the child express his/her views and ideas. • Provide opportunities to develop motor abilities. • Promote and develop-interpersonal relationships.



12. What is late childhood?

- ✓ The period from 6 years to 10 years of a child's life is called late childhood. During this period the child starts formal education

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13. Write the physical and psycho-social needs in late childhood?

Physical needs	Psycho-Social needs
1. Nutrition • Provide a well-balanced diet. **2. Growth** • Once in 4 months check the height and the weight and check whether BMI and height are within the accepted range and if necessary take action. **3. Protection** • Provide the child with necessary knowledge and guidance to identify and prevent injuries and train them in different skills. • Make the child aware about people and situations that can cause harm to them and how to avoid these. • Educate them to be cooperative and work with others. Be aware of different intimidations that they could face from the people they work with.	**1. Show love and kindness. At every opportunity talk with them** **2. Stimulation for mental development**. • Guiding with personal hygiene and good health habits. • Provide opportunities and skills to build good inter relationships with parents, relations and friends. • Provide the opportunity and skills to gain experience through activities. • Build self-esteem through praise. • Motivate to engage in different types of hobbies and creative work. • Encourage to develop psycho-social skills through group events.



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03 Let us maintain correct posture

01. What is correct posture?

- ✓ Keeping each part of the body in correct alignment thus avoiding undue strain on supporting muscles and joints.

02. Write the types of correct posture with an example.

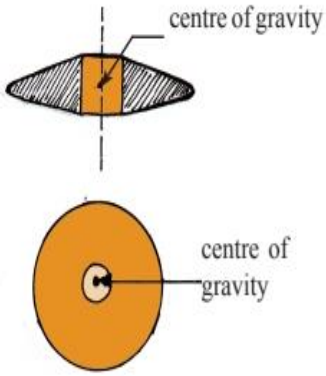
- ✓ Standing, sitting and lying down are known as **static postures.**
- ✓ Walking, running and jumping are referred to as **dynamic postures.**

03. What are the advantages we can gain when we use correct postures?

- ✓ Minimize discomfort and fatigue.
- ✓ Mental and physical satisfaction
- ✓ Comfort for internal organs
- ✓ Maintenance of balance

04. Give 04 harmful effects of bad postures?

- ✓ Feel clumsy
- ✓ Feeling of pain
- ✓ Spine ailments
- ✓ Waste of energy



05. Mention 02 Bio mechanical factors related to posture.

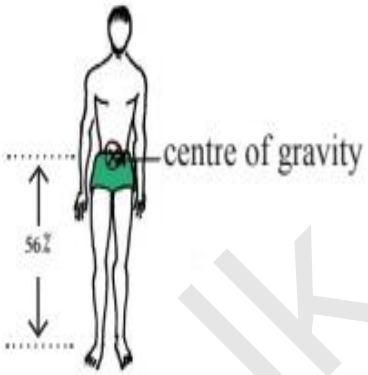
- ✓ Centre of gravity
- ✓ Balance

06. What is "Centre of gravity"?

- ✓ Any object, as well as the human body is made up of tiny particles. All these tiny particles have a weight. The weight of these objects act around a single point. This point is called **centre of gravity.**
- ✓ The centre of gravity of an object or human body, is a point where the whole weight of an object/body is concentrated.
- ✓ In any posture, we adopt the weight of the body acts around a single point and that point becomes the centre of gravity.

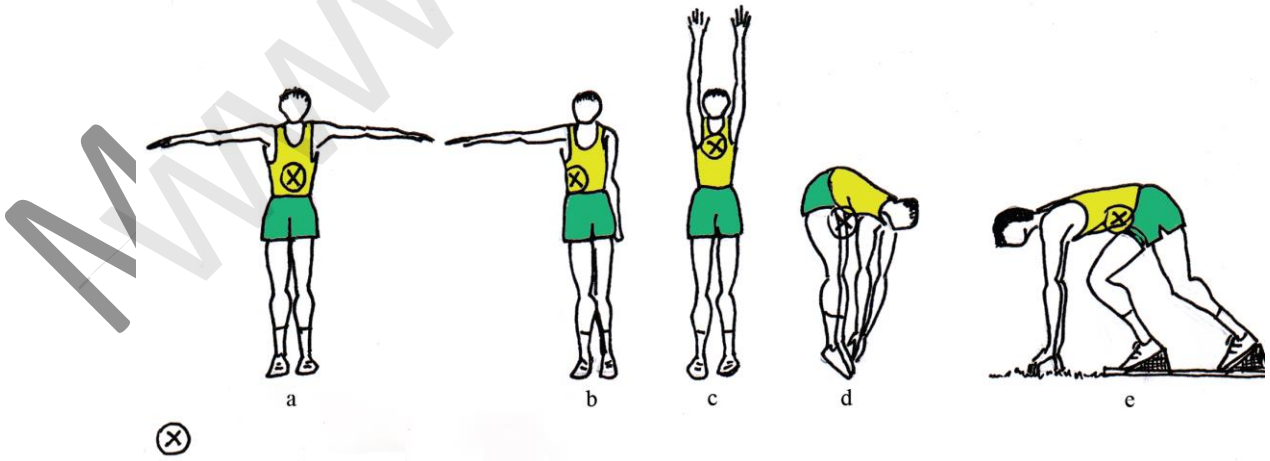
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- ✓ A person standing straight with hands by the side will have his/her centre of gravity at a distance of about 56% of the total height measured from the ground. Although the centre of gravity normally appears as described above, it could change temporarily according to the posture of the body.



- ✓ This happens as the weight spreads in different directions. When a person stands with both arms by the side and then raises the arms up the weight is spread to the upper part of the body. So, the position of the centre of gravity goes higher. Study the changes in the centre of gravity that occur when both arms are stretched out on either side of the body, only when the right hand is stretched out, both arms are raised, the body is bending forward and at the start of a race.

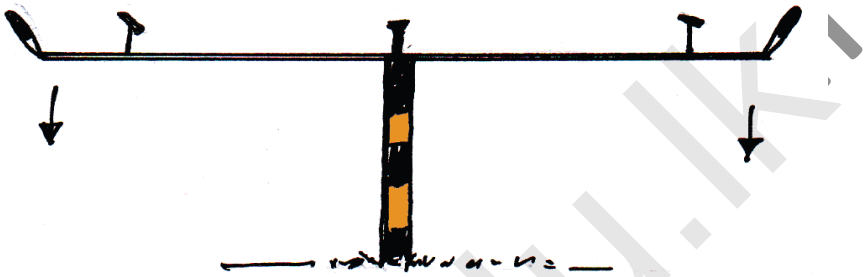
position of centre of gravity



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07. What is “Balance"?

- ✓ The state of a body or physical system that is at rest or in constant and unchanging motion is called **balance.** When an equal force is applied on either side of it, it will maintain its **balance.**
- ✓ This is because the forces that act on either side of the centre of gravity is equal and is in a balanced position. If a weight is put only to one side of the see-saw, it will lose
  its balance and there will be a movement around the centre of gravity.

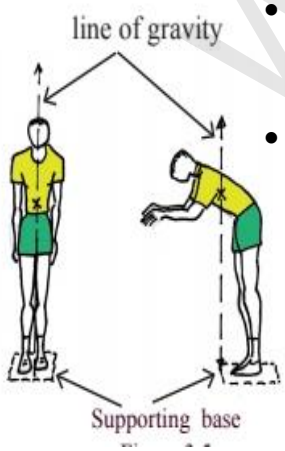


08. Write 05 factors that help to maintain the balance at different body postures?

- ✓ Keeping the line of gravity within the supporting base - vertical line passing through the centre of gravity is called the line of gravity.
- ✓ Having the centre of gravity at a lower position (closer to the ground)
- ✓ Maintaining a wider supporting base
- ✓ Movement of the body in the opposite direction when loss of posture is imminent
- ✓ Bending the body towards an external force

09. How the above factors affect different postures?

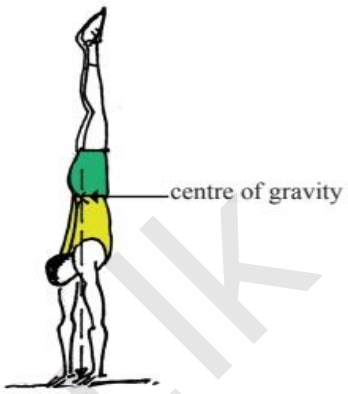
i. Keeping the line of gravity within the supporting base



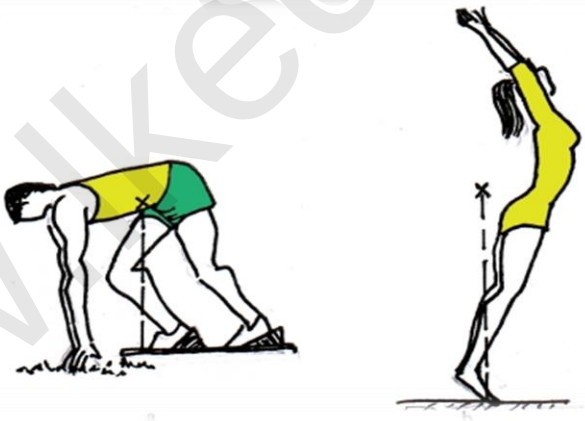
- **A person standing with both legs together, bends his body forward without bending the knees and waist at one point will tend to lose his balance and fall forward.**
- **Standing with both legs together, the centre of gravity is vertically above the feet. That is to say, the line of gravity stays within the supporting base. When bending forward, the vertical line on the centre of gravity goes away from the base of the feet. As it passes the peripheral margin of the base, the body loses its balance and falls**

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- **In gymnastics, the player's centre of gravity should be positioned above the**
  supporting base. When the body bends in a certain direction, the centre of gravity moves in that direction to prevent falling, maintaining the line of gravity within the supporting base. By moving the centre of gravity towards it, the player balances his body.



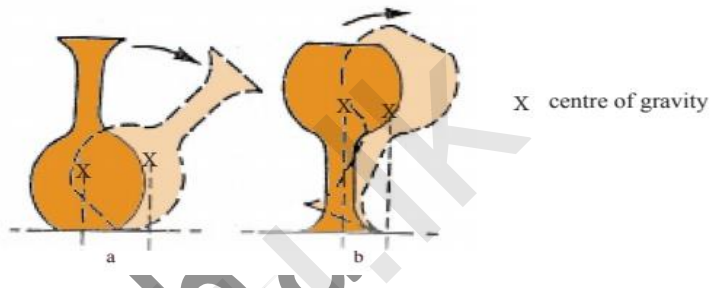
- **show the start of the short distance race and a gymnastics movement. In both situations the centre of gravity of the player's body is placed above the supporting base. Therefore, in both situations the body is well balanced.**



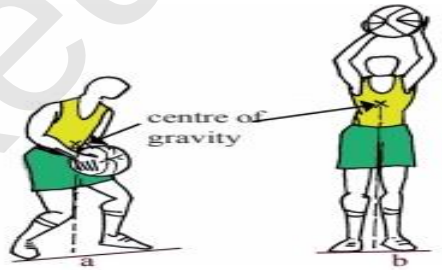
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ii. The Centre of gravity at a lower level

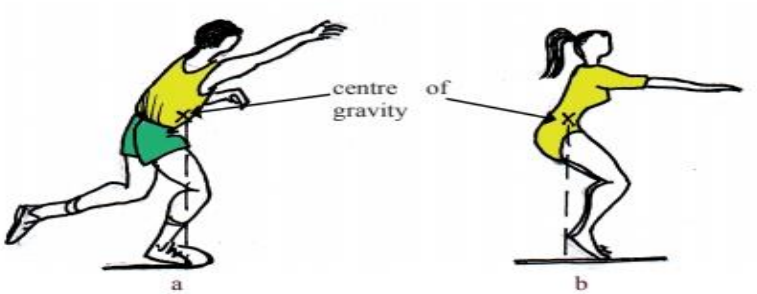
- **When the centre of gravity is placed at a lower level it helps to maintain the balance of the object. The centre of gravity of the object in figure 3.8 a is at a lower level than the object shown in figure 3.8 b. The beaker in 3.8 a is in a more balanced position. If it were to lose its balance and fall, the centre of gravity of that object has to move a considerable distance but with a slight push the line of gravity of the object can be moved away from the supporting base and topple easily.**



- **When a basketball player bends his knees, his centre of gravity is at a lower position than the centre of gravity of a player who is standing vertically and the first player is better balanced.**



- **After an athlete has released the put, he always moves his body forward and downwards. This helps the player to balance his body by keeping the centre of gravity in a lower position. Figure 3.10 b shows how a gymnast carries the centre of gravity to a lower position to maintain balance.**



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iii. Wider supporting base

- **When the supporting base of an object is wider it's balance also increases. We can see a better balance in a person who is standing, with feet wide apart than the person**
  who is standing keeping the feet close together. The reason for this is the wider supporting base. (figure 3.11)
- **It is very clearly shown in figure 3.11 that when the ground area of the supporting base increases the equilibrium also increases. Figure 3.11a shows the player's feet kept close to each other. Here the size of the supporting base is small. In a situation**
  like this, the player's position is not stable. Even a small external push can make him lose his balance. If the player's feet are kept as shown in 3.11b, his stability is more. As shown in 3.11c, apart from keeping the feet wide apart, keeping one hand on the ground, will increase the size of the supporting base. Furthermore, it brings the position of the centre of gravity to a lower level making it a more stable position.

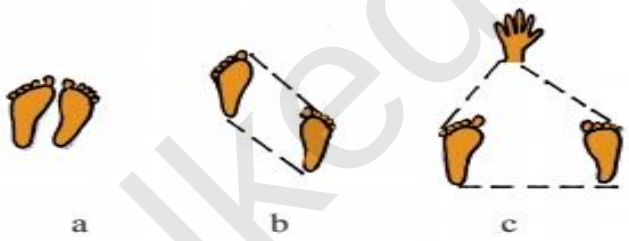


Figure 3.11

- **Figure 3.12 shows a netball player and a weight lifter keeping their feet apart. Due to a wider supporting base they have more stability in their stance.**

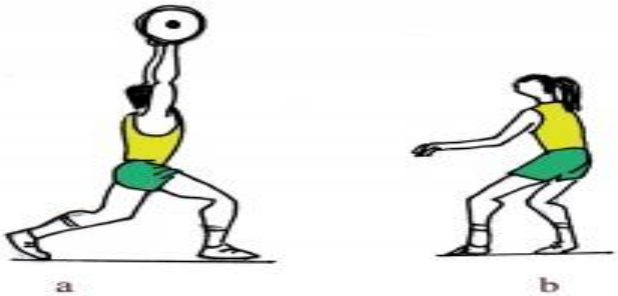


Figure 3.12

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iv. Movement of the body in the opposite directions.

- **When a part of the body moves far from the line of gravity the body may lose its balance. Moving another part of the body in the opposite direction, the former position can be balanced. The player in diagram 3.13, while stretching his left hand forward has his left leg and hand stretched backward. By doing this he balances his body.**

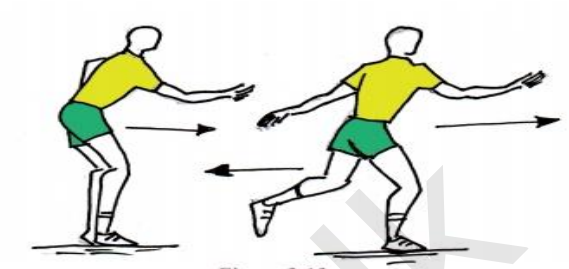
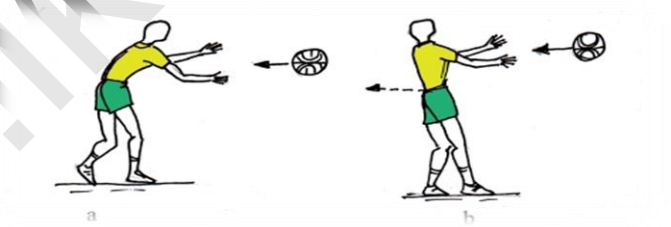


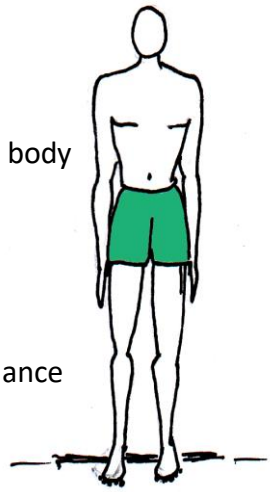
Figure 3.13

v. Bending the body towards an external force.

- **When an external force is coming towards you by leaning forward, you can have a better balance. If you bend your body backwards to an external force then the centre**
  of gravity will be pushed backwards away from the base of your body and balance will be lost. This is explained by the two positions shown in figure 3.14.



10. Write some points to consider when stand.



- ✓ Body is kept in a vertical stance
- ✓ Hands are kept on either side of the body
- ✓ Keep the feet apart, at an equal distance of the shoulder and direct the body weight to spread equally to both feet

11. Write some points to consider when standing and attending.

- ✓ keep the body in a vertical stance
- ✓ keep feet apart at an equal distance of the shoulder maintaining the balance
- ✓ adjust the working surface to the level of the elbow (e.g.: ironing)

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12. Write some points to consider when sitting.



- ✓ Keep the spine vertically
- ✓ Waist, knees and ankles should be bent at 90 degrees
- ✓ The soles of the feet should be touching the floor
- ✓ Use a properly designed chair with
  - a back rest to lean
  - the height of the chair equal to the height of knee from its feet
  - sitting surface not soft or too hard
  - handrests to rest the elbow



13. Write some point to consider when sitting and working at a table.

- ✓ Keep the spine vertical.
- ✓ Feet should touch the ground.
- ✓ Hip and knee joints should be bent at 90 degrees
- ✓ If sitting for a long time, it is important to get up and walk from time to time. This will prevent undue pressure on the spinal cord.

14. Write some points to consider when driving a vehicle.



- ✓ Sit on the driver's seat with a relaxed body.
- ✓ Hands bent slightly at the elbows.
- ✓ Keep back straight and rest completely against the backrest.
- ✓ Legs should be in a relaxed position when using brakes

15. Write some points to consider while working at the computer.



- ✓ Chair should be one inch higher than the usual height.
- ✓ Spine should be vertical.
- ✓ Head should not be swayed forward or backward unnecessarily.
- ✓ Feet should touch the floor.
- ✓ Shoulder should be parallel to the hip bone.

16. Write some points to consider when you are lying down.

- ✓ The air way should not be obstructed when lying.
- ✓ The circulatory process should not be obstructed.
- ✓ Lying down in such a way that it does not give any aches and pains to the body.
- ✓ A horizontal, flat and medium soft surface should be used in order to avoid muscle related problems.
- ✓ Lying down should not affect the curves of the spine or muscles of the back.

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04 Let us learn about sports and outdoor activities

01. Write 04 advantages of engaging in sports and outdoor activities?

- ✓ reducing stress,
- ✓ gaining pleasure
- ✓ developing personal values.
- ✓ Sports also help us develop the ability to obey rules and regulations and the spirit of working as a team.

02. Why volleyball has become popular?



- ✓ Does not incur a high cost
- ✓ Minimum equipment is required
- ✓ Limited space is required
- ✓ Does not take much time to complete a game

03. What is the National game of Sri Lanka?

- ✓ Volleyball

04. When was Volleyball introduced in Sri Lanka? By Whom?

- ✓ 1916- Robert Walter Camack

05. When was Volleyball introduced in the World? By Whom?

- ✓ 1895- William G Morgan

06. Write the skills of Volleyball?

- ✓ Serving
- ✓ setting
- ✓ blocking
- ✓ Receiving
- ✓ Court defending
- ✓ Spiking

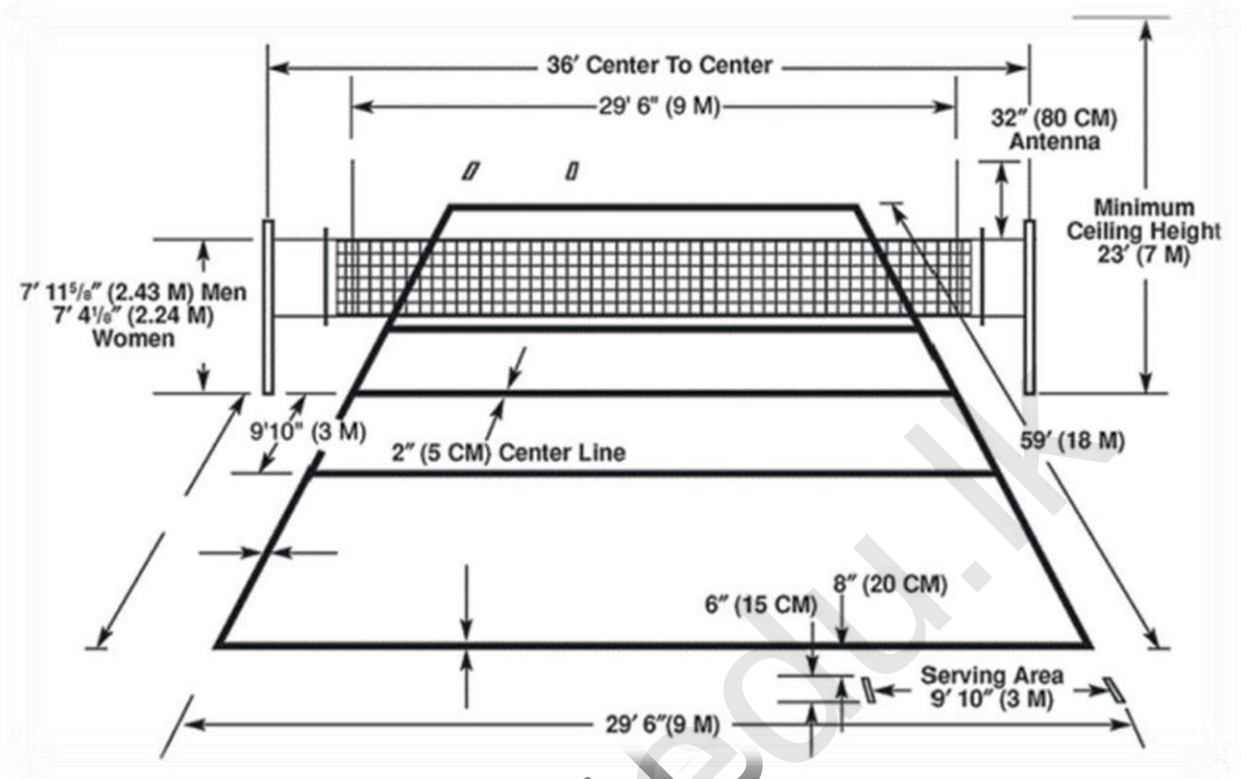


07. What is the name of the place which volleyball was started?

- ✓ Minro net

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08. Draw the volleyball with measurement.



09. What is ''Spiking''?

- ✓ In volleyball, slamming the ball that is over the net into the opposing team's court is called spiking.

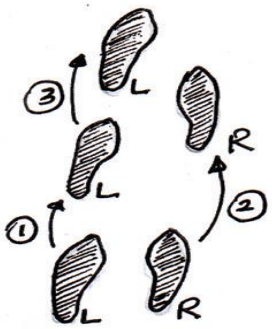
10. Write some points about '' Spiking''.

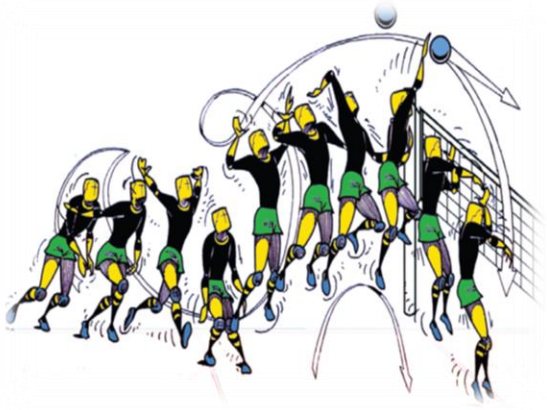
- ✓ Except for serving and blocking, all the other acts of passing the ball into the opposing team's court can be considered as spiking.
- ✓ When executing a spike, releasing the ball clearly off the five fingers is accepted mostly while touching and throwing the ball are not allowed.
- ✓ Spiking is considered to be complete when the ball has completely passed the vertical plane of the net or when the ball makes contact with a defender of the opposing team.
- ✓ Spiking is very important in ensuring the victory of a team and maintaining the spirit of the game.

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11. Write the techniques of spike.

- ✓ Hitting approach
- ✓ Take-off
- ✓ Hit the ball
- ✓ Landing



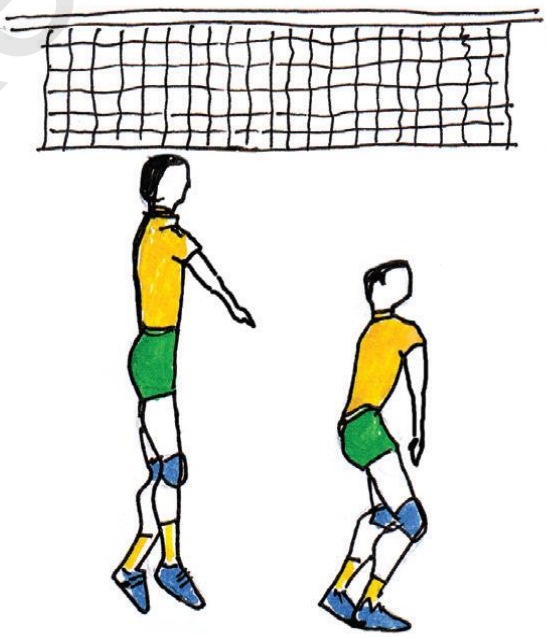








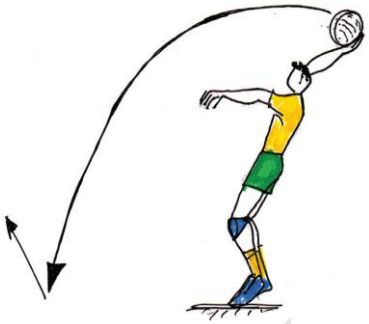




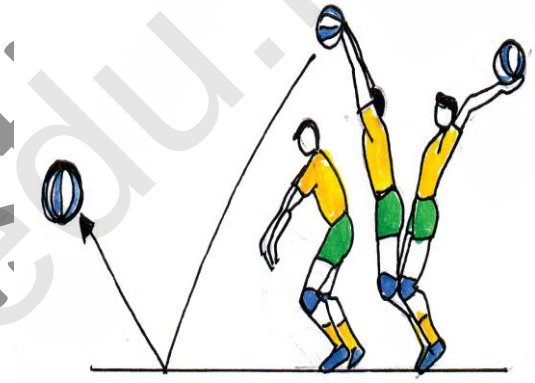
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12. Write 03 activities related to spiking can be developed.

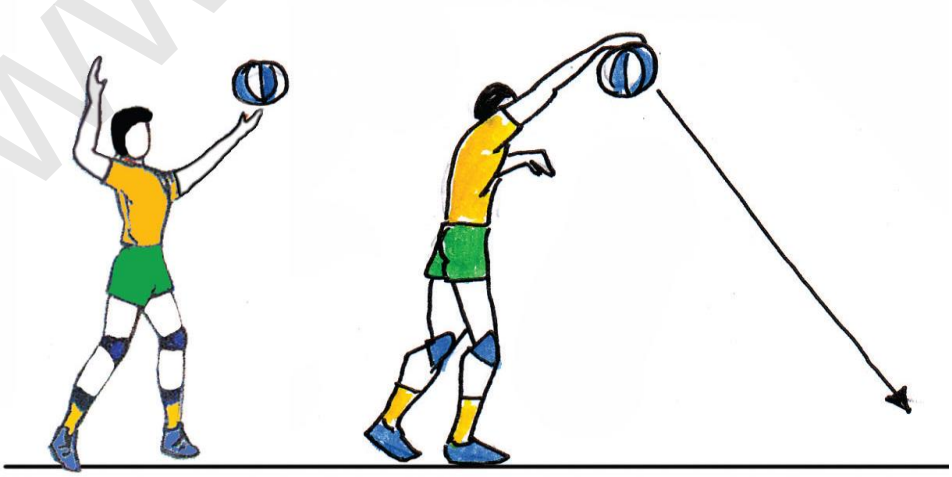
- ✓ Hold the ball with one hand, raise it above the shoulder and fling it onto the ground with great force.



- ✓ Hold the ball with both hands and fling the ball on to the ground with great force dashing forwards with the body bent backwards like a bow.



- ✓ Drop the ball that is held in the non-dominant hand and hit it with the dominant hand.



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13. What are the things to be borne in my mind when spiking according to the rules?

- ✓ **The front-row players** can hit the ball that is at any height within their own court.
- ✓ **The back-row players** can hit the ball that is at any height taking off from the back court only. It is illegal to touch the spiking line with feet when taking off to hit or hit the ball keeping the feet in front of the spiking line. It is not illegal to land on the front half of the court after hitting the ball having taken off from the rear half of the court.
- ✓ **A back-row player** can hit the ball while in the front part of the court, but at least a part of the ball should be below the top level of the net at the point of hitting.
- ✓ **A team cannot** complete a spike when the service ball, which is coming to the court is completely above the top level of the net

14. Mention some fouls committed during spiking.

- ✓ Hitting the opposing team's ball.
- ✓ Hitting the ball so that it goes off the court.
- ✓ A back-court player coming to the front court and hitting the ball that is completely above the net.
- ✓ Spiking and sending the ball to the opponent's court, which was lifted by the libero player with finger tips in the front part of the court while it is completely above the level of the net.

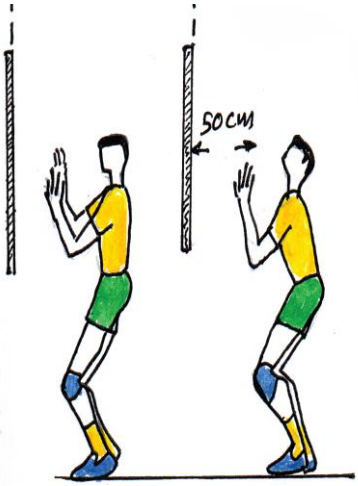
15. What is ''Blocking''?

- ✓ Blocking is obstructing the ball, above the level of the net by front row players, which was hit by the opposing team and has cleared the net.

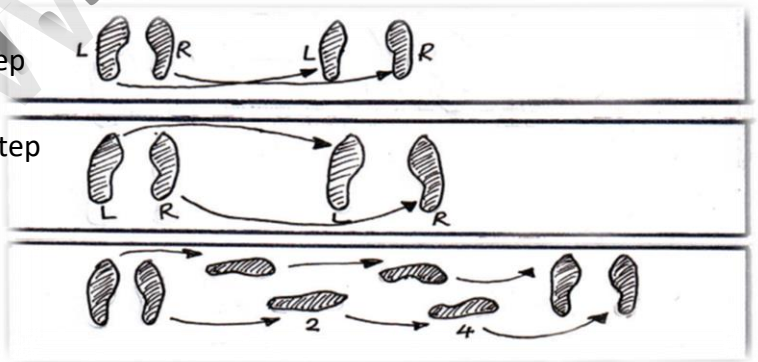
16. Write the techniques of Blocking.

- ✓ Ready Position
- ✓ Approaching the ball
- ✓ Take-off and touching the ball
- ✓ Landing





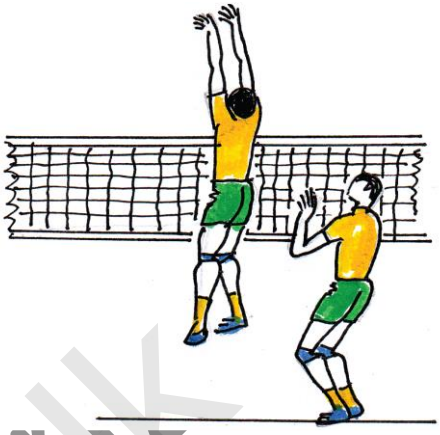
- Side step
- Cross step
- Dash



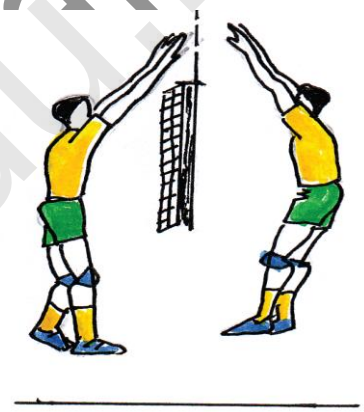
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17. Write 03 activities can be done to practice blocking.

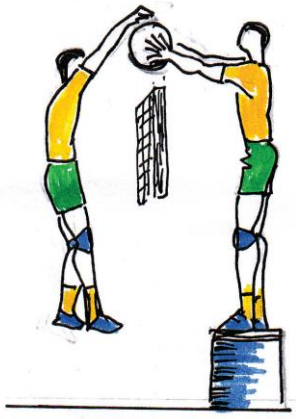
- ✓ Take-off properly at the net that has been tied at a lower level to suit the height of the players and practise blocking without using the ball.



- ✓ Two players take off from opposite sides of the net and touch each other's hands pretending to block the ball.



- ✓ The ball is held above and close to the net and the players practise blocking by touching the ball.



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18. What are the things to be borne in my mind when blocking according to the rules?

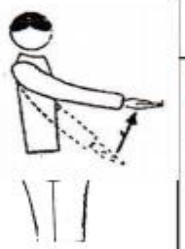
- ✓ **Only the front-court players can complete** the coverage. At the time a blocking takes place, some part of the player's body should lie above the top level of the net. The blocking action without touching the ball is called an 'attempt to block'. A blocking becomes complete only after the blocker has touched the ball.
- ✓ **Joint block**
- ✓ **When two or three players** join together and perform blocking, it is called a joint block. The blocking becomes complete when any one of them touches the ball.
- ✓ **Repeated touch of** the ball by one or more of the blockers is considered a single touch that happens during the same posture. Touching the ball while blocking is not considered a hit and therefore a team gets three hits when they receive the ball to their court after blocking.
- ✓ **After blocking** any player of the team can make the first hit. Even the player who did the blocking can make the first hit.
- ✓ **While blocking**, a player may attempt to block by extending the hands and arms over the net to the opponents' court so that it does not obstruct the opponents.

19. Mention the consistency of a volleyball match for officiating.

- ✓ First referee
- ✓ Second referee
- ✓ Scorer
- ✓ Assistant scorer
- ✓ Two- or four-line judges
- ✓ **The first referee**
  The first referee should carry out his/her duties seated or standing on the referee's stand located at one end of the net. His/her view should be approximately 50 cm above the upper level of the net.
- ✓ **The second referee**
  The second referee should stand on the ground outside the court close to the pole on the opposite side of the first referee.
- ✓ **The scorer/ Assistant Scorer**
  The scorer should sit facing the first referee at the scorer's table that is placed on the side opposite of the first referee's position

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✓ **Official hand signals of the referees.**

Authorisation to serve Move the hand to indicate the direction of service.		**Team to serve** Extend the arm to the side of the team that will serve	
Change of courts Raise the forearms front and back and twist them around the body.		**Time-out** Place the palm of one hand over the fingers of the other, held vertically (forming a T) and then indicate the requesting team.	
Substitution Circular motion of the forearms around each other.		**Misconduct warning** Showing a yellow card.	
Misconduct penalty Showing a red card for penalty.		**Expulsion** Showing both cards together in one hand.	
To declare the un suitability of play the two cards in both hands raised upwards.		**End of set of match** Cross the forearm in front of the chest, with hands open.	
Ball not tossed or released at the service hit Lifiting the extended arm with the palm facing upwards.		**Delay in service** Raising eight fingers with palm spread open.	
Blocking fault or screening Raising both arms vertically with palms open.		**Positional or rotational fault** Making a circular motion with a finger.	

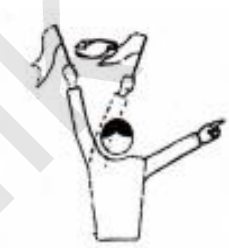
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Ball "in" Pointing the arms and fingers towards the floor.		**Ball "out"** Showing the back of the palms bending elbow perpendicularly	
Catch Slowly lifting the forearm with palm of the hand facing upwards.		**Double contact** Raise two fingers spread open.	
Four hits Raise four fingers spread open.		**Net touched by player or served ball fails to pass to the opponent through crossing space** Pointing to the net on the relevant side.	
Reaching beyond the net Place a hand above the net with the palm facing downwards.		**Attack hit fault** Make a downward motion with the Fore arm with hand open.	
The server has trampled the line or stepped into the court or a player is out of court Pointing to the center line or relevant line.		**Double fault and replay** Raising both thumbs vertically.	

Ball touched Brushing with the palms of one hand the fingers of the other that are held vertically.		**Warning / delay penalty** Covering the wrist with a yellow card (warning) with a red card (penalty).	

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✓ **Line Judges' Official Flag Signals.**

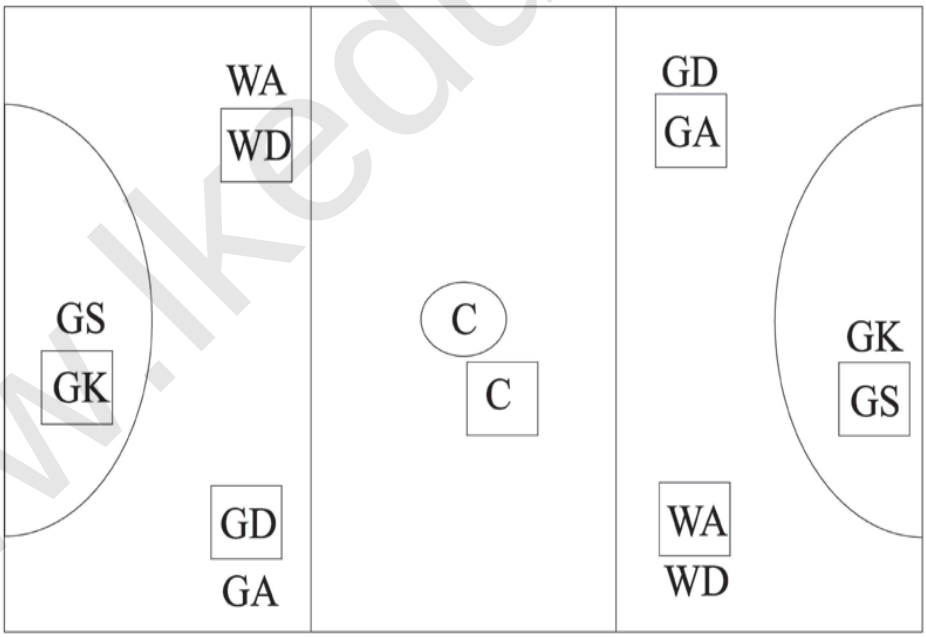
Ball "in" Point down with flag.		**Ball "out"** Raise flag vertically.	
Ball touched Raise flag and touch the top with the palm of the free hand.		**Crossing space faults, ball touched an outside object or foot fault by any player during service** Waving flag over the head and pointing to the antenna or respective line.	
Judgement impossible Raise and cross both arms and hands in front of the chest.			

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Netball

- **Netball is a sport that is very popular among females. Twelve players can be registered for a game of netball. A netball team should consist of seven players to play the game but a game of netball can also be played with five players.**
- **below shows how players should be placed in the court at the start of a game. The symbols (letters) relevant to each player of one team is shown in the boxes. According to the rules that are applied at the start of the game, all the players, except for the centre player (C), should be within their goal areas. They can come to the centre area of the court when the referee has blown the whistle. The centre player (C) of the team which gained the centre pass after the referee has blown the whistle passes the ball from the centre circle following the rule related to footwork to another player of the own team within three seconds so that the ball can be caught by that player from within the centre area. After winning a point by shooting the ball, the two teams take alternate turns of centre pass.**

- **Position of playes**

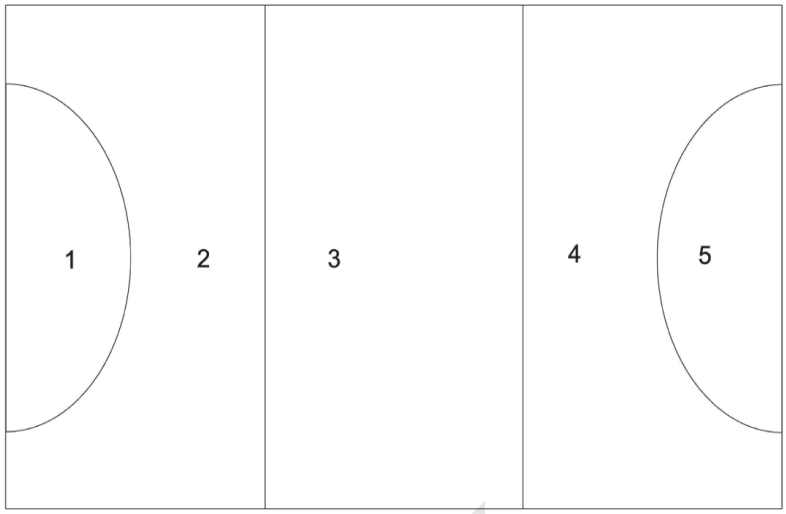






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- **Play area**
- **Player Areas allowed to play in**
- **GS - Goal Shooter - 1,2**
- **GA - Goal Attack - 1,2,3**
- **WA - Wing Attack - 2,3**
- **C - Centre - 2,3,4**
- **WD - Wing Defence - 3,4**
- **GD - Goal Defence - 3,4,5**
- **GK - Goal Keeper - 4,5**



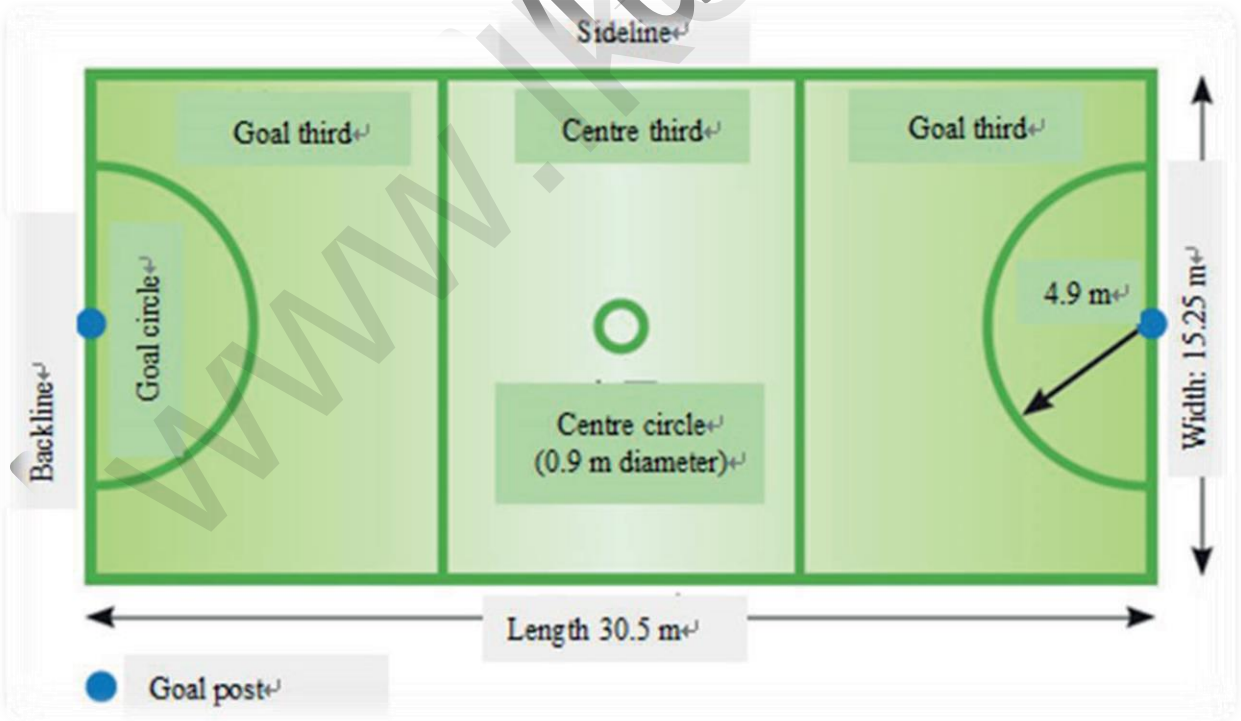
01. When was netball introduced in Sri Lanka? By Whom?

- ✓ 1921- Jenny Green

02. When was netball introduced in the World? By Whom?

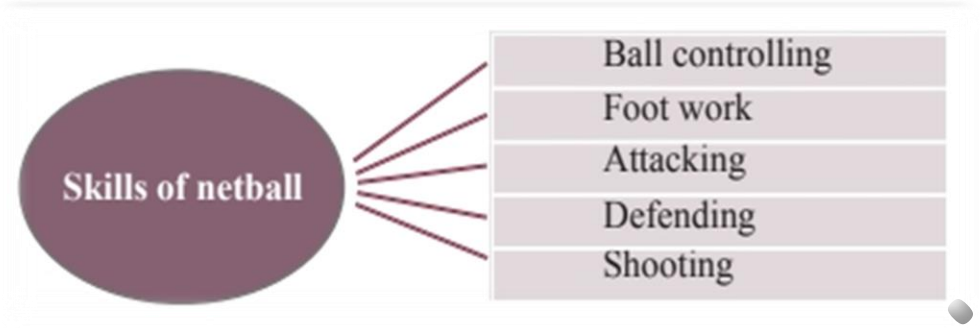
- ✓ 1891- Jams Smith -U.S.A

03. Draw the netball court with measurement



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04. Write the skills of netball?



05. What is ''Attacking''?

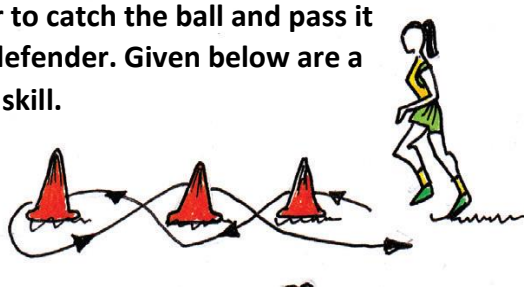
- ✓ In netball when a team has received the ball, taking it to their shooting post by way of passing it among the members of the own team while avoiding the opposing players is called attacking

06. Write 03 obstructions of opposing team During attack.

- ✓ prevent a player from catching the ball thrown to her by her team mate.
- ✓ prevent a player from moving to a vacant place in order to get the ball.
- ✓ prevent a player from passing the ball to her team mate.

- **Therefore, it is the tactical skill of the attacking player to catch the ball and pass it to a team member, avoiding the obstructing player cdefender. Given below are a few of the activities that are useful in developing this skill.**

  - ✓ **Running around obstacles in a zigzag**



  - ✓ **Running side ways.**

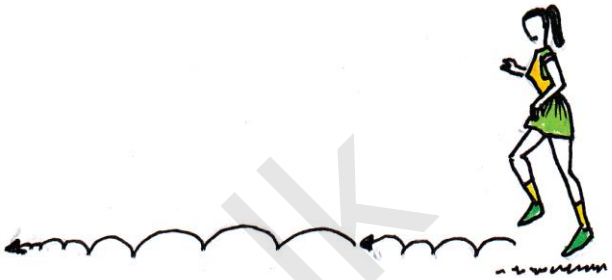


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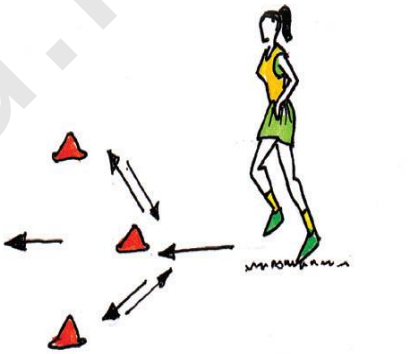
- ✓ **Running backwards and forwards**



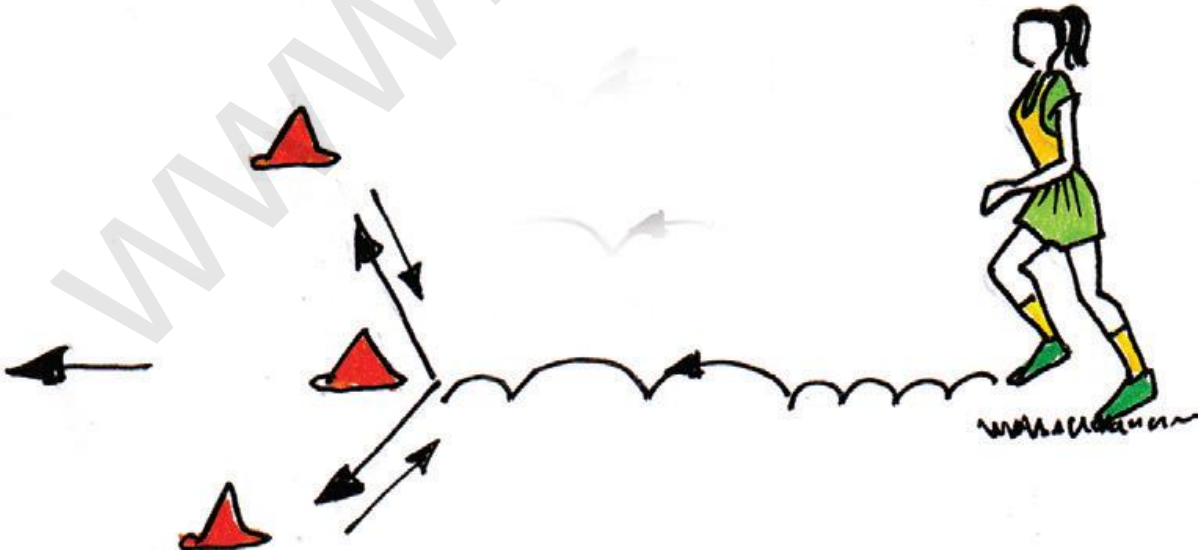
- ✓ **Running changing the pace**



- ✓ **Running while abruptly changing direction**



- ✓ **Running changing both pace and direction**



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07. Write a short note about Defending.

- ✓ The aim of the defender is to limit the number of goals the opponents would score or to delay them from scoring goals. The skill of the defender is to prevent the opponents passing the ball among one another and to get possession of the ball to their team.

08. Write some activities to develop defending skills.

- ✓ Defend the opponent very efficiently.
- ✓ Obstruct the opponent from throwing or shooting the ball that she has caught.
- ✓ Start defending the opponent soon after passing the ball.
- ✓ Quickly understand the tactics and the playing style of the opposing team.

09. What is ''Shooting''?

- ✓ Putting the ball through the ring on the goal post from within the goal circle is called shooting. Shooting can be done with a single hand or with both hands. When shooting the ball, it is important to control the arms and legs correctly.

- Keep the body erect, raise the dominant hand and hold the ball with the fingers. The ball should be above the head and in front of the forehead. The free hand is kept on the ball as a support.



- Start shooting by bending the knees slightly



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- Stretch the arms as the body straightens from the knees. Then release the ball from the hand so that the ball is pushed upwards with the wrist whilst aiming at the ring on the goalpost.



10. Write some activities can be performed in order to make shoot successful?

- ✓ Practise shooting at different places within the goal circle.
- ✓ Practise shooting while being obstructed by a defender.
- ✓ Catch the ball sent by another player to the goal circle from different places and shoot

11. Write some rules and regulations in netball.

- ✓ Netball rules and regulations are introduced by the International Federation of Netball Associations (IFNA). Netball games are governed by 21 key rules. You gained knowledge about some of those rules in the previous grades and this year, you will learn some rules related to attacking, defending and shooting……

- **While defending or attacking, a player should neither knock against, push, strike**
- **the opponent nor grab the ball from the opponent.**
- **Players cannot stretch their hands sideways and defend.**
- **A player possessing the ball should not be obstructed within a distance of less than 0.9m (3 ft.).**
- **When shooting, the shooter should not be obstructed by the opponent stretching the arms, standing within a distance of less than 0.9 m (3 ft.).**

- ✓ When above rules are violated, a penalty pass or a chance to shoot a goal is given on the spot. The player who committed the offence should stand by the side of the player who did not commit the offence so that she does not get obstructed. The player who committed the offence cannot join the play until the ball is released from the hands of the player who did not commit the offence.

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12. Write some situations of Toss up..

- ✓ get hold of the ball at the same time
- ✓ commit an offence at the same time so that play is obstructed
- ✓ move to an offside area at the same time and either one or both of them get hold of the ball,

Duration of the game

At national or international level, a game consists of four 15-minute quarters.

1. Quarter 1 - 15 minutes - break 3 minutes
2. Quarter 2 - 15 minutes - break 5 minutes
3. Quarter 3 - 15 minutes - break 3 minutes
4. Quarter 4 - 15 minutes

The two teams should change sides after each quarter.

For extra knowledge

At school level, a game consists of two quarters according to the requirement of the organizers.

The duration of a game at school level is as follows:

Table 4.3

Age	First half	Break	Second half
Under 15	10 minutes	3 minutes	10 minutes
Under 17	15 minutes	3 minutes	15 minutes
Under 19	20 minutes	3 minutes	20 minutes

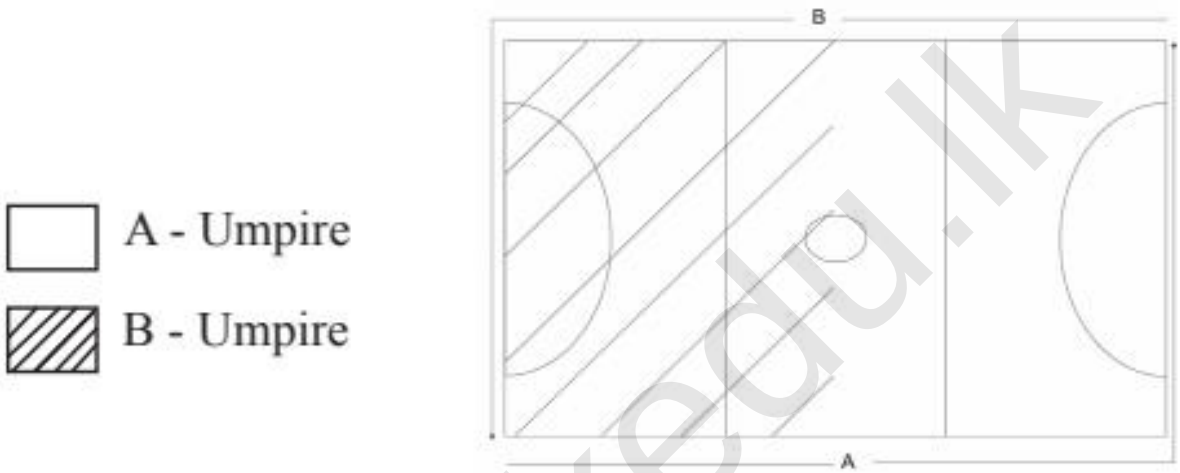
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Judging netball games

The panel of judges at a netball game consists of the following officials:

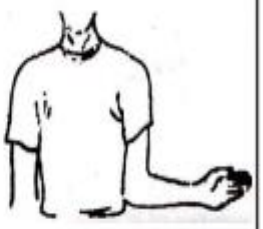
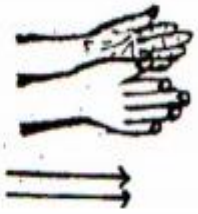
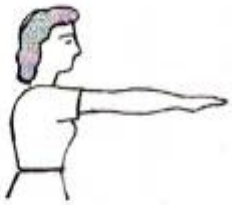
- Two umpires to control the game and to make decisions
- Two timekeepers
- Two scorekeepers

- The two umpires should select their sides by tossing a coin. When the umpires stand facing the court, they judge the half of the court that lies on their right. Figure 4.31 given below shows the areas and the boundary lines which the umpires A and B judge.
- Official hand signals used by a netball umpire are given in the next page.



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✓ **Hand signals used by a netball umpire**

Direction of pass		Stepping	
Short pass		Personal contact	
Held ball		Toss up	
Time out		Obstruction	
- Over a third - Off side - Breaking in to the center third		Advantage	

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Football

- **Football is a game played between two teams with eleven players each. Each team tries to score goals by kicking the ball into the opposing team's goal. It has won recognition as the most popular sport in the world as it has become the game that is watched by the most number of people. In football, the players, except for the goal keeper, cannot touch the ball with their hands during play. Hence they engage in play employing a variety of skills…….**
  The game was started in 1911 in Sri Lanka.

01. Write the skills of football?



02. Write the methods of kicking the ball.

- ✓ Kicking with the toe
- ✓ Kicking with the inside of the foot
- ✓ Kicking with the outside of the instep
- ✓ Kicking with the heel

1. Kicking with the toe

Toe kick is used to make the ball move fast along a straight path. In toe kick, the ball is kicked with the tips of the toes.





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2. Kicking using the inside of the foot

The inside of the foot kick is used for long-distance passes and short-distance passes. In this kick, the curved inner part of the foot is used to kick the ball.



3. Kicking with the outside of the instep

The outside of the instep kick is used to make the ball move along a curved path. The outside of the instep is used for this kick.

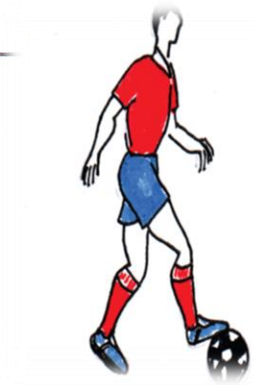


4. Kicking with the heel

The back heel kick is used to flick the ball backwards deceiving the opponent. The heel is used for this kick



03. Write the methods of controlling the ball.



- ✓ By keeping the foot on the ball
- ✓ Using the innerside of the foot
- ✓ Using the chest
- ✓ Using the abdomen

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❖ **Stopping the ball by keeping the foot on the ball**

- The ball is stopped by keeping the sole of the foot on the ball as it comes rolling along the ground or, if the ball is moving through the air, just as it touches the ground

❖ **Stopping the ball using the inner side of the foot**

- A slow moving ball or a fast moving ball is stopped using the innerside of the foot. When stopping the ball in this manner, the foot is drawn a bit backwards just as the ball
  touches the foot.



❖ **Stopping the ball using the chest**

- A ball that is moving in the air can be stopped using the chest. When stopping the ball using the chest, the chest should be drawn a little backwards just as the ball hits the
  chest



❖ **Stopping the ball using the abdomen**

- A ball that bounces on the ground can be stopped using the abdomen. When stopping the ball using the abdomen, the abdomen is drawn a little backwards just as the ball hits the abdomen.



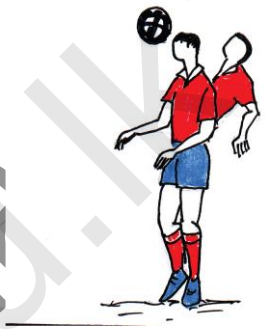
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04. Write the typing of heading the ball.

- ✓ Heading the ball without a jump
- ✓ Heading the ball with a jump
- ✓ Heading the ball, that is coming from a side with a jump

❖ **Heading the ball without a jump**

As the ball is moving in the air, heading is done using the forehead while keeping an eye on the ball. When the ball is headed in this manner, the feet are in contactmwith the
ground and the ball moves forward.



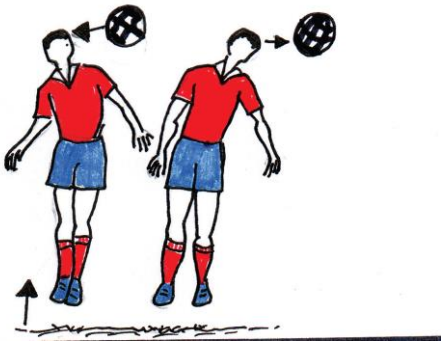
❖ **Heading the ball with a jump**

The eye is kept on the ball that is moving in the air and heading is done with a jump using the forehead. When heading is done in this manner, the feet lie above the ground and the ball moves forward



❖ **Heading the ball, that is coming from a side with a jump**

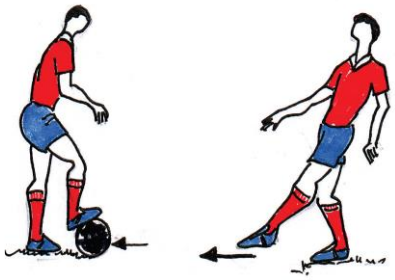
In this method, the ball that is moving in the air is headed using the sides of the head in order to send the ball in different directions. Most often, the ball is headed with a jump in this method.



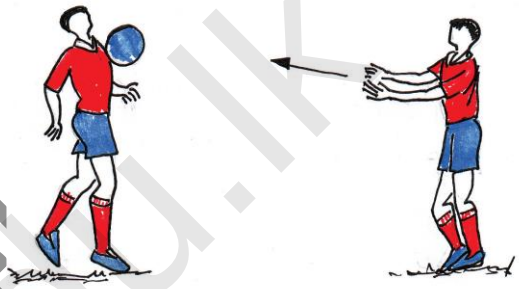
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05. Write some activities will help you to develop these skills.

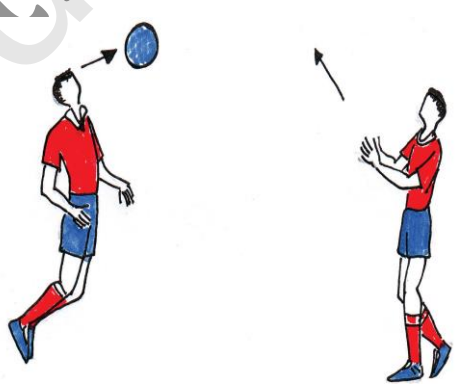
1. Two pupils stand apart and practise passing and stopping the ball kicked by each other alternatively…….



2. The ball is passed in different ways to stop using different methods (using the inner-side of the foot, instep of the foot, abdomen).



3. When the ball is passed by one student, another heads the ball with or without a jump



06. Write some rules and regulations in football.

- ✓ When you learn about the game of football, it is important that you gain a clear understanding of the rules and regulations of the game. We will next learn about the rules and regulations applied and signals used by referees in international football games.
- ✓ **Number of players**
  A football team consists of a maximum of eleven players one of whom should be the goal keeper. The minimum number of players that a team consists of is seven. There can be three to seven reserve players**.**
- ✓ **Duration**
  The duration of a game of football consists of two 45minute halves and maximum of 15 minutes break in between. (According to the game it can be reduced to 40 minutes)

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07. Write some major offences committed in football.

- ✓ Kicking or attempting to kick an opponent
- ✓ - - Tripping or attempting to trip an opponent
- ✓ - - Jumping at an opponent
- ✓ - - Charging at an opponent
- ✓ - - Strikes or attempts to strike an opponent
- ✓ - - Pushing an opponent
- ✓ - - Holding an opponent
- ✓ - - Spitting at an opponent
- ✓ - - Deliberate handling, hitting or carrying the ball with the hand.

08. Who will participate for judging the football match?

- ✓ referee
- ✓ two, side referees

09. Write some responsibilities of the referee.

- ✓ Checking the legality of the football ground and the football
- ✓ Enforcing rules throughout the game
- ✓ Keeping records of the game
- ✓ Imposing penalties on players who violate rules
- ✓ Pausing the game after an accident and restarting
- ✓ Preventing outsiders entering the ground except for players and umpires

10. Write some Responsibilities of the side referee.

- ✓ Assisting the referee
- ✓ Giving signals when the ball moves out of the ground
- ✓ Showing the team that possesses the corner kick, goal kick and the throw-in
- ✓ Showing players who are in offside positions
- ✓ Informing substitution of players
- ✓ Informing the time limit of the game

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- **Referee's signals**

Direct free kick



Advantage



Indirect free kick



Yellow Card - warning



Red Card - removing player



Substitution



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Throw-in for attacker



Throw-in for defender



Goal Kick



Corner Kick



Outdoor educational activities

01. Mention some outdoor activities.

- ✓ Camping
- ✓ Campfire games
- ✓ Cooking out door
- ✓ Jungle craft
- ✓ Hiking
- ✓ Jungle exploration

02. Write some benefits we gain from outdoor educational activities.

- ✓ An opportunity to gain pleasure
- ✓ An opportunity to identify the environment
- ✓ An opportunity to understand the environment
- ✓ An opportunity to understand the challenges nature offers
- ✓ Develop exploration skills
- ✓ Develop self-confidence
- ✓ Develop leadership skills
- ✓ Develop collective understanding

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03. Write some objectives of Walks (Hiking)?

- ✓ Hikes to raise awareness of an issue among the public
- ✓ Hikes to raise funds
- ✓ Hikes for pleasure
- ✓ Hikes to explore the forest
- ✓ Hikes for political purposes
- ✓ As a mark of protest
- ✓ As a means of demonstration

04. What are the things should be consider when preparing plans for the jungle exploration.

- ✓ Expected date of the hike
- ✓ The route they were going to take
- ✓ Equipment they need to carry
- ✓ Finances required for expenditure
- ✓ Persons from whom they have to get permission
- ✓ Institutes from which they have to get permission
- ✓ Places which require permission to visit
- ✓ Persons who should be informed
- ✓ Action that has to be taken in an emergency
- ✓ Preparing for possible accidents.

05. Write some notes about " Compass".

- ✓ The compass is a piece of equipment that is used to find the direction.
- ✓ The pointer of the compass always indicates the North when placed on a flat surface.
- ✓ The route map is marked accordingly.
- ✓ Compass can be used to find the direction to reach the destination.



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✓ **Standard Symbols used in maps**



Main road (A Grade)



Main road (B Grade)

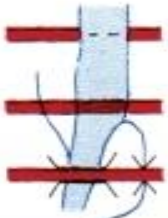

Main road under construction


Minor roads

Foot path

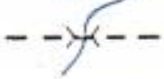

Tunnel


Scrub / forest


Passenger ferry

Causeway

Bridge / culvert


Footbridge


Marshy land / mangroves

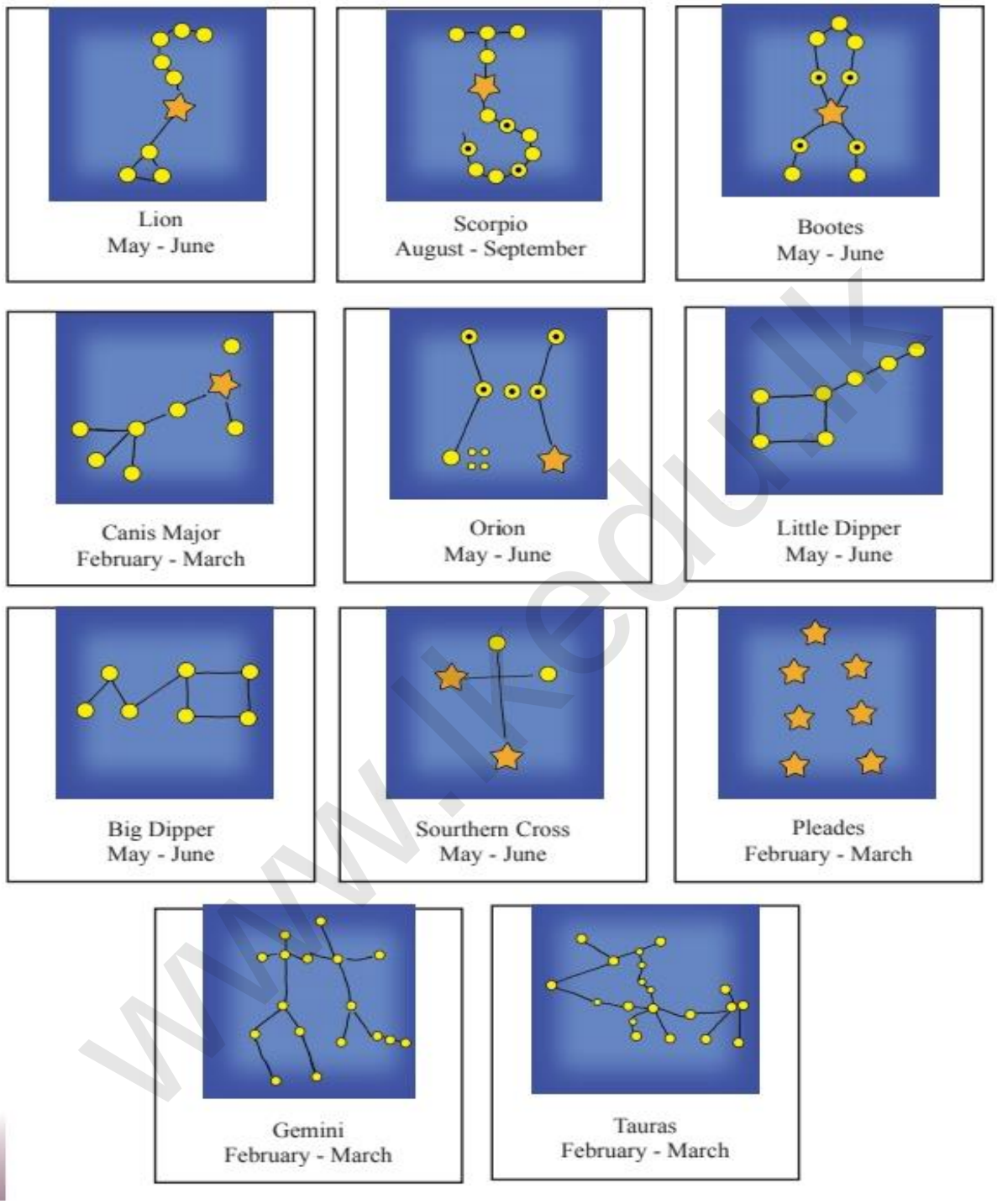

Tank / abandoned tank

Irrigational canal

Catch pit / dam

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- ✓ **importance of using the position of constellations in travel for the knowledge of the pupils; using illustration**



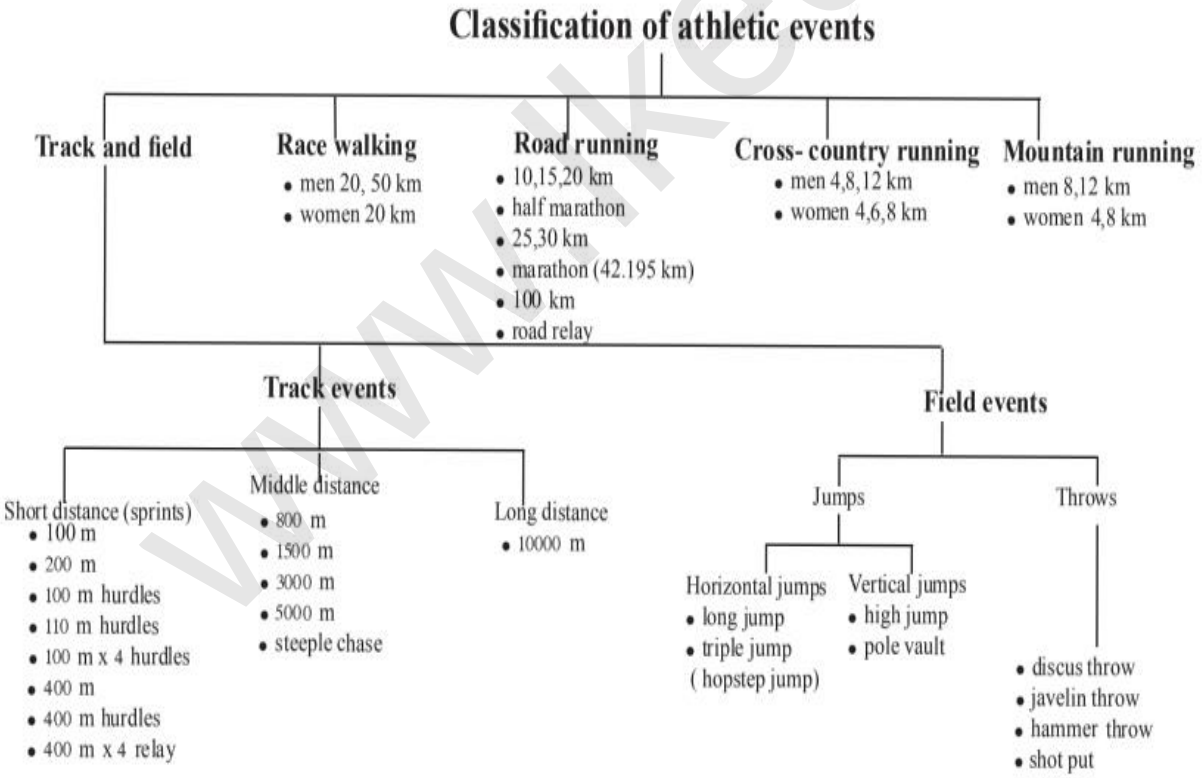
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05 Let us learn about athletics

- **Activities such as walking, running, jumping and throwing have naturally been connected with man's life throughout the process of evolution. These activities gradually developed and resulted in the creation of modern athletic events. It is considered that organized athletic events were first started in Greece during the Greek era. Athletics was introduced to Sri Lanka by the British. Gaining theoretical knowledge and practical experience in athletics will contribute immensely to successful performance of day-to-day activities and also pave the way to a healthy life……**

01. Write the classification of athletic events.

- ✓ **Track and field**
- ✓ **Race walking**
- ✓ **Road running**
- ✓ **Cross - country running**
- ✓ **Mountain running**

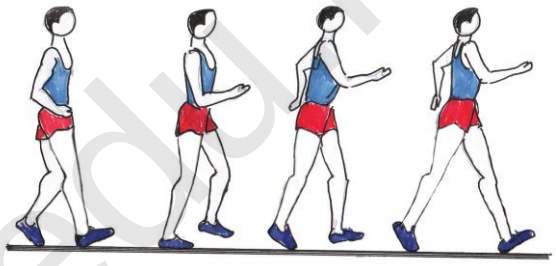


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02. Write the types of combined events with examples.

- Combined events have several athletic events combined together and performed by a single athlete. They are, pentathlon (5 events), heptathlon (7 events) and decathlon (10 events). Pentathlon is held in one day while heptathlon and decathlon are held over two days.
  - ✓ **Pentathlon (Men's)**
    Long jump, javelin throw, 200m running, discus throw and 1500m running.
  - ✓ **Heptathlon (Women's)**
    100m hurdles, 200m running, 800m running, high jump, shot put, long jump and javelin throw
  - ✓ **Decathlon (Men's and Women's)**
    100m running, 400m running, long jump, high jump, shot put, 110m / 100m hurdles, discus throw, pole vault, javelin throw and 1500m running.

- **<u>Race walking</u>**



  - ✓ Walking is an activity naturally performed by everybody. It is a motor skill that man naturally possesses. However, with the passage of time it also evolved into a racing event.
  - ✓ Although race walking differs from the way we naturally walk, there are some common features between the two.

Every step of race walking consists of two stages.

- ✓ **Single-support phase:**

• The stage in which the race walker makes contact with the ground with one supporting sole is called the single-support phase.

• In this stage the speed necessary for forward movement is generated and the free leg makes the next stride.

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✓ **Double-support phase:**

• The stage in which the race walker makes contact with the ground with both soles is called the double-support phase.

• This stage is necessary to maintain continuous contact with the ground.



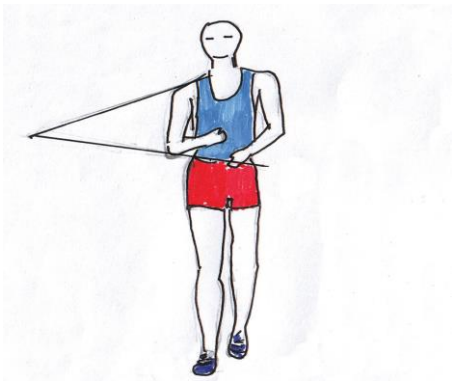
✓ **Accurate Foot work in race walking**

- When walking, the sole of the foot makes contact with the ground at three pointsthe heel, the ball and finally the toes.

✓ The back foot gives a powerful and rapid push for the forward movement.
✓ The toes and the knee joint of the front foot are directed straight forward.
✓ The walker steps along a straight line.
✓ The back foot lies erect anchored to the ground until the front foot lands.

✓ **Hand movement**
✓ Shoulders are kept relaxed.
✓ The arms are bent by about 900 at the elbow and move forward and backwards rapidly from the shoulder.

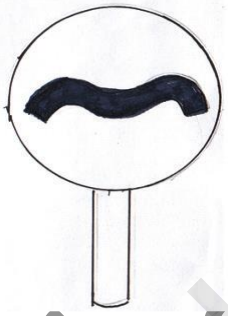
✓ **Hip movements.**
✓ The axis of the shoulders and the hip move upwards and downwards alternately as shown in the figure, i.e. the hip of the leg which lies straight moves upward while the shoulder of the same side moves downward



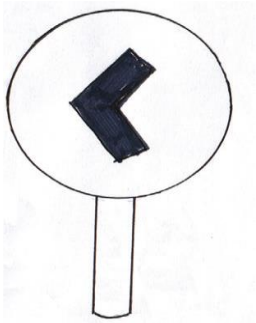
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03. Write the rules and regulations related to race walking.

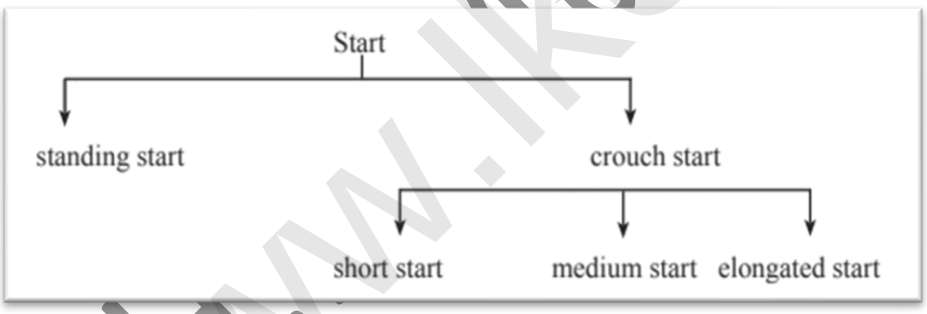
- ✓ In race walking, stepping is done in such a way, that one foot is always kept in contact with the ground, i.e. the front foot should come into contact with the ground before the back foot has been taken off the ground.
- ✓ The front leg should lie straight without bending the knee from the moment it first touches the ground until it becomes erect.
- ✓ **If race walkers violate the above rules, the following signals will be given to them.**
- **Lack of contact with the ground**



- **Bending the knee**



- **<u>Running events</u>**



1. Standing start

• Standing start is used in running races of over 400 m.

• Two commands are given for the standing start:

i). on your marks

ii). go (sound of the starting gun)

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- ✓ **Stages of the standing start**

(i) 'On your marks' stage

• Stand keeping the foot of the dominant leg very close to the starting line and the other leg behind in an easy manner.

• The arm opposite the front leg should be bent at the elbow and placed in front. The other arm should be placed behind.

• The front knee should be slightly bent with the body leaning forward.

(ii) 'Go' stage (sound of the starting gun)

• As the sound of the starting gun is emitted, the back leg should immediately move forwards and running should begin.

2. Crouch start

- ✓ It is compulsory that the crouch start is used in 400 m races and all other races less than 400 m. Starting blocks are not used at school level and races below national level but is compulsory to use at national and international races. There are three stages of command for crouch start:

1. On your marks

2. Get set

3. Go (sound of the starting gun)

Stages of the crouch start

Table 5.1

stage and the command	on your marks	get set	go
postures			

- ✓ **The crouch start is divided into three styles based on the gap between the starting line and the front foot and the gap between the two legs.**

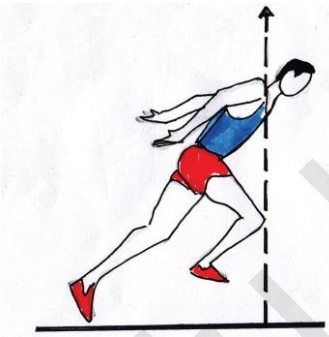
✓ short start - a small gap between the feet
✓ medium start - a moderate gap between the feet
✓ elongated start - a big gap between the feet

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- **Offences committed at the start of a race**

✓ A runner takes too long to complete 'on your marks' or 'get set' stages.
✓ Making the start so that the other runners are disturbed either with some noise or by any other means.
✓ Changing the posture and starting before the sound of the starting gun is heard.
✓ If any of the above offences are committed, the runner will be removed at the first instance. The starting officer shows the red card to remove a runner who has
committed an offence.

- **Finishing the race**



✓ The finish of the race is marked with a line that is 5 cm wide and perpendicularn to the running direction. The finish is taken by the edge of this line that is closest to the runners.
✓ The winners are selected according to the sequence that the torso (the body except the head, hands and legs) of the runner reaches the vertical plane of the inner edge of the finishing line.
✓ It is a good finishing technique to lean the body forward with the last step before the finishing line.

Running exercises (Running drills)

Running exercises and correct running techniques are important in increasing the running speed. The following can be achieved by doing running exercises:

1. Increasing power through the correct movement of arms and legs.

2. Gaining the correct motion and the rhythm of a running step.

3. Maintaining the correct body postures while running.

4. Maintaining efficient nerve – muscle co-ordination.

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Running - A	● The sole of the supporting leg is in complete contact with the ground. ● Then the sole of the foot is raised well from the heel, ball and up to tip of the toes. ● The supporting foot is not completely taken off the ground. ● Arms are bent at the elbow at an angle of 90^0 and swung with a movement similar to that which is made in running. ● Footwork is continued in this manner
Running - B	● The supporting leg lies well stretched. ● The opposite leg is bent at the knee at an angle of 90^0 and is lifted so that the thigh is parallel to the ground. ● The knee is raised forward and a forward move is made with alternate steps according to a rhythm. ● Arms are bent at the elbow at an angle of 90^0 and swung with a movement similar to that which is made in running.
Running - C	● Arms are bent at the elbow at an angle of 90^0 and swung with a movement similar to that which is made in running. ● Both legs are bent at the knee alternately and a forward run is made while hitting on the buttocks. ● Running is continued making steps forward alternately

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Relay

Baton change

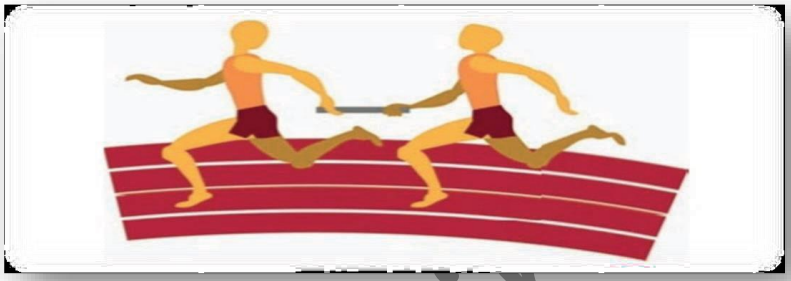
- ✓ Baton change can be classified in relation to the side of the body of the receiver.

1. Inside change

2. Outside change

3. Mixed change

- ✓ **In the inside change**, the runner receives the baton with his/her left hand (the inside hand in relation to the running track). The runner carrying the baton holds it with his/her right hand and runs close to the left edge of his/her lane.



- ✓ **In the outside change**, the runner receives the baton with his/her right hand (the outside hand in relation to the running track). The runner carrying the baton holds it in his/her left hand and runs close to the right edge of his/her lane.



- ✓ When runners use both these baton changes alternately in a relay it is called the **mixed change**.

- ✓ This is how each of the runners carry the baton and how it is changed in the mixed method.
  1. *The first runner carries the baton in the right hand and passes it to the left hand of the second runner (inside pass).*
  2. *The second runner carries the baton in the left hand and passes it to the right hand of the third runner (outside pass)*
  3. *The third runner carries the baton in the right hand and passes it to the left hand of the fourth runner (inside pass).*

- ✓ Receiving the baton with the left hand by the runners in the first and the third zones called the inside change while receiving the baton with the right hand by the runner in the second zone is called outside change. Accordingly, the alternate use of the inside change and the outside change is called the mixed change. The mixed change is more suitable in 100m x 4 relay races held in a 400m track.

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✓ **Rules and regulations related to relay races**

❖ The baton should have the following specifications'

● length : 28 – 30 cm

● circumference: 12 – 13 cm

● weight: should be less than 50g

❖ Baton change should take place only within the changing zones.
❖ Runners should carry the baton throughout the race.
❖ The baton should be changed from hand to hand only.
❖ The baton should not be passed to the receiving runner by way of throwing.
❖ If the baton falls down while it is being changed, the runner who is giving the baton should pick it up. It is illegal for the runner who is receiving the baton to pick it up.

❖ it is illegal to block the lanes after changing the baton so that the other runners are obstructed.

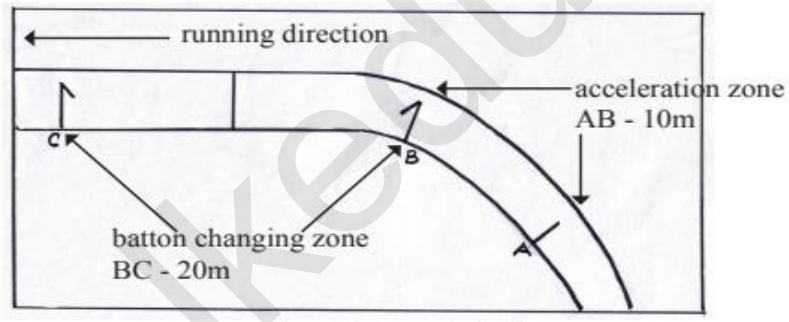


Figure 5.9 - Baton changing zone

✓ **There are four jumping events in athletics.**
1. long jump
2. triple jump
3. high jump
4. pole vault

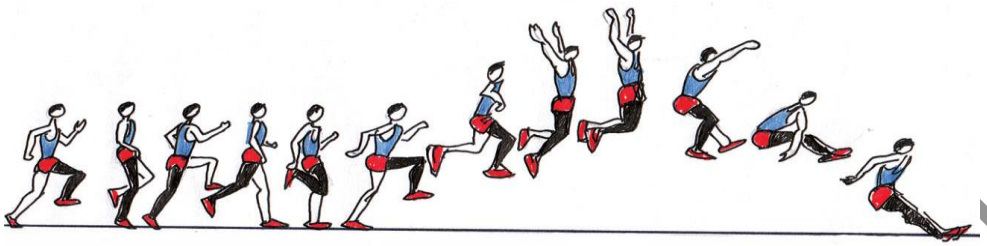
✓ **There are three major flight techniques for the long jump**
1' Hang Technique
2' Sail Technique
3' Hitch-kick Technique / walking on the air

✓ **Whatever the technique adopted by the jumper; long jump is completed in four stages:**
i' Approach run
ii' Take-off
iii' Flight
iv' Landing

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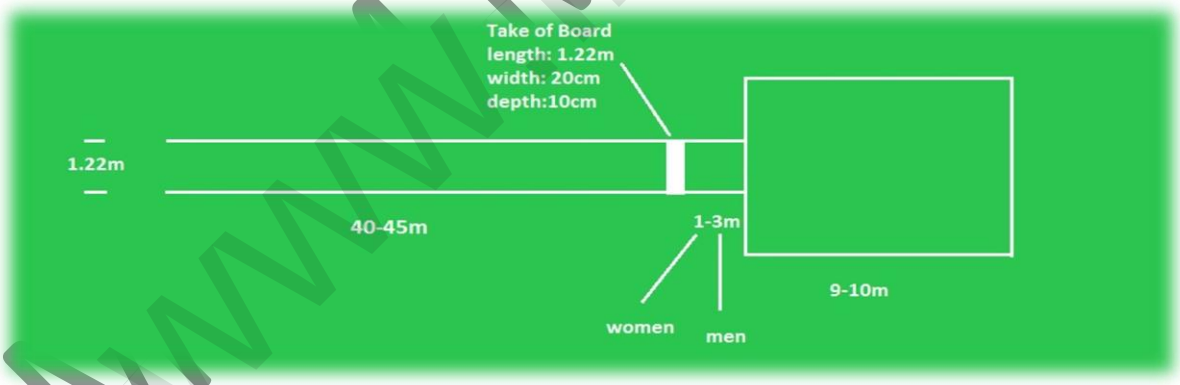
The hang technique of long jump

Approach run take-off flight landing



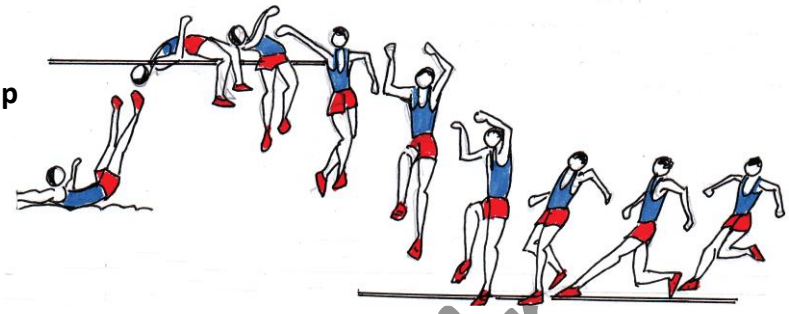
- **Rules and regulations related to long jump**

✓ In terms of the rules and regulations of long jump, the following jumps are considered to be foul:
✓ When taking off, touching the area beyond the take-off line with any part of the body.
✓ When taking off stepping on the ground on either side of the take-off board.
✓ Touching the ground between the take off line and the landing area while jumping.
✓ Using summersaults while running or jumping.
✓ When landing, touching the ground outside the landing behind the closest landing point with any part of the body.
✓ Taking more than one minute to start the attempt after the jumper's number has been announced.



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- **High jump**



✓ **Techniques of high jump**
1' Scissor jump
2' Eastern cut off
3' Western roll
4' Straddle
5' Fosbury flop

✓ **With the development of technology,** Fosbury flop style **has become the most widely used technique at present for better performance.**

✓ **High jump can be divided into four stages under any of the techniques.**
i' Approach run
ii' Take-off (flight)
iii' Bar clearance
iv' Landing

✓ **Rules and regulations related to high jump**

- In terms of the rules and regulations of high jump, the following jumps are considered to be foul.

1. Bar falling off the rests due to an action of the jumper while jumping

2. Making contact with the landing area or the area outside the two supporting poles with any part of the body before clearing the bar.

- Take-off should be done with a single foot.
- Continue to compete after three consecutive unsuccessful attempts.
- A jumper has the right to refrain from attempting to clear a particular height and going to the next height. In such situations, the jumper does not have the right to ask for another opportunity to clear the height that he did not attempt.

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Putting and throwing

- **In athletics there are four events coming under putting and throwing.**

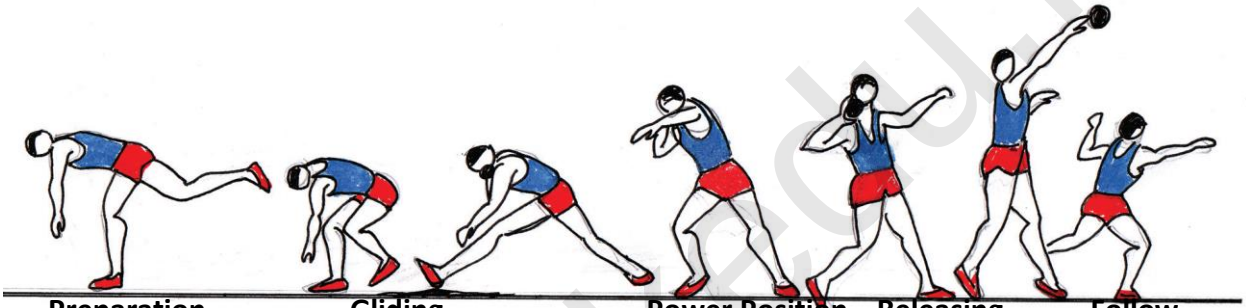
1. Shot put

2. Discus throw

3. Javelin throw

4. Hammer throw

- **There are two techniques of putting the shot put.**
  1. Parry O Brien technique **(linear technique)**
  2. Rotational technique



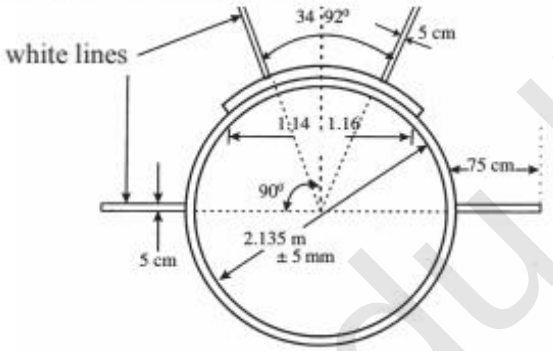
Preparation Gliding Power Position Releasing Follow through

- **The linear shot-put technique comprises of the following stages:**
  i. Preparation
  ii. Gaining speed (Gliding)
  iii. Power position
  iv. Releasing
  v. Follow through
- **Weight of the shot put used for open competitions of different age limits at school level**

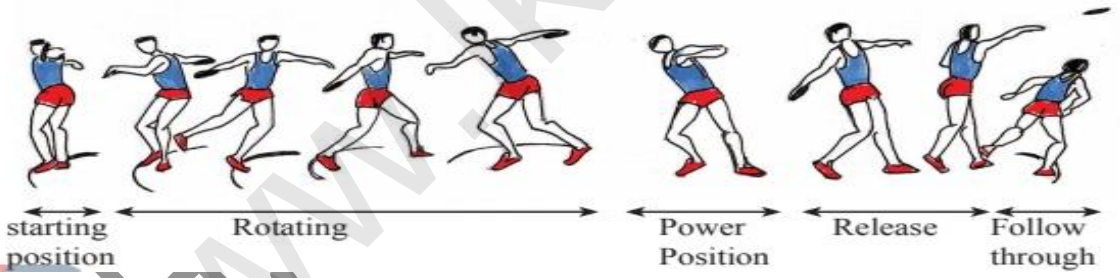
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Age limit	Boys	Girls
Under 15 years	4.000kg	4.000kg
Under 17 years	5.000kg	4.000kg
Under 19 years	6.000kg	4.000kg
Under 21 years and open	7.260kg	4.000kg

The throwing circle for shot put



Discus throw



- **Stages of discus throw**
  1. Preparation
  2. Starting position
  3. Rotating
  4. Power position
  5. Release
  6. Follow through

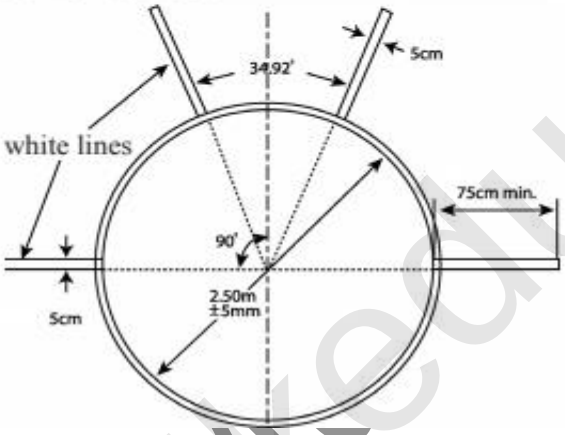
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Weight of the discus used for open competitions at different age limits at school level

Table 5.4

Age limit	Boys	Girls
Under 15 years	1.000 kg	1.000 kg
Under 17 years	1.000 kg	1.000 kg
Under 19 years	1.500 kg	1.000 kg
Under 21 years open	2.000 kg	1.000 kg

The throwing circle for discus



✓ **Some of the rules and regulations related to shot put and discus throw**

- After a competition has started, the circle and the area on which the equipment lands cannot be used for training activities.
- The place that each participant has won is decided on their best performance in all the rounds.
- An attempt should be started with a steady position within the circle.
- The participants should be within the relevant limits when an attempt is made.
- The participants should not leave the circle after throwing until the equipment has touched the ground.
- After an attempt has been made, the participant should leave the circle through the back half.
- It is a foul attempt to touch the ground outside the circle, the top of the iron rim or the stop board or the area beyond that with any part of the body.
- Participants are not allowed to wear gloves.

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06 Let us adhere to rules, regulations and ethics in sports

01. Why people engage in sports?

- ✓ form of recreation
- ✓ displaying their physical strength
- ✓ developing a healthy body and mind,
- ✓ upgrading social ethics
- ✓ creating a law-abiding society.

02. What are Rules and regulations in sports?

- ✓ Rules and regulations of sports are the guidelines created, accepted and imposed by the national and international sport governing bodies.

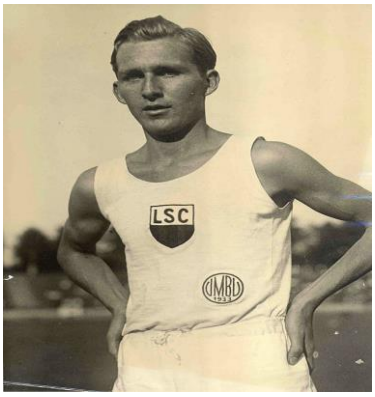
03. What is the need for rules and regulations in sports?

- ✓ to maintain ethics in sports
- ✓ to maintain enthusiasm in sports
- ✓ to maintain the dignity of sports
- ✓ to develop personal values
- ✓ to regulate games and minimize accidents
- ✓ to protect the rights of the participants



- At Berlin Olympics **in 1936**, **Jesse Owens of United States of America and Luz Long of Germany** had tied in the men's **long jump marking at 7.87** m by the end of the fourth round. Then Luz Long instructed Jesse Owens on ways of improving the running approach. Finally, Jesse Owens won the first place making a final jump of **8.06 m.** The two athletes then walked around the playground together amidst the cheers of about **80,000 strong group of spectators**.





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- **For instance, the test match played between Sri Lanka and New Zealand in Galle in 2012, the wicket keeper of the New Zealand team made an appeal for a catch against Mahela Jayewardene when Mahela was on 91 runs. Mahela left the field without waiting for the umpire to give his decision. It is because he possessed high personal values. The very incident earned Mahela the special award named ICC Spirit of Cricket at ICC Awards 2014.**



✓ **The following values of sports are guaranteed through fair play:**

• good attitudes towards sports

• ethics of sports

• prevention of misconduct, doping, violent acts and exploitation in sports

• refraining from causing physical or mental suffering to others.

✓ ***Evolution of the Olympics.***

- The first recorded Olympic Games were held in Olympia, Greece, in 776 B.C. The competitions were held in a beautiful plain close to the city of Pissa on the Alpians in Athens.
- There are many legends describing the origin of the Olympics, one of which says that Hercules, son of Zeus, the King of Gods, started the Olympics in memory of Zeus.
- Another legend says that Prince Pelopas who fought against King Onamous to marry the king's daughter defeated the king and started holding Olympic Games to celebrate his victory.
- The winners at Olympic Games were awarded a wreath of olive leaves and honoured with great respect that is accorded to heroes.
- In its early years women were not allowed to take part in the Olympic Games.
- After the Romans had invaded Greece in 146 A.D, the Olympic Games came under Roman influence. Consequently, games in which men used animals, were added. Emperor Theodosius, who was dissatisfied with the violent nature of those games, banned Olympic Games in 394 A.D.
- In **1896 A.D, a Frenchman Pierre de Coubertin started the modern Olympic Games. (Greece, Athens)**
- The objective of holding the Olympic Games was to promote world peace and strengthen relationships between nations through the games.

- Several organizations were created to work for the development of sports and to maintain its dignity; International Olympic Committee is the foremost among them.

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- **2016 Brazil Rio de Janeiro**
- **2021 Japan Tokyo**



✓ **Consequences of doping in sports**

• Performance-enhancing drugs can cause severe damage to physical health in the long run and even cause death.

• Athletes / players who are found to have taken performance enhancing drugs can be banned from participating in sports.

• The victories of such athletes / players can be annulled and they can be stripped of their medals.

• Doping in sports brings disgrace on the individual players as well as the country they represent**.**

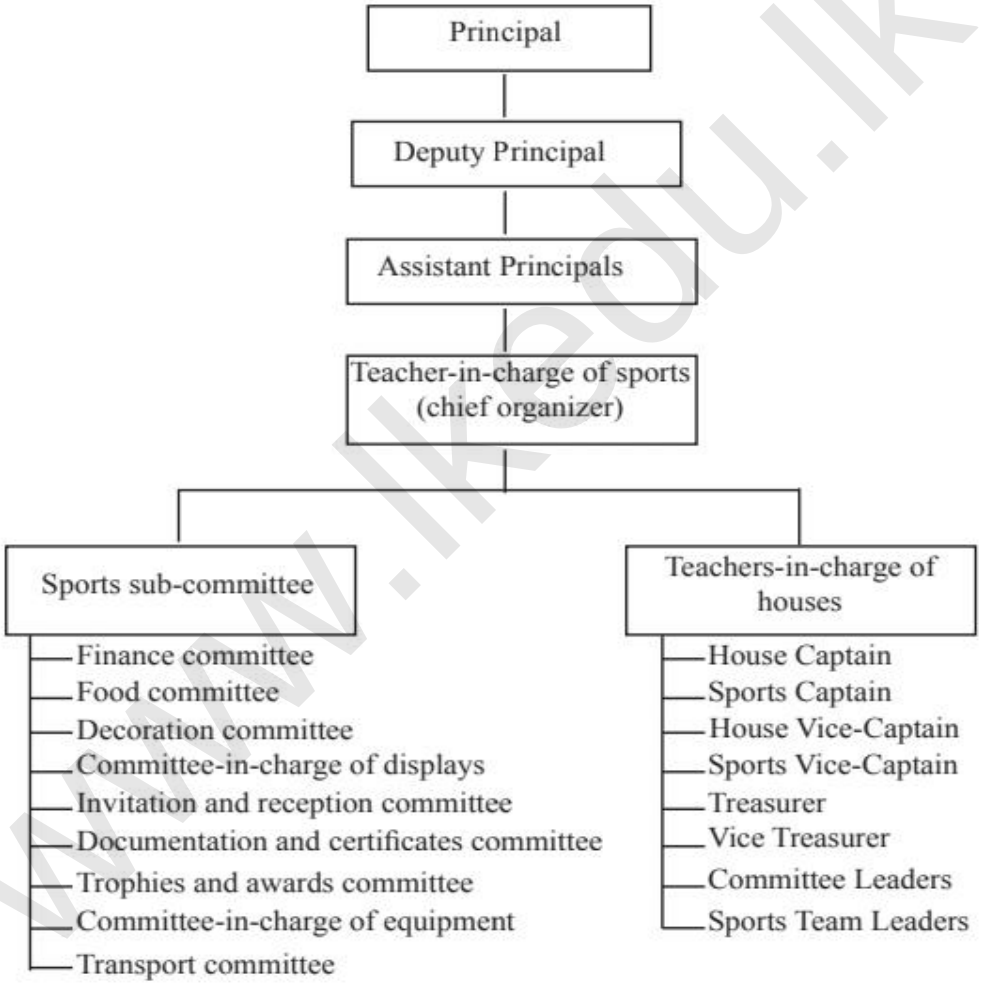
✓ **Sports events and health and physical education programs held at school level.**

- Inter-house sports meet
- Physical fitness programmes
- Programmes on sports and physical education
- Sports / physical education day
- Appraisal of athletes / players (award of colours)
- Health week
- Mosquito control "shramadhane''
- oral health workshops
- Workshops to create awareness about
- non- communicable diseases
- World tuberculosis day

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- ✓ **The following objectives are expected to be achieved through inter-house sports competitions…….**
    - Provide opportunity for every pupil to take part in sports events
    - Develop leadership qualities among pupils
    - Personality development in the pupils
    - Appraisal of the sports talents of the pupils
    - Develop skills related to team work
    - Promote collective action and team spirit

- ✓ **Structure of an organizing committee in an inter-house sports meet.**



(Note – The above is only a model)

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04. Write some other sports programmes that are conducted at school level.

- ✓ **D**ifferent sports competitions • Drill displays
- ✓ athletics training camps • Scout and girl guide camps
- ✓ Training camps for team events • Cadet coaching camps
- ✓ Camps related to outdoor education
- ✓ Fitness tests for players / athletes

05. Write some objective of conducting a one-day workshop to develop sports/ physical education skills of the pupils.

- ✓ Implementing a programme to check the physical fitness of every pupil.
- ✓ Measuring the body mass index (BMI) of every pupil
- ✓ Implementing a programme to improve their nutritional status.
- ✓ Organizing a sports tournament.
- ✓ Directing pupils to create and play simple games or improvised forms of games that they already play.
- ✓ Implementing awareness programmes on the importance of engaging in sports and physical exercises.

06. Write some objectives of conducting a health week of a school?

- ✓ Raising awareness among pupils on abuse and delinquency.
- ✓ Holding debating competitions on good health.
- ✓ Conducting workshops on first aid.
- ✓ Conducting clinics on oral health.
- ✓ Conducting workshops on improving mental health and implementing religious programmes**.**
- ✓ Implementing counselling programmes

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07 Let us have nutritious food for healthy livings

01. Write some importance of nutritious food?

- ✓ needed for growth,
- ✓ repair of worn-out tissues,
- ✓ protection from illnesses
- ✓ to provide energy needed for different functions of the body

02. Write the symptoms of a person with poor nutrition?

- ✓ Reduced energy
- ✓ Mental unfitness
- ✓ Poor immunity
- ✓ Long term illnesses
- ✓ Poor health

- **The working capacity of a person with a poor nutritional condition will be lower than a person with a good nutritional condition due to the above reasons. This has a negative effect on the personal life and in general the economy of the country. When children are affected by nutritional problems, it affects their education, capacity to think, growth and personality. It adversely affects the individual, the family and the nation as a whole.**

03. Write the types of nutrition and give examples.

- **Macronutrients**
  Nutrients in the diet that are required in large amounts are called macronutrients. Carbohydrate, protein and fat are considered as macronutrients.
- **Micronutrients**
  Nutrients in the diet that are required in small quantities are called micronutrients. Vitamins and minerals are micronutrients. They are needed to protect the body

04. What is Malnutrition?

- Malnutrition occurs due to lack of proper nutrition as well as excessive consumption of nutrients.

05. Write the types of malnutrition with explanation.

- Undernutrition
- Overnutrition

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- **1. Undernutrition**
- The common nutritional problem that developing countries face is undernutrition. Undernutrition results when the required amount of macronutrients are not taken in the diet. Any person of any age can develop **undernutrition**. However, all over the world the main victims are children. The adverse effects of undernutrition, could have long term effects at different stages of life.

- **Different effects of undernutrition are given below:**
- 1. **Stunting (inadequate height for the age)** - height being below -2 SD line in height for age chart.
- 2. **Wasting (inappropriate weight for the height**) - BMI below -2 SD line in BMI for age chart.
- The problem of undernutrition arises as a result of lack of required nutrients to the body. This could occur due to the lack of the essential nutrients during a short or over a long period of time e.g.: Diseases such as diarrhoea or worm infestations can lead to temporary weight loss leading to wasting.

- **Harmful effects of undernutrition:**
  1. Inactivity and being less productive
  2. Retarded physical growth
  3. prone to diseases
  4. Being poor concentration and memory power
  5. Learning difficulties
  6. Low life expectancy

  2. Overnutrition
- Over nutrition has become a major nutritional problem all over the world. Overnutrition results when excess amounts of macronutrients are consumed. Especially excess intake of sugar and fat in our diet is the main reason for overnutrition. The following are two examples of overnutrition.

  1. **Overweight** - weight not proportionate to height. This has the risk of developing obesity (BMI between +1SD to +2SD line in BMI for age chart)

  2. **Obesity** - inappropriately high levels of weight to the height. This is a disease state. (BMI above +2SD line in BMI for age chart)
  The BMI is also used to assess an adult's nutritional status. In the first chapter we learnt how to assess the nutrional status of adults using the BMI.

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- **Obesity can lead to the following problems:**
  1. Prone to non-communicable diseases such as heart disease, diabetes and stroke
  2. Diseases related to joints and bones
  3. Reduced efficiency at work
  4. Social problems
  5. Psychological issues

- **Micronutrient Deficiency**
- Lack of micronutrients in our daily food intake, over a long period results in micro nutritional deficiency. The most common micro nutritional deficiencies are given below.

1. Iron deficiency

2. Iodine deficiency

3. Vitamin A deficiency

4. Calcium deficiency

5. Zinc deficiency

- **<u>Reasons for micro-nutrient deficiencies, symptoms and preventive actions</u>**

01. causes of iron deficiency

• Less intake of iron rich food

• Iron is not absorbed easily

• Incorrect food habits

• Bleeding into the intestines due to worm infestations

• Excessive bleeding during menstruation

- **Harmful effects of iron deficiency**
  • Anaemia
  • Lethargy
  • Low birth weight babies
  • Fatigue
  • Poor concentration
  • Growth retardation

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- **Preventive actions that can be taken to reduce iron deficiency**

• Include food rich in iron in the daily diet. Especially animal proteins (meat, eggs, red rice, beans, cashew nuts, peanuts)

• Pregnant mothers should take a well-balanced iron rich diet

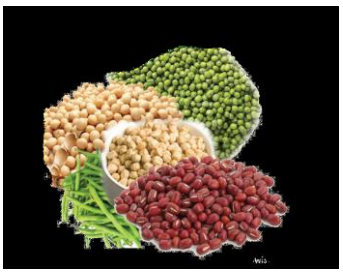
• Items such as tea and coffee should not be taken 1-2 hours after the main meal

• Eat food that improves the absorption of iron (Lime with green leaves, fruits after a meal)

• Selecting iron fortified food.







- **Food rich in Iron**
- Green leaves- Eg: gotukola, kankung Vegetables- Eg: bitter gourd
- Meat, fish, liver, egg yolk, dry fish
- Cereals and grains- Green gram, soya bean, cow pea

02. causes of Vitamin A deficiency

• Babies not being given breast milk for an adequate period

• Improper food storage

• Improper preparation of food

• Frequent worm infections

• Low intake of food rich in vitamin A

- **Effects of vitamin A deficiency**

• Night blindness

• Bitot's spots in the eye

• Dryness in the eye

• Weakness in sight

• Diseases of the respiratory tract often contracted

• Diarrhoea easily developed

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- **Preventive actions that can be taken to reduce Vitamin A deficiency**

• Increase the daily intake of green- and yellow-coloured vegetables and fruits

• Taking the vitamin, A drops orally, which is given through state institutions

• Continue breast feeding up to 2 years of age

• Take steps to provide colostrums in milk during first few days of life of a new-born as it is rich in vitamin A

✓ **Food rich in vitamin A**

- Dark green leafy vegetables and dark yellow- or orange-coloured fruits and vegetables
- Animal liver, animal oil, milk, fish, cheese, butter
- Cereals and grains- Green gram, soya beans





03. Causes of iodine deficiency

• Lack of iodine in the diet

• Sea vegetables not being popular

• Loss of iodine in soil due to erosion in the hill country, vegetables grown there will be deficient in iodine

• Iodized salt kept in warm places and iodine being evaporated (stored near fire place)

✓ **Effects on iodine deficiency**

- A decrease in thyroxin production
- Prone to develop goiter
- Slowing of mental development
- Poor concentration
- Poor school performance
- Retarded growth, especially height

✓ **Preventive actions that can be taken to reduce iodine deficiency**

• Use of iodized salt when cooking

• Add fish and sea vegetables to the diet

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- ✓ **Food rich in iodine**
  - Green leafy vegetables and sea vegetables
  - Sea fish, saalaya, sprats, prawns, crabs
  - Iodized salt

04. Causes of calcium deficiency

• Lack of intake of food rich in calcium

• Consuming food that obstructs the absorption of calcium

- ✓ **Harmful effects of calcium deficiency**

• Causes Osteoporosis

• Tooth decay

• Growth retardation

- ✓ **Preventive actions that can be taken to reduce calcium deficiency**

• Increase the intake of food rich in calcium

• Increase the intake of food rich in vitamin D

• Consume food that helps to absorb calcium (lactose containing food)

- ✓ **Food rich in calcium**
  - Green leaves, Small fish, sprats, milk and milk products

05. Zinc deficiency

- ✓ Zinc is an important mineral as it strengthens the immune system, helps carbohydrate breakdown and stimulate growth, division and reproduction of cells. Zinc deficiency can lead to frequent infections, delayed or stunted growth etc.
- ✓ Zinc is found in protein rich foods such as beans, red meat, peanuts and marine foods.
- ✓ **Steps to be taken to prevent nutritional problems.**
  - Having a well-balanced healthy diet.
  - Having meals at regular times and not skipping breakfast
  - Engage in daily physical exercise and spend the day actively.
  - Daily intake of water of a healthy person should be 1 ½ to 2 liters. Whenever you feel thirsty drink clean water.
  - Large portions of seasonal food to be consumed during the season (Mango, Rambutan).
  - Consume food to fulfil the daily requirement of calories

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✓ **The vicious cycle of nutritional deficiency**

- When the mother has undernutrition, naturally the baby born will be underweight. When that child enters teenage years, he/she will have poor growth which results in stunting and wasting. As a result of this when a girl enters motherhood, she will develop nutritional deficiencies and her baby too will suffer from nutritional deficiencies. This cycle is **called the vicious cycle of nutritional deficiency.**

✓ **The reasons for poor weight gain during pregnancy**

1. Maternal undernutrition
2. Inadequate nutrient intake during pregnancy
3. Illnesses developed during pregnancy (diabetes, anaemia, high blood pressure)
4. Not receiving proper nutrition during childhood and adolescence.

- **The reasons mentioned above will result in a baby with a low birth weight. If a baby's weight is below 2.5kg, it is considered as a low birth weight.**

➢ **Factors affecting nutritional deficiency**

01. Food hygiene
02. Age
03. Health condition
04. Environment
05. Misconceptions about food and nutritional problems

➢ The facility to find the adequate amounts of food of proper quality as required is called **'' food security''**. There are **03 factors that contribute to food security**.

01. **Food availability**- Availability of sufficient number of various kinds of foods without
any shortage so that all the nutritional requirements are fulfilled.
02. **Accessibility to food**- Every person having the facility to find food required for him.
03. **Utilization of food**- Facility to consume quality food rich in taste and nutrition.

➢ **''Food hygiene''** refers to the cleanliness in the preparation and consumption of food in such manner as to prevent disease and that doesn't develop any harmful effects to the health of an individual.

➢ **There are three factors that affect the safety of the food:**

I. **Biological factors** - food contaminated with microorganisms
ii. **Chemical factors** - food contaminated with other chemicals
iii. **Physical factors** - common types of foreign matters - e.g.: sand, stones etc.

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- **Food spoilage is the loss of the quality of food due to different factors, such as:**

  I. Flies, cockroaches, rats and birds feeding on the food
  ii. During preparation having unclean hands, unclean utensils and improper cooking methods.
  iii. Improper food usage
  iv. Adopting improper storing methods

- **By using proper methods, food spoilage can be prevented. The following points will help to minimize food spoilage:**

  I. Washing hands before touching food
  ii. Preparing food hygienically
  iii. Using clean spoons and utensils to serve food
  iv. Person preparing food to maintain a high level of personal hygiene

  • Avoid taking food contaminated by fungi - some fungi produce a poisonous chemical called **Aflatoxin**
  • Avoid taking potatoes with green coloured skin - when potatoes are exposed to the sun light a poison named solanine develops on it which is harmful to health.
  • Avoid using metal containers to store pickles –Acetic acid in vinegar reacts with the metal (aluminium or iron).
  • Avoid reusing oil for deep frying - as it results in producing unfavourable chemicals.
  • Do not use expired food, food with no labels or torn labels, food in cans with altered shapes (indented or puffed-up tins.)
  • Do not consume food with an altered taste or smell.

- **As we grow older, we do less physical activities, so our diet should contain lesser amount of energy providing food. As we grow old, the micronutrients such as vitamin B12, vitamin C, riboflavin, folic acid, calcium and iron in our body become less.**

- **Some misbeliefs related to nutrition are given below:**
  I. 'Cool' and 'heaty' food is bad for the health.
  ii. Expensive food items carry more nutritional values.
  iii. Soft drinks quench the thirst faster than water.
  iv. Milk is considered as a complete food.
  v. Believing that digestion is affected during illness therefore reducing the intake of food**.**

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➢ **Students' contribution to minimize nutritional problems.**

1. Development of knowledge related to nutrition

- possess a knowledge about the nutritional value of food and to select a well-balanced diet. Students should pay attention to the amount of food that need to be consumed (not less or more) and thereby maintaining an appropriate BMI.

- It is very important to take a balanced, healthy diet and to take three main meals a day. Paying attention to the food pyramid when selecting the amount of food from each group as necessary per day is important (this was studied in the previous classes)



2. Preparing the home garden relative to consumption of food

➢ **However, there are many advantages of growing vegetables and fruits in your own garden. Some benefits are……**

1. Fruits and vegetables would be free of poisonous chemicals and be rich in nutrients.
2. Can prepare a well-balanced diet easily.
3. Get used to the habit of recycling organic waste material.
4. Adds beauty to your surroundings.
5. Spend leisure time productively.
6. Gardening provides the opportunity for physical activity and happiness.
7. Economic benefits (saves money).

➢ **Although inadequate space is an obstruction to home cultivation, the Agriculture Department of Sri Lanka has introduced many alternative methods for home gardening. Considering the individuals, nutritional needs, availability of space and time, different methods have been introduced.**



1. Growing crops
• Leafy vegetables in pots and drains
• Crops like chillies and tomatoes in pots
• Timber wood trees for the boundary

2. Organic manure
• Compost bins in urban areas and compost pits in other areas

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3. Implementing a bio gas unit
4. Collecting rain water and using for gardening.
5. Animal farming





3. Getting used to indigenous food

- Home gardening helps to add local food to your diet and also to go organic. Harmful chemicals will not get mixed in your food. It is economical too. One way to cut down your risk of ingesting unwanted chemicals from food is to have your food from your own garden which would be fresh food.

- Garlic, pandan leaves (rampe), karapincha, tamarind, coriander, vinegar are a few natural flavours that we could add to our daily cooking rather than getting used to artificial flavours. Natural flavours add taste to the food, gives a nice appearance and improve the appetite. Spices have medicinal values and a profound effect on general health.

- **Some natural colours that can be used when preparing food.**
- Eg; Red - beet root
- Blue - blue katarolu
- Green - melon skin, “kehipiththan”
- Yellow - mango and orange
- White - cucumber



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➢ Food related culture of Sri Lanka

- From ancient times, the staple food in Sri Lanka has been rice. There are different
  kinds of rice such as 'Suwandel', 'Elsahal', 'Heeneti' etc. Apart from rice, grains and grain-based products are taking a major place in our diet. Kurakkan and meneri are a few of these. Grains carry a high nutritional value.

- Our main meals should be balanced and wholesome. For example, we can include
  hathmaluwa (curry made with seven vegetables), mung kiribath, mixed green leaves etc. To have a well-balanced diet many vegetables and green leaves are added.

- Steps could be taken to avoid food wastage. There are many ways to preserve food in Sri Lanka such as making dry fish, jadi, drying jack seeds etc**.**

- Sri Lanka has always been a home to a multi ethnic and multi-cultural society. There are certain foods popular among certain communities. Pittu, thosai, wade are traditional food items of the Tamil community while wattalppan and biriyani traditional foods of the Muslims,

- There are certain types of food prepared on special occasions. Milk rice is a traditional food item of Sri Lanka made to celebrate special occasions such as wedding ceremonies, birthdays etc. At different stages of life, we come across situations that are important in our life and on each such occasion the food that is prepared and served has a special significance. For example, the meal which is partaken by the kith and kin of the dead, is known as "mala batha", which is a simple meal of rice served with curries cooked with dry fish and pumpkin. This type of food traditionally comes from generation to generation, with or without the
  knowledge of nutritional value.

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- **Preparations of food according to the needs of different individuals.**
  - ✓ Children
  - ✓ Adolescent
  - ✓ Pregnant mothers
  - ✓ Lactating mother
  - ✓ Patients
  - ✓ Vegans
  - ✓ Sportsman

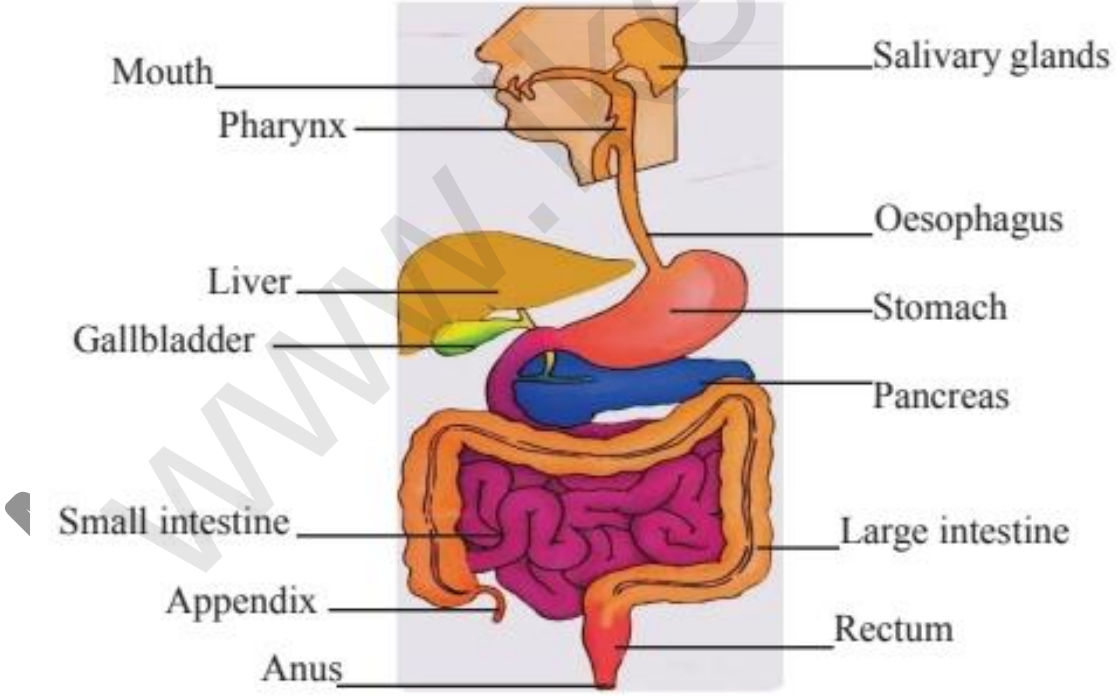
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08 Let us maintain a healthy body

01. Write some different systems in our body to perfume different tasks?

- ✓ digestive,
- ✓ respiratory,
- ✓ circulatory
- ✓ excretory systems
  - ➢ **The nervous system, especially the brain, controls the functions of the other systems. It also transmits messages about the environment around us through sensory organs. The nervous system helps in our movements by coordinating the functions of the muscular skeletal systems. Skeletal system also protects the important organs including brain, lungs and the heart. The endocrine glands produce hormones that control growth, functions of the reproductive system and metabolism of the body. The reproductive system helps to reproduce a new life.**

- **<u>Digestive system</u>**

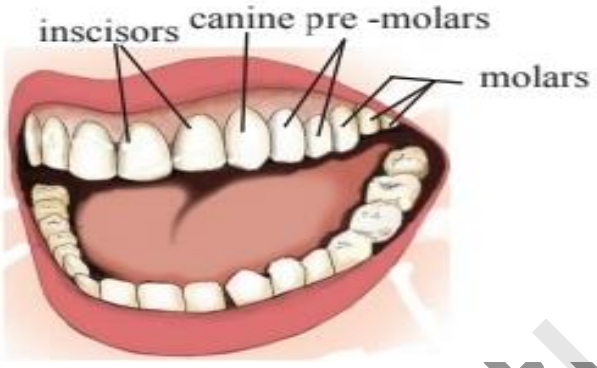


- **Digestion of Food**
  Digestion of food is the process in which food is broken into smaller particles both physically and chemically and absorbed. The digestive system consists of the mouth, oesophagus, pharynx, stomach, small intestines, large intestines,

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rectum and anus. Apart from these, the salivary glands, liver, gallbladder and pancreas which are called supportive organs, also help in digestion.

- **Mouth**
  The digestion of food begins in the mouth. Food is broken into smaller particles and
  mixed with saliva. Teeth and the salivary glands help in this process.



- **Teeth**

Babies get their milk teeth between 6 to 9 months of age and will continue up to 3 years. There are 20 milk teeth with 10 on each jaw. The milk teeth fall between 6 -12 years and are replaced by 28 permanent teeth. The eruption of the last four molar teeth can be delayed until 25 years of age. There are 32 permanent teeth. A tooth consists of two parts. The crown of tooth is the part that is seen outside the gum and is covered by enamel. This consists of calcium and it is very strong. The root is the part embedded in the gum. It contains nerves and blood vessels.

- **Salivary glands**

A human being has three pairs of salivary glands. Saliva is important as it helps to swallow the food. The ptyalin enzyme in saliva, helps to digest the carbohydrate of the food in the mouth.

- **Pharynx**

The nasal cavity and the oral cavity open into the pharynx. The larynx and oesophagus are connected to the pharynx.

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- **Stomach**

The Stomach is a J shaped organ. The upper end is connected to the oesophagus while the other end is connected to the small intestine. The glands in the inner walls of the stomach secrete mucous, pepsinogen enzymes and hydrochloric acid. The food we eat travels down from the oesophagus into the stomach and is temporally stored there. During this time the food gets mixed with gastric juices and the digestion of protein starts in the stomach. The absorption of water, certain medicines and alcohol take place in the stomach. After two to six hours the food enters the small intestine.

- **Small Intestine**

The small intestine consists of three sections. They are the duodenum, jejunum and the ileum. The first part of the small intestine is the C shaped duodenum. The presence of villi in the inner walls of the small intestines increase the surface area and it helps to increase efficiency of absorption. The inner walls of small intestines have glands that secrete mucous. Digestion of carbohydrates, proteins and fat is by the enzymes that are secreted in the small intestine. Due to peristaltic movements the food gets mixed with these juices and is pushed down. The digestion of protein and fat is completed with the help of pancreatic and intestinal fluid and it is absorbed inside the small intestine. The bile produced by the liver helps to absorb the fat. Apart from this, water and minerals are also absorbed in the small intestine.

- **Large Intestine**

Large intestine is about 1.5 meters in length. Although secretion of mucous takes place in the glands of the large intestine, no digestive enzymes are secreted in this section. Villi are not present in the walls of the large intestine. Any unabsorbed food from the small intestines enters the large intestines with water and minerals.

No significant digestion takes place in the large intestine but absorption of water and minerals take place. The unabsorbed material form faeces and is transmitted through the rectum out of the body. The appendix is located near the junction of the small intestine and the large intestine, as a small pouch.

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- **Diseases related to the digestive system**

1. Gastritis

Gastritis is an inflammation of the lining of the stomach. Gastritis can be caused by excessive consumption of alcohol, stress, use of certain medications specially pain killers, smoking, bacterial infections and erratic feeding habits.

2. Cancer in the digestive system

Cancer is common in the digestive system. oesophagus, liver, stomach, pancreas, large intestine and rectum are common sites where cancer could occur.

You can reduce the risk of developing oral cancer by avoiding smoking, alcohol and chewing betel. Using insecticides and harmful flavours increases the risk of cancer. Arecanuts and tobacco are considered as major risk factors for developing oral cancer. If patches, small growths or ulcers appear in the mouth, seek immediate medical advice.

Lack of intake of food rich in fibre (fruits and vegetables) and improper motions lead to cancers in the large intestines. Smoking and consuming alcohol mainly increase the risk of cancers in the digestive system. When one has difficulty in swallowing food, loss of appetite or passing blood with stools, it is advisable to consult a doctor immediately.

3. Cirrhosis

Cirrhosis is a chronic disease of the liver occurring due to germs and chemicals. It is commonly associated with the consumption of alcohol.

4. Appendicitis - inflammation of the appendix

5. Communicable diseases - diarrhoea, typhoid, jaundice.

6. Piles (Haemorrhoids)

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- **Steps to avoid digestive system related diseases**

1. Brushing the teeth twice daily (after meals).

2. Avoiding smoking, alcohol and chewing betel.

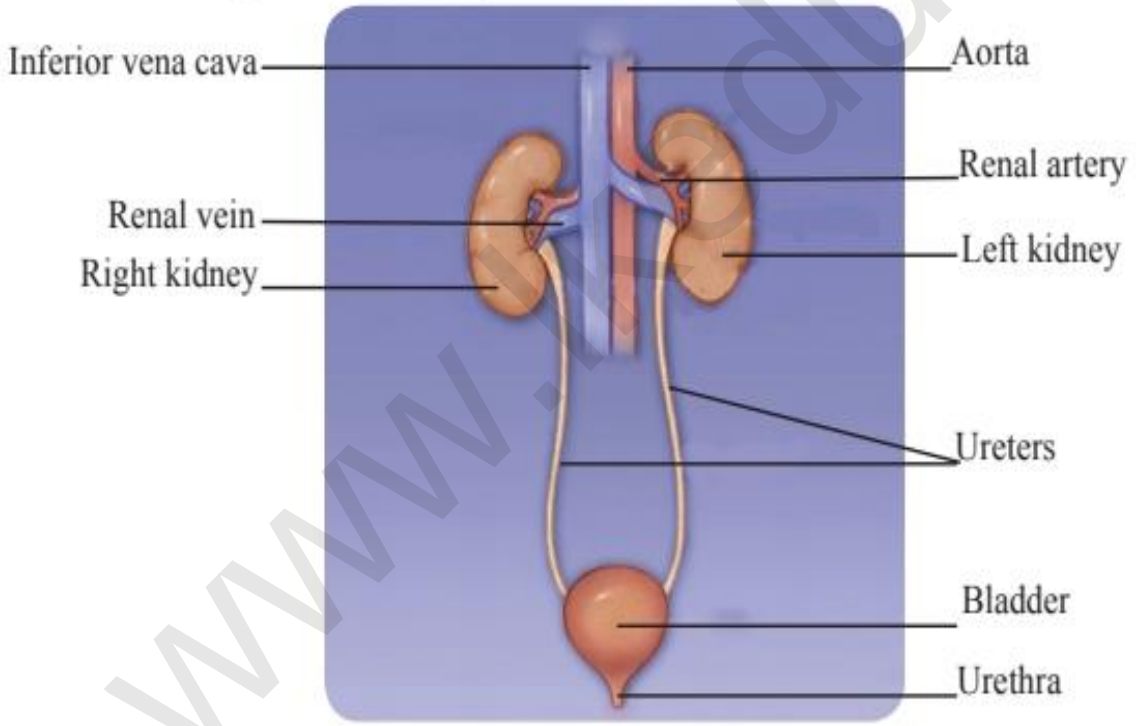
3. Taking natural fiber containing food.

4. Avoiding consumption of food with artificial flavours, chemicals or insecticides

5. Drinking adequate amounts of clean water.

- **Excretory system**

The system that removes waste materials from the body, is the excretory system. Kidney filters waste materials and excretes it as urine. Apart from this the lungs and the skin also perform excretory functions.



- **Kidneys**

The kidney is a bean shaped organ, red - brown in colour. It is located in the abdominal cavity behind the intestines.

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- **Functions of the kidneys**

The main function of the kidney is to remove waste from the body and maintain the balance of fluid and minerals. Apart from this, there are many other functions too.

1. Removing waste products from the body and keeping the internal environment clean.

2. Releasing hormones which help to produce red blood cells.

3. Producing vitamin D.

4. Helping to control blood pressure.

- **Nephron**

The nephron is the functional unit of the kidneys. There are about one million nephrons in the cortex of each kidney. The waste in the blood filter into the nephron. This filtered waste is then passed through nephron tubule and urine is formed. Urine is then passed through the urethra into the bladder. Bladder is an inflated, flexible bag and urine is temporarily stored to pass at regular intervals. Contraction of the walls of the bladder helps to pass urine.

- **Diseases related to the excretory system**

1. Stones in the kidney and bladder

Stones can be formed in the kidney and passed into the ureters, giving rise to severe pain. This pain travels along the back to the lower front of the abdomen. About 60% of these stones pass naturally with the urine. Shock wave method called Lithotripsy is the most frequently used procedure to crush bigger kidney stones thus enabling them to pass in urine. Sometimes surgery is done to remove large stones.

2. Renal Failure

Malfunctioning of the kidneys to perform its functions is known as renal failure. Fatiguability, vomiting, loss of weight, high blood pressure, loss of appetite and swelling of body are some of the complications of renal failure. Diabetes, high blood pressure dehydration, smoking etc. are some reasons for renal failure. Renal failure has become a major health issue in the recent past in some parts of Sri Lanka. The chemicals in the environment can be considered as one reason and there may be multiple reasons. Either kidney transplant or dialysis has to be done on patients with renal failures.

There can be acute renal failure due to some other diseases in the body such as snake bites, hyper dynamic circulation or leptospirosis. In most instances acute renal failure is curable.

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3. Cancer in the kidney & bladder (renal carcinoma & bladder carcinoma).

4. Urinary tract infection.

- **Steps to avoid diseases related to the excretory system**

1. Drink an adequate amount of clean water.

2. Avoid taking medication without the doctor's advice (specially pain killers).

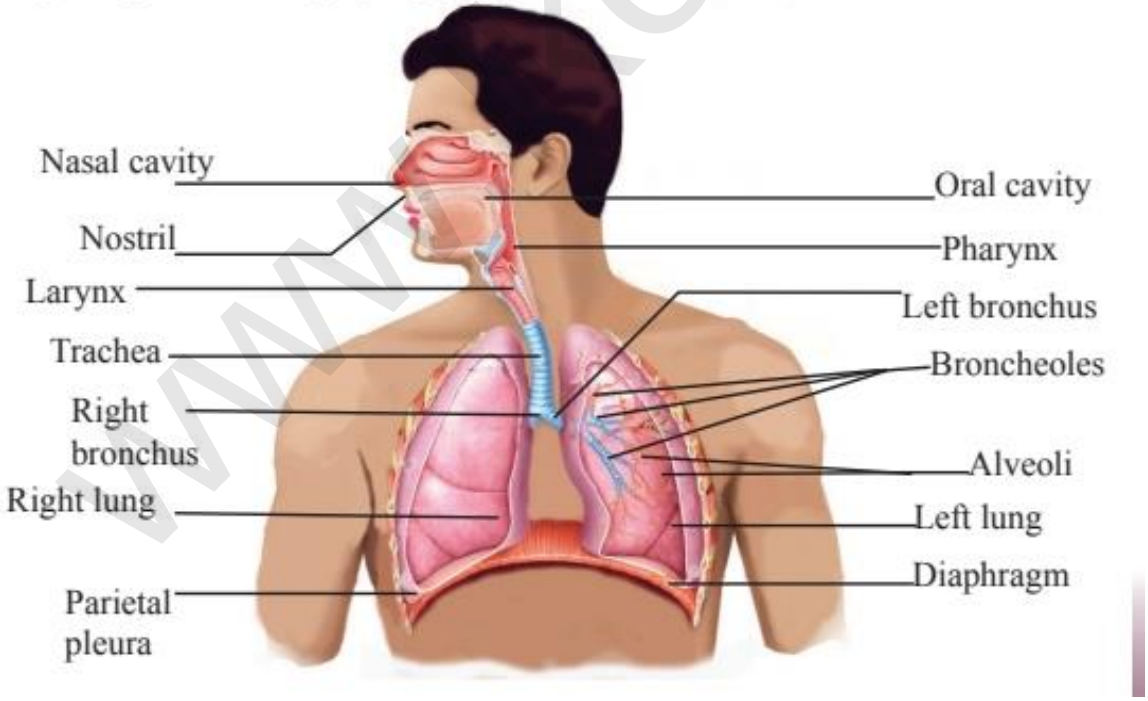
3. Delay introducing salt to a baby's food (at least till one year) and also control the amount of salt added to food even afterwards.

4. Control diabetes and blood pressure.

5. Whenever the need arises to pass urine, do it without controlling it.

- **Respiratory system**

Oxygen is important for the production of energy inside cells. During this process carbon dioxide is produced. The respiratory system is involved in the process of transporting and exchanging oxygen and carbon dioxide.



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- **Nose**

The nasal cavity is covered with a mucous membrane. There are mucous secreting glands and some hair cells called cilia. The cilia around the nostrils and the mucous membrane help to trap foreign particles in the air that enter the nose. Inside the nose the temperature of the air is increased and moisture is added. What are the reasons for sneezing and getting a burning sensation, when you inhale chilli powder?

- **Pharynx**

The air enters the trachea / wind pipe through the pharynx and larynx. The pharynx is a tube-like structure that connects the nasal and oral cavities. The trachea and the oesophagus begin here. Larynx (voice box) is at the opening of the trachea. This part of the body also aids in the production of sound through the vocal cords. When we swallow food, the epiglottis closes the upper end of the larynx and prevents food from entering the trachea. The cough reflex is a natural defense mechanism to emit food that enters the trachea.

- **Trachea**

The trachea begins just under the larynx and runs down inside the chest in front of the oesophagus. The trachea then divides into two smaller tubes called bronchi. They are right bronchus and left bronchus. This gets further divided into smaller and smaller branches called bronchioles and eventually ends in air sacs called alveoli.

- **Lungs**

The chest contains two lungs, as the left and the right. They are protected by the rib cage. The bronchioles and alveoli are inside the lungs. Apart from this the lung consists of the blood vessels which transport blood to and from the lungs, the lymph glands and nerves.

- **The process of inhalation and exhalation**

When you inhale the diaphragm and intercostal muscles (these are muscles between your ribs) contract and expand the chest cavity. This expansion lowers the pressure within the chest cavity than the atmospheric pressure. Air then flows through the air ways to the lungs. When you exhale, the diaphragm and intercostal muscles relax and the chest cavity gets smaller. The decrease in volume of the cavity increases the pressure in the chest cavity than the atmospheric pressure and air flows out of the lungs.

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- **Exchange of air in the lungs**

Exchange of oxygen and carbon dioxide takes place inside the alveoli. The walls of the alveoli are extremely thin. The alveoli are covered with capillaries. The oxygen concentration is higher within each alveoli than the capillaries, so oxygen enters the capillaries from the alveoli. The concentration of carbon dioxide is high in the capillary, so carbon dioxide enters the alveoli from the capillaries.

- **Diseases related to the respiratory system**

1. Common cold & inflammation of larynx

This is caused by bacteria and virus. The common cold is spread by infected air droplets or by direct contact with infected droplets while sneezing, coughing or breathing. The common cold usually, settles with a person's own immunity and it doesn't need treatment.

2. Bronchitis and Pneumonia

They are diseases in the lower part of the respiratory system. These inflammations are caused by bacterial and viral infections. It is important to take medical treatment for these conditions.

3. Tuberculosis

This is caused by a bacteria. Tuberculosis typically affects the lungs but it can affect other organs and systems of the body. By getting the BCG vaccination at birth, the dangerous forms of tuberculosis can be prevented. Taking a course of drugs continuously, will help cure this disease completely. Therefore, it is important to take prescribed drugs continuously as instructed by your physician.

4. Bronchial Asthma

Asthma is a lung disease that causes inflammation and the narrowing of the airways It obstructs the process of inhalation and exhalation. Cough and difficulty in breathing are some common symptoms. Generally, asthma is caused during childhood and disappears as one grows older. Episodes can get precipitated by the common cold, dust and environmental pollutants. Asthma can be controlled by getting proper treatment.

5. Catarrh (Allergic Rhinitis)

This is a disease in the respiratory tract due to an allergy mainly affecting the upper inner side of the nose. Some reasons for this are cool drinks, dust inside the house, cobwebs, mosquito coils (some), cigarette smoke and cold air.

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6. Cancer in the lungs

This is a very serious form of cancer. Smoking is the main reason for lung cancer. Smoke released when plastic and polythene are burnt, from vehicles, house hold smoke from fire wood and passive smoking also increase the risk of lung cancer.

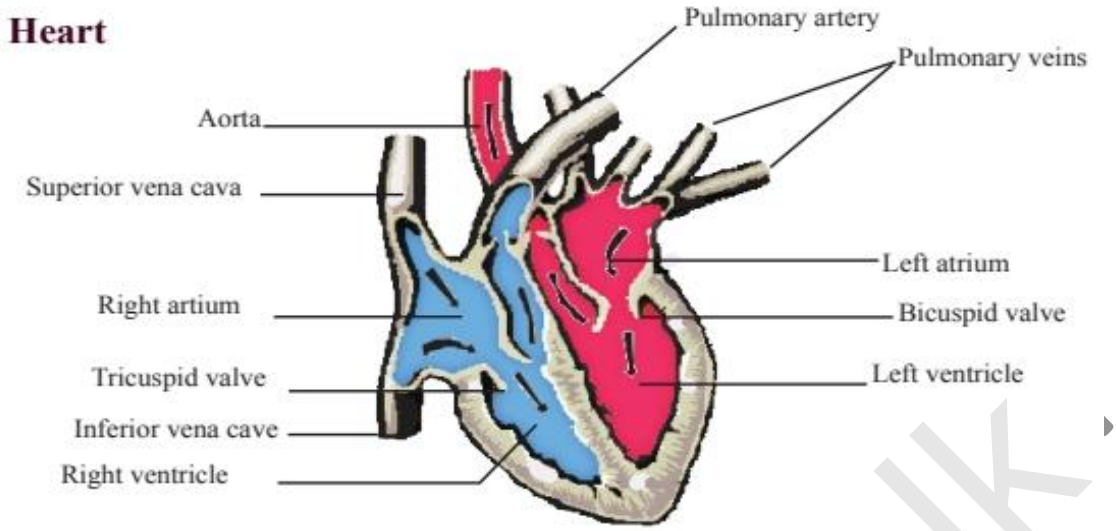
- ## Steps to avoid diseases related to the respiratory system

1. People with such infections should avoid crowded places, when sneezing and coughing should cover the nose and the mouth to prevent infecting others.
2. Avoid smoking.
3. Avoid taking foods that are allergic (food causing allergy to an individual may not cause an allergy to another).
4. Inhale clean air and avoid environmental pollution.
5. Use a mask when you are in a polluted environment or when suffering from any diseases. e.g.: A policeman on duty on a dusty road.
6. Take medical advice when you are suffering from cough for a long period or if you feel you are losing weight.

- ## Circulatory system.

Circulatory system consists of the heart and the blood vessels. Systemic circulation means the part of the circulatory system in which the blood leaves the heart from left ventricle to different organs of the body cells and re-enters the right atrium. Pulmonary circulation is the portion of the cardiovascular system which carries blood from the right ventricle of the heart, to the lungs and returns to the left atrium.

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The heart is a muscular organ. It is made up of four chambers. They are right atrium, right ventricle, left atrium and left ventricle. The atria are in the upper part of the heart while the ventricles are in the lower part of the heart. The tricuspid valve is between the right atrium and the right ventricle. The bicuspid valve or mitral valve is between the left atrium and the left ventricle. When the ventricles contract these valves prevent the blood entering the respective atria. There are Semilunar valves located at the beginning of the aorta and left ventricle as well as the pulmonary artery and right vertricle. These Semilunar valves prevent the blood entering the heart when ventricles relax.

The two large veins that carry blood from the body to the heart are superior vena cava and the inferior vena cava. Both these veins open into the right atrium. The blood travels to the right ventricle and through the pulmonary arteries to the lungs. The pulmonary veins which carry blood rich in oxygen from the lungs enters the left atrium. Aorta starts from the left ventricle. Aorta carries oxygen rich blood to the rest of the body.

- **<u>The function of the heart & blood circulation</u>**

When the left and the right atria contract the blood enters the left and right ventricles respectively. Contraction of the left and right ventricles send the blood through the semilunar valves to the aorta and the pulmonary artery respectively. At the time of ventricular contraction, the atria relax and expand leading to the filling of blood.

The superior vena cava and inferior vena cava, carry blood that has a low concentration of oxygen and a higher concentration of carbon dioxide to the right atria. When the right atrium contracts, this blood enters the right ventricle and when right ventricle contracts, the blood travels through the pulmonary artery to the lungs. The blood receives oxygen and passes out carbon dioxide through the lungs and travels through the pulmonary veins to the

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left atria. When the left atrium contracts, this blood enters the left ventricle and then the left ventricle contracts, the blood enters the aorta through the semilunar valve.

Aorta carries this blood to the rest of the body. The aorta is divided into many branches and supplies blood to all the organs in the body. These branches further divide until it forms the smallest blood vessel called capillaries. Exchange of oxygen, carbon dioxide, minerals, nutrients and waste take place through the walls of the capillaries. The capillaries connect together and form veins which unite with more and more veins ultimately forming the superior and inferior vena cava. Both of these main veins carry blood from the organs to the right atrium of the heart.

Tissue fluid occupies the space between capillaries and the cells of organs. Tissue fluid consists of substances which are diffused from the blood in the capillaries to extra cellular space. The substance that does not enter the veins, but remain in the tissue fluid will be collected by the lymphatic system and delivered to the blood later at a different point. The digested fat is also absorbed in to the body through the lymphatics and this milky substance is called chyle.

The primary function of the lymphatic system is to protect the body from the microorganisms. This is done by the white blood cells found inside the lymph nodules. When there is an infection or a wound, the lymph nodules in that region get swollen and become active.

e.g.: Lymph nodes in the neck enlarge when there is an infection in the throat, swelling of lymph glands in the arm pit when there is a wound in the hand.

- **Diseases related with the circulatory system**

1. Angina (Reduced blood supply to the heart)

The heart is an organ which will have a lifelong function. The necessary oxygen and the energy for the heart muscles is supplied by the coronary arteries. In the inner walls of the coronary arteries, plaque of fat gets deposited causing narrowing and stiffening of the coronary arteries. This results in reduced blood flow to the heart muscles and reduced supply of oxygen to the heart muscles. People who suffer from this condition will find it hard to walk, run, carry heavy things, or engage in daily activities as the blood supply to the heart is reduced. They get chest pain and feel tired even during small exertion.

2. Myocardial infarction (Heart Attacks)

Due to the deposition of fat plaque inside the coronary arteries, blood vessels get narrowed. At these places, blood clots can settle and completely obstruct the flow of blood to the heart muscles. As the oxygen supply is cut off the heart muscle supplied by that coronary artery will die. This is known as a heart attack and it can result in death.

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3.Stroke (paralysis)

Similar to a heart attack, the blood flow to the brain can get obstructed due to deposition of fat plaque or a blood clot inside blood vessels and can result in a stroke. The blood supply to the brain can also get interrupted by a rupture of an artery. The patient may suddenly lose the ability to speak or one side of the body becomes paralysed. High levels of cholesterol in the blood leads to early development of fat plaque and are deposited inside the blood vessels causing obstruction to the flow.

4. Hypertension

Blood is supplied through arteries to every part of the body. Blood circulation takes place through the contraction of the heart and as a result of this, the walls of the blood vessels will create a resistance. The artery of a person, who has high blood pressure, is thick. Therefore, the flexibility of the arteries is less. So, the walls of the arteries will begin to create more resistance with time. Therefore, the heart has to make a bigger effort to circulate the blood. The kidneys, heart, brain can get damaged due to high blood pressure. The risk of getting a stroke, heart attack and kidney failure is more when a person is having hypertension. Maintaining a proper BMI, avoiding smoking and consuming alcohol, reducing the intake of salt and being free from stress helps to bring down or even prevent getting high blood pressure.

- **Steps to prevent diseases related to the circulatory system**

1. Engaging in adequate exercises.

2. Maintaining an active life style.

3. Avoid smoking.

4. Avoid consuming alcohol.

5. Getting used to healthy food habits.

(Avoid taking excess amounts of food, too many sweets, salt and fatty food)

6. Controlling obesity and diabetes.

- **Reproductive system**

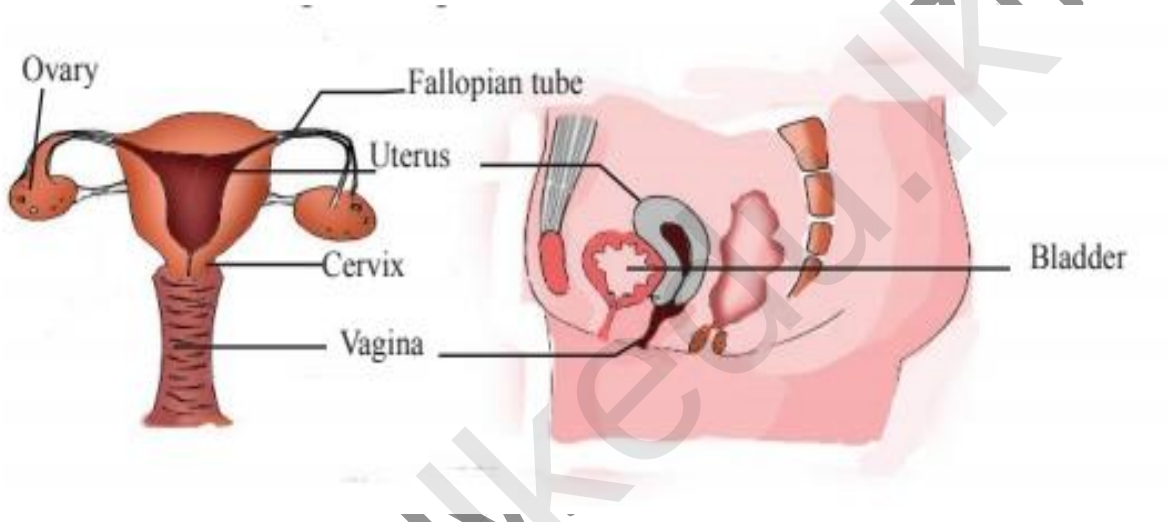
The main function of the reproductive system is to produce offspring. The male and female reproductive systems differ from each other. The male as well as female reproductive systems produce gametes. The female gamete is called ovum and the male gamete is known as sperm. The reproductive system is not active during childhood. During puberty the secondary sexual features appear and through the reproductive system hormones and mature gametes begin to be produced.

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- **Female Reproductive system**

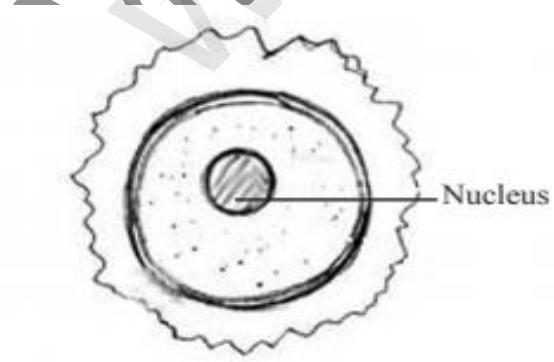
Functions of the female reproductive system

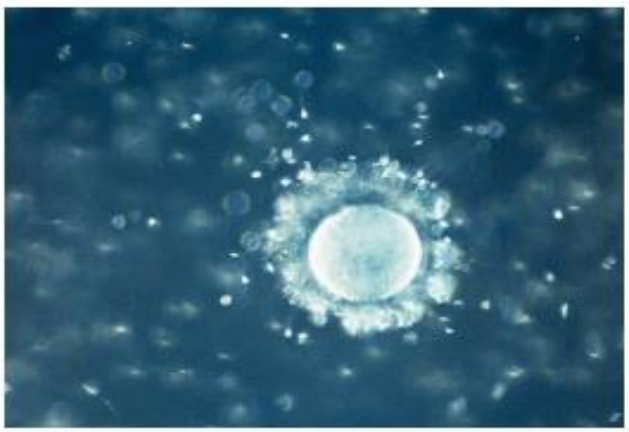
- Ovary - produce ova and hormones
- Fallopian tube - transporting ova from the ovaries, and the fertilized ova to the womb
- Womb/ uterus - providing nutrients and protection to the growing embryo and fetus till it is born
- Vagina - Sexual intercourse and deposition of sperms, the baby is born through the vagina.



- The female reproductive system consists of a pair of ovaries, a pair of fallopian tubes, the womb, the vagina and external sex organs.
- **Ovaries**

Female gamete cells or ova are produced by the ovaries. At birth (of a girl) ovaries contain millions of immature gamete cells. During puberty, the matured ova begin to be released from the ovaries. In every menstrual cycle, generally every 28 days, a mature ovum is released by the ovaries.





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The other main function of the ovaries is to produce oestrogen and progesterone hormones.

- **Fallopian tubes (uterine tubes)**

The fallopian tubes are located closer to the ovaries and it is about 10 cm in length. It is a narrow tube connecting the ovaries to the uterus. The fallopian tube takes the shape of a funnel and it partly covers the ovaries. Ova, which are released from the ovaries, are carried to the uterus through the fallopian tubes.

- **Womb/uterus**

The uterus is a hollow muscular organ. When an ovum fertilizes with a sperm, \ it's transported along the fallopian tube to the uterus and gets deposited there. Gradually the uterus expands during pregnancy with the growth of the fetus. The uterus provides nutrients and protection until the fetus is born.

- **Vagina**

The vagina is a muscular canal. During intercourse the sperms are deposited in the vagina and they pass through the vagina along the fallopian tube and fertilization of ova takes place in the fallopian tube. During child birth the baby passes through the vagina.

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Menstrual Cycle and the female reproductive Hormones

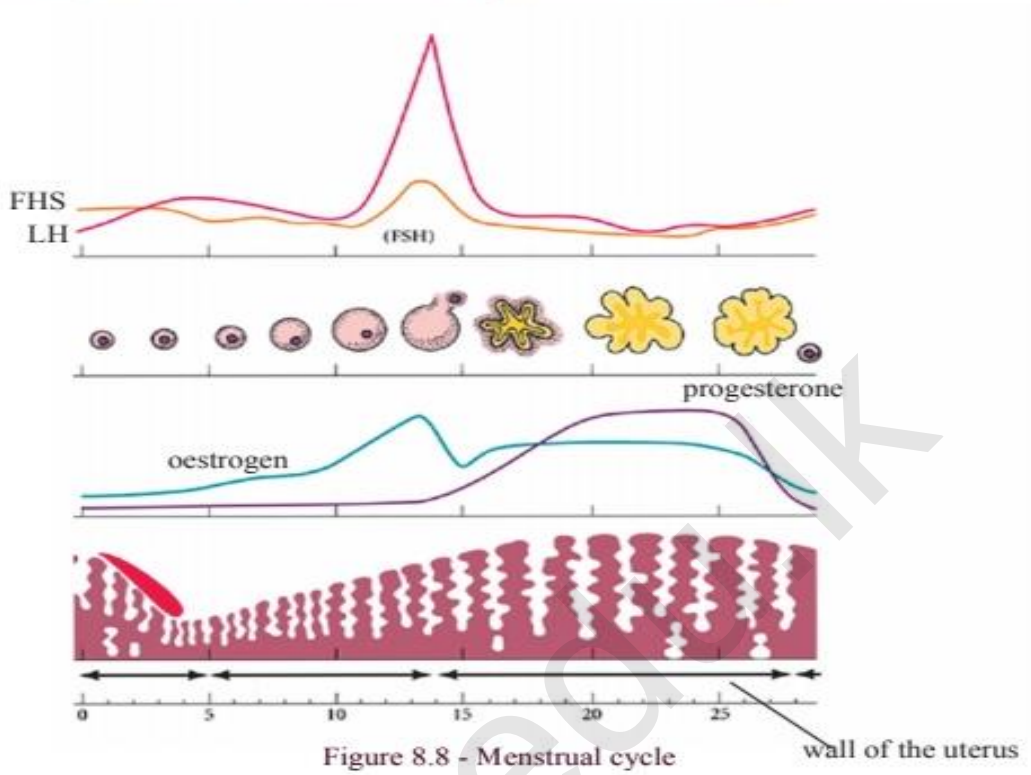


Figure 8.8 - Menstrual cycle

During the first week of the menstrual cycle, under the influence of secreted oestrogen hormone, the inner walls of the uterus become thick while the blood vessels grow strong. By the 14th day of the cycle the matured ova appear on the surface of the ovaries. Between 14-28 days of the cycle secretion of oestrogen and progesterone hormones increase and further strengthens the formations of inner walls of the uterus. These changes in the walls of the uterus provides a conducive environment for the growing embryo if fertilization of the ovum takes place. If fertilization does not take place, by about the 24th day the oestrogen and progesterone hormone level will decrease. As a result, the inner wall of the uterus begins to shed. These broken tissues along with blood travels out of the uterus through the vagina. This is called menstruation. This flow lasts for about 3- 4 days. The menstrual cycle begins with the appearance of the secondary features (at puberty) and ends between the ages of 45 – 50 years of age and is called menopause.

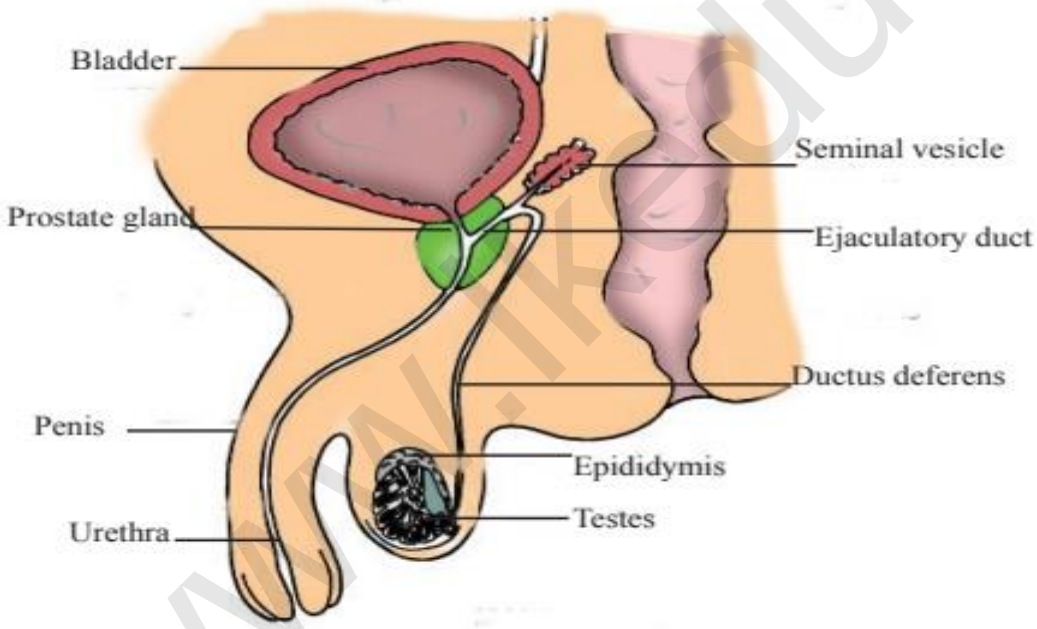
Apart from producing oestrogen and progesterone hormones from the ovaries, the secretion of hormone FSH and LH by the pituitary gland, have an influence on maturation and release of ova and the secretion of hormones by the ovaries.

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- **Male reproductive System**

Male reproductive System consists of the following parts.

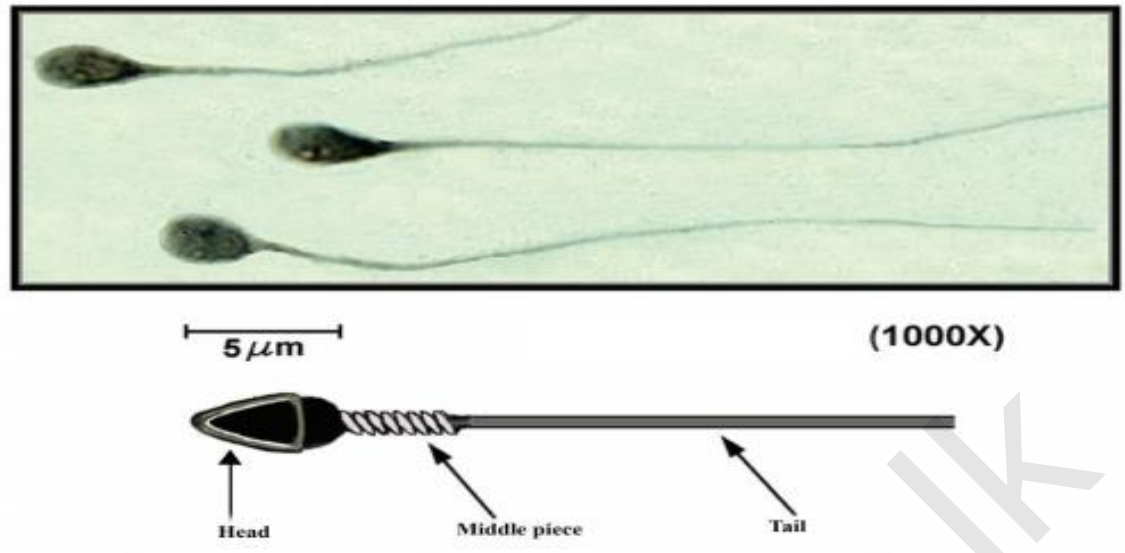
1. Testes
2. Ductus deferens
3. Seminal vesicle
4. Ejaculatory duct
5. Prostate gland
6. Penis
7. Epididymis



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- **Testes**

The testes are suspended outside the body in a sac, called the scrotum. The testes are on the outside because the temperature of the testicles must be lower than the rest of the body for the optimal production of sperm. The testes contain many seminiferous tubules. They are the sites of sperm production. The male reproductive hormone called testosterone is produced by a different group of cells within the testes.



- **Ductus deferens**

The ductus deferens is a muscular tube. It enters the pelvic cavity. The latter part of ductus deferens unites with the duct of a seminal vesicle and forms the ejaculatory duct. This passes through the prostate glands and opens into the urethra.

- **Seminal vesicles**

Seminal vesicles are about 5cm in length. It is situated below the bladder but outside of it. It unites with ductus deferentia and forms the ejaculatory duct. Secretions of the seminal vesicles are added to seminal fluid.

- **Prostate gland**

This is situated below the bladder, around the urinary tract. The secretions of the prostate glands are added to the seminal fluid. Seminal fluid is formed by the secretions of the seminal vesicles and the prostate gland.

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Diseases related to the reproductive system

1. Sexually transmitted diseases

Sexually transmitted diseases are transmitted from one individual to another through sexual intercourse. They are syphilis, gonorrhoea, herpes and AIDS.

Disease	Agent	symptoms
Syphilis	Bacteria - *Treponema pallidum*	At the primary stage blisters and wounds appear on the genitalia and later it spreads to other areas.
Gonorrhoea	Bacteria - *Neisseria gonorrhoeae*	Burning sensation while passing urine, passing pus from the urinary track and from the vagina
Herpes	Virus - *Herpes Simplex*	Fever, rash, in the genitalia, swelling of lymph glands
AIDS Acquired Immune Deficiency Syndrome	HIV virus Transmitted through sexual intercourse and blood transfusion, From infected pregnant mother to new born child, Using unsterilized medical equipment e.g: syringes	Due to reduced immunity in the body they are prone to develop other diseases

2. Cancer in the female reproductive System

Cancer can occur in the ovaries, womb and the cervix. In order to identify cervical cancer at an early stage, it is advised that every woman above the age of 35 undergo a PAP smear test.

3. Diseases in the male reproductive system.

Due to the inflammation of the prostate glands at old age there will be difficulty in passing urine. Cancers may affect the prostate glands too.

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- **Steps to prevent reproductive system related diseases**

1. Have sexual relationships with one trustful partner. Use protective methods while engaging in sexual intercourse.

2. Be concerned about your personal hygiene and keep external genitalia clean.

3. If you notice any wounds or secretion around the external genitalia, consult a doctor immediately.

For extra knowledge

Steps to prevent reproductive system related diseases

1. Have sexual relationships with one trustful partner. Use protective methods while engaging in sexual intercourse.
2. Be concerned about your personal hygiene and keep external genitalia clean.
3. If you notice any wounds or secretion around the external genitalia, consult a doctor immediately.

Subfertility

There can be many reasons why a couple is unable to produce a baby. This can be due to a disease state in both or one person.

Reasons for male subfertility

Inadequate number of sperms, poor state of health of the sperms are some reasons for subfertility. If the number of sperms in semen (Sperm count) is low or if the movement of the sperm is abnormal; fertilization does not take place. Tests will help to identify this condition. Conditions in the male contributes to about 30-40% of sub-fertility in couples.

Reasons for female subfertility

Irregular ovulation contributes to about 20% of subfertility. Another 20% is due to damages or blocks to the fallopian tube. Diseases in the womb also contribute to subfertility. In some instances, a cause for subfertility is never found. Different methods of treatment are being used to treat subfertility. Irregular menstrual cycle in obese females may cause delay in getting pregnant.

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09 Let us maintain fitness for a healthy life

- **Physical fitness** is a combination of skills we can improve for maximum and correct performance of physical activities.
- When we successfully face challenges, live productively and happily it is known as **mental fitness.**
- **Physical fitness** is a set of attributes or characteristics that people possess or can be achieved which relate to the ability to perform day to day physical activities effectively.
- **Health related physical fitness** is factors that help a person to maintain good health.

- **Following are the five components of health-related physical fitness.**
  1. Cardio vascular fitness
  2. Muscular endurance
  3. Muscular strength
  4. Flexibility
  5. Body composition

01. Cardio vascular fitness

- Cardiovascular fitness refers to the ability of your heart, lungs and organs to consume, transport and utilize oxygen. There should be uninterrupted supply of oxygen and nutrition to the tissues to work for long periods as well as to remove the waste. The circulatory, respiratory and excretory systems work jointly for the optimum functioning of the muscles.
- The energy required by the body is produced through aerobic metabolism by utilizing oxygen and nutrients.
- Developing fitness will help us to do our work without much effort within a short period of time. The performance of those engaged in long distance running, football, walking and swimming will also be better.

Activities helpful in developing cardio vascular fitness

1. Brisk walking
2. Jogging
3. Cycling
4. Swimming
5. Aerobics



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Benefits of developing cardio vascular fitness

1. Improves oxygen circulation in the body

2. Able to perform more work with less effort

3. Burning fat and weight reduction

4. Maintains mental well being

5. Improves performance in sports and other physical activities

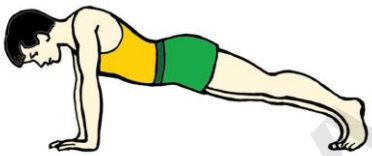
6. Effective clearance of waste from body

02. Muscular Endurance

- Muscular endurance is the ability of a muscle or a group of muscles to sustain repeated contractions against a resistance for an extended period of time. Developing this fitness has a direct influence on improving the health of a person. This can be improved by engaging in day-to-day activities, activities that can be performed using one's own body weight and activities that can be done using external resistance.

Exercise that can develop muscular endurance

It is important to engage in these activities for a long duration or do many repetitions.



• **Activities using body weight**

1. Different types of jumps 2. Push ups

3. Dips 4. Playing football/badminton

5. Running on the beach

6. Cycling

7. Hiking

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• **Activities/exercises using extra weight and multiple repetitions.**

Apart from this, it is important to do daily chores without using automated equipment

e.g.: drawing water from a well, working in the garden, pounding flour, chopping firewood, etc.

Benefits of developing muscular endurance

1. With less effort we can engage in more demanding work for a long period of time.

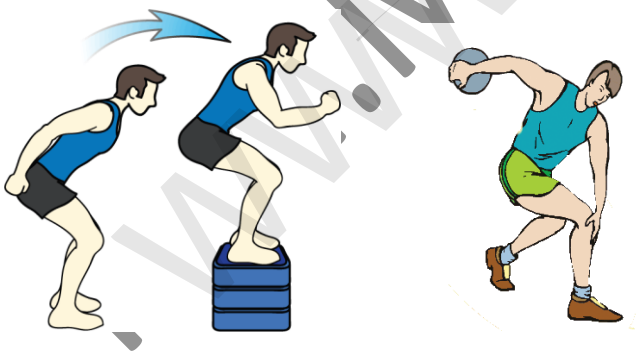
2. With less effort we can perform more work.

03. Muscular strength

- Muscular strength is the ability of a muscle to exert maximal force through a given range of motions at a single given point.
- In order to perform day-to-day activities smoothly a strong set of muscles are needed. For example, carrying a weight, pushing a weight. Similarly developing this strength is important when engaging in sports. Throwing the put shot and weight lifting are examples of some of them.

Activities that help in developing muscular strength

- To develop muscular strength, one should engage in activities lesser number of times as this will give more resistance.



1. Weight lifting activities under supervision of a trainer

2. Engaging in jumping exercises

3. Engaging in push ups

4. Engaging in dips

5. Throwing heavy objects

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- Along with the above activities engaging in the following activities such as drawing water from a well, pushing a loaded wheel barrow will help to develop muscular strength.

Benefits of developing muscular strength

1. Proper functioning of the blood vessels and muscles.

2. Improvement in the functioning of the muscles.

3. Ability to generate more muscle power.

4. Better functioning of joints and muscles.

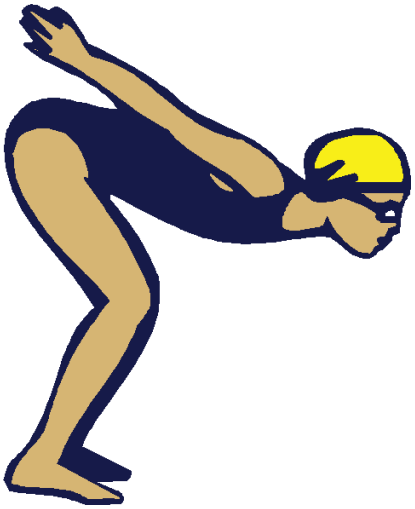
5. Improved self-image.

04. Flexibility

- Flexibility is the range of motions in a joint or group of joints. For flexible movement of joints, the length of the muscles, state of the ligaments and joints are important.
- Limitations in flexibility will affect the function of the joints and the efficiency of the person decreases. As a result, various joint ailments and injuries could develop.
- By engaging in exercises, to suit different joints, one will be able to develop flexibility.

Activities to develop flexibility





1. Stretching exercises

2. Yoga exercises

3. Gymnastics

4. Swimming

5. Ballet dancing

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- When engaging in the above exercises, and day-to-day activities such as chopping fire wood, drawing water and working in the garden flexibility can be improved.

Benefits of developing flexibility

1. Joints function to the maximum capacity

2. Minimum joint related ailments

3. Helps to maintain balance

4. Helps to improve posture

05. Body composition

- The human body is composed of water, protein, minerals and fat. This is called body composition. Body composition can be divided into two main components.

1. Fat component

2. Fat free component

- Fat component includes all the fat in the body.
- **Fat free component** is composed of all the non-fatty tissues of the body, including bones, muscles, organs and connective tissues. The amount of fat in a healthy person is mentioned as a percentage of the body weight. **Generally, for a male it is between 20% - 25% while for a female it is 30% - 35%.** Risk of getting a non-communicable disease is associated with a high level of fat in our body. Therefore, it is important to maintain the proper percentage of fat in the body from young age.

Things that can be done to maintain a proper body composition

1. Have a healthy, well-balanced diet.

2. Minimize the intake of salt, sugar and oily food.

3. Engage in aerobic exercises or sports for at least 30 minutes daily.

4. Avoid using alcohol

5. Get adequate amount of sleep and rest

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Benefits of having the correct body composition

1. Be healthy
2. Be efficient
3. Minimize injuries and disabilities
4. Reduce risk of non-communicable diseases
5. Develop a good physical appearance



- Proper nutrition as well as physical exercise is important to lead a healthy life. We can use the “food pyramid” to learn about healthy food and use the “physical activity pyramid” to develop physical fitness.

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Activity pyramid

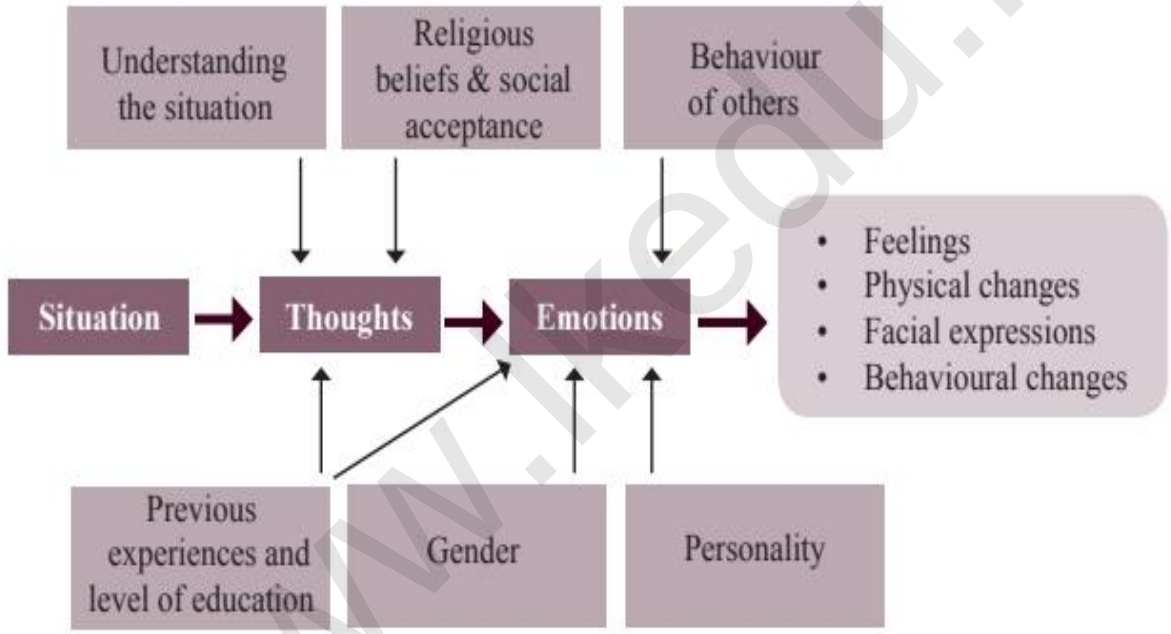
- Through the activity pyramid one can be certain how to maintain a healthy life by taking part in exercises and the time to be spent on the same.



Psycho-social well-being

- **Psycho-social well-being** is the ability to use talents and abilities to cope with stressful situations, work effectively and contribute positively to the society.
- **Emotion means** a strong feeling. It can change our activities externally as well as internally. Emotions could also be identified as thoughts that occur very fast and instantly in the mind of a person.
- We have **pleasant emotions** as well as **unpleasant emotions**. Happiness, appreciation, exaltation, compassion, and being bountiful are a few pleasant emotions. Anger, fear, disgust, sorrow and jealousy are a few unpleasant emotions.

Factors affecting emotions



Stress

- Stress is the pressure or worry caused by a problem and is a mental reaction to a situation involving challenge or danger.

Stressful situations faced by students

1. Facing exams 2. Entering a new school

3. A close friend leaving school 4. Participating in sports 5. Brawls between parents

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Factors or situations affecting stress



Physical characteristics	Mental Characteristics	Behavioural changes
Increase in pulse rate	Irritability	Quarrelsome
Increase in blood pressure	Reduced concentration	Less active
Breathing very fast	Forgetfulness	Restless
Sweating	Desolation	Reduced interaction with others

Consequences of long-term stress

- Long term stress has many adverse effects on health:

• High risk of getting non-communicable diseases, such as diabetes, high blood pressure, heart disease and mental illness.

• Depression

- Losses and difficult challenges can lead to depression. Feeling sad most of the time, crying, preferring to be alone, reduced activity are some characteristics of depression. Medical advice is very important for this condition.
- **In stressful situations You can get the help of the counselling unit of your school or "Suwa sariya" of the Ministry of Health Education Bureau. Suwa seriya - 0710107107 - www.suwasariya.gov.lk**

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Managing stress

A few points to manage stress:

1. Identify reasons and implement alternative methods for dealing with stress

2. Express feelings

3. Understand the reality of the problem

4. Proper time management

5. Stress management – face it positively or control it confidently.



Behaviour that could be seen in people due to stress

1. Squabbling with others

2. Smoking

3. Using illicit drugs and alcohol

4. Binge eating or excessive intake of food

5. Postponement of work



Activities that we can indulge in to reduce stress in our daily life

1. Have adequate sleep and rest

2. Take a 30-minute walk daily, engage in games such as volleyball, football etc. and in activities such as running and swimming

3. Engage in religious activities, meditation and exercises to develop concentration.

4. Enjoy the natural beauty e.g.: enjoy the scene of setting sun / sun rise

5. Peer group companionship

6. Listen to music

7. Engage in leisure activities…

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10 Let us prevent from accidents

01. What are the challenges that we face in adolescences?

- ✓ diseases,
- ✓ accidents,
- ✓ natural disasters,
- ✓ sexual
- ✓ abuse and delinquency

➢ Injuries caused by sports can be divided into two, namely, **external injuries and internal injuries.**

External injuries	Internal injuries
Bruises	Injury to bones
Lacerations	Injury to joints
Cuts	Injury to muscles
Piercings	Injury to ligaments
Blisters	Injury to nerves and other internal organs

➢ **Sports injuries can happen due to personal factors and external factors.**

- **Personal factors**
- Level of physical fitness not adequate for the sport
- Participating in sports without warm up exercises
- Lack of proper training
- Not taking adequate time to recover after a sport
- Overtraining

- **External factors**
- Not wearing safety gear recommended for the sport
- Use of improper sports equipment
- Lack of standard playgrounds
- Not observing the rules of the game
- Environmental factors (e.g.: extreme weather conditions)

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External injuries

1. Bruises

- Damage caused to the external surface of the skin is a bruise.

2. Lacerations

- An irregular tear of the skin (including the full thickness of the skin) is called a laceration. A laceration most often happens with a contusion of the skin that lies just over a bone.

3. Cuts

- A cut is caused by a sharp object. A cut can be either superficial or deep; a deep cut may damage the internal organs.

4. Piercing

- Piercing could be caused by a sharp tool or a pointed object. While the surface wound caused by piercing may be small in area, the wound can go deep into the body.

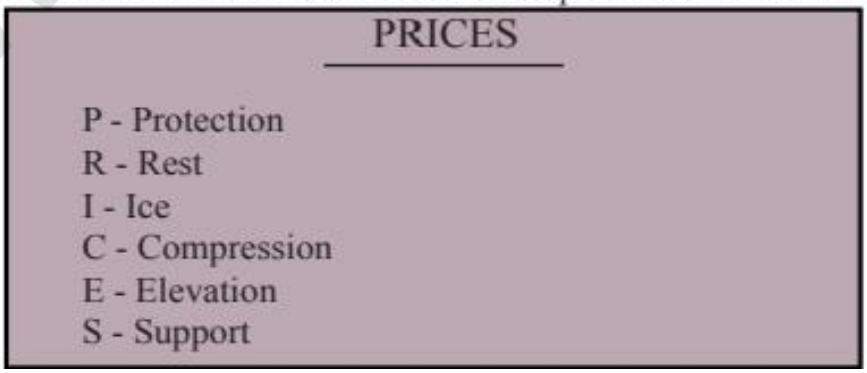
5. Contusions

- In the case of a contusion, a greater damage could have happened to the organs in the inner part of the affected area than what is seen superficially on the skin. Swelling and reddening of the skin of the affected area could be noticed.

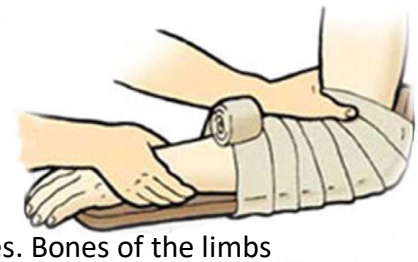
6. Blisters

- A blister is a painful red swelling on the skin that contains liquid usually formed by burning or friction (e.g.: by a new shoe or sports equipment or burn). Usually, a blister will heal on its own. However, if it is broken, it can get infected.

- RICE treatment is a commonly used method of giving first aid for internal injuries. PRICES treatment is a further development of the RICE method.



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Internal Injuries

1. Fractures

- A fracture is the most common type of injury caused to bones. Bones of the limbs and even the skull can get fractured. A fracture may be open to the outside.

2. Joint injuries

- The most serious injury that can be caused to a joint is for it to get dislocated, i.e., the bones forming a joint suddenly get dislodged from their correct positions. When a joint gets dislocated, the bones may fracture and ligaments may get damaged.

3. Ligament injuries

- Ligaments are strong strips of tissue in the body that connect bones together. Ligaments can get damaged in an accident and consequent swelling, pain and lack of proper functioning of the joint can be experienced.

4. Muscle injuries

Piercing, contusions, cut injuries or fractures can cause injury to muscles. Muscle may even tear as a result of muscle strain. There are many occasions where athletes / players suffer muscle injury in this manner.

5. Injuries to nerves and other internal organs

- The most important organ in our body is the brain. Participants in sports like rugby, football, boxing and types of martial arts face a high risk of injury to brain. Concussion, is temporary brain damage caused by a fall or hard knock on the head by another player or an object. Liver, spleen, and kidneys are among other internal organs which commonly face risk of injury by accidents. Other internal organs may be damaged in sports accidents and consequent internal bleeding may make the patient look pale or even faint. In such situations, the patient should be taken to hospital immediately.

6. Accidents due to the increase of body heat

- Sports is usually done outdoors and often during daytime. In such situations, the body temperature of participants may increase as a result of intense heat and increased physical activity. The following could result when a person's body temperature increases uncontrollably during sports:

- cramps - heat strokes - dehydration.

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➢ Accidents faced in day-to-day activities

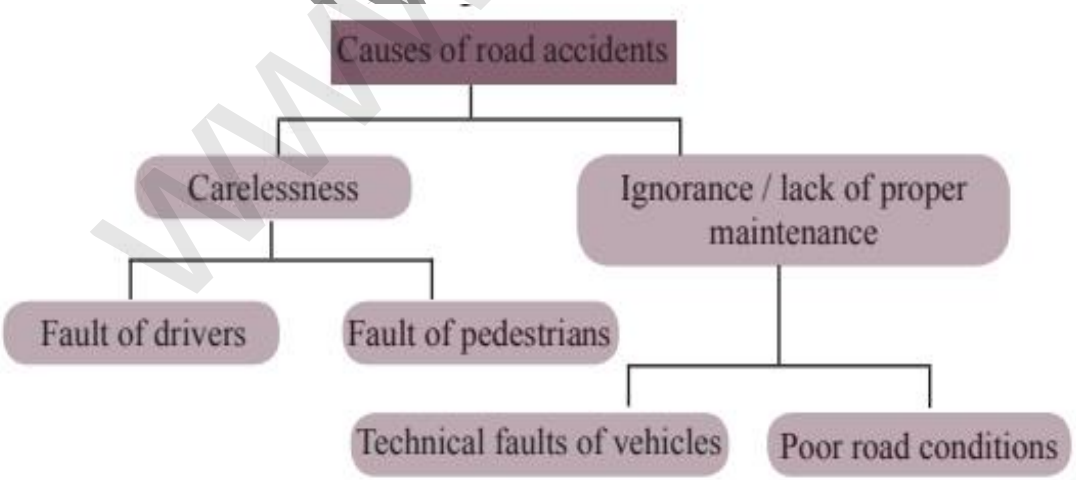
1. Domestic accidents
2. Accidents that happen in the garden
3. Road accidents
4. Natural disasters
5. Agro-chemical accidents and food poisoning



➢ Ways to minimize Domestic accidents

- Being cautious when using sharp tools.
- Preventing small children from handling such tools.
- Refraining from using unsafe kerosene lamps.
- Storing pesticides, acids and drugs safely.
- Maintaining electric wires and plug bases with proper covering.
- Constructing safety walls or fences around dangerous places like wells.

➢ Ways of occurring road accidents



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Faults committed by the drivers



- Not observing road rules
- Driving too fast
- Driving under the influence of alcohol
- Driving when tired
- Driving under stress

➢ Faults committed by pedestrians

- Not following road signs
- Walking in the dark or wearing dark coloured clothes when walking in the dark.
- Walking on the road in groups



- Walking on the left-hand side of the road
- Throwing waste matter onto the road

➢ Technical faults of vehicles

- Brake failure
- Defunct lamps (head lights or tail lights)
- Tyres of poor condition

➢ Poor road conditions



- Lack of properly displayed road signs and traffic signals
- Dilapidated roads
- Open uncovered drains on the edge of the road
- Lack of / defunct street lamps.

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➢ Remedial measures that can be taken to prevent road accidents

• Raising awareness among motorists on the importance of driving etiquette and obeying road rules.

• Raising awareness among pedestrians on the importance of road etiquette and obeying road rules

• Pedestrians and drivers to refrain from taking alcohol and illicit drugs

• Motorists to wear seat belts.

Precautionary measures that can be taken to prevent animal attacks



• Wearing safety boots

• Using a stick when walking outdoors

• Carrying a torch when walking in the dark

• Walking with heavy steps

• Keeping the home environment clean

➢ Instances of improper use of agrochemicals

• Not following safety precautions (e.g., wearing gloves, masks etc)

• Exceeding the recommended dosage

• Spraying agrochemicals just before the harvesting days

• Spraying agrochemicals against the wind direction

➢ Safety and health in the use of agrochemicals

• Wearing safety clothing like gloves, masks, helmets and footwear.

• Using the correct dosage of agrochemicals and at the correct time.

• Refraining from taking any food while using agrochemicals.

• Using only agrochemicals which have approved composition and standards.

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Work related accidents

i. Poisoning

- Most often those who are engaged in agricultural activities and those working in mines face accidents of poisoning. Poisons can enter the body in a number of ways:

• through the skin

• orally

• through the respiratory system

Most accidents happen due to ignorance and lack of knowledge.

ii. Accidents related to the use of machinery

- In industries that involve the use of machinery, accidents happen due to workers' carelessness, ignorance, lack of knowledge and lack of proper maintenance of machinery. Injuries due to such accidents include cuts, bruises and occasionally death.

iii. Electrocution

- People whose job involves the use of electricity as well as others using electricity domestically may face accidents due to electrocution.

Some of the precautionary measures that can be adopted to minimise work related accidents are as follows:

• Follow safety instructions while using chemicals.

• Take proper care when using machinery.

• Use machinery of good quality and in good condition.

• Provide sufficient training to workers on using machinery.

• Proper maintenance of machinery.

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➢ Sexual abuse

• undue touching of the body

• undue kissing and hugging

• rape of women

• child sexual harassment

➢ Other forms of abuse

• employing children as servants

• depriving of opportunities for education of children

• causing shame

• intimidation

• physical harassment

➢ Ways to avoid sexual abuse

• Never let anybody touch your body.

• Be assertive.

• Express your dislike looking directly at the abuser's face bravely and decisively saying "No, I don't like it."

• Go to a safe place or a person who can save you as soon as possible.

• If not, shout for help immediately.

• If you are alone at home, do not let others know that you are alone.

➢ Natural disasters

• Storms • Landslides

• Earthquakes • Bushfires

• Tsunami • Lightning

• Floods • Droughts

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1. Precautions that can be adopted to mitigate the effects of cyclones

• Construct houses with strong roofs.

• Remove dangerous trees which are close to houses and buildings.

• Move to a safe place when a warning has been received.

• Cut branches of large trees which lean towards houses/buildings.

• Lie on the ground or move to a place under a concrete roof.

2. Precautions that can be taken to mitigate the effects of floods

• Facilitating good drainage of rain water.

• Refrain from constructing buildings in low lying lands, river basins or in areas close to the beach.

• Take measures to minimize soil erosion.

• Identify high lands which can be used for shelter during floods.

• Be mindful of early warnings (e.g.: the times of opening sluice gates).

3. Mitigating the effects of landslides

• identifying and minimising the human activities which cause landslides.

(e.g.: improper cultivations, cutting down of trees, digging up of soil).



• reforestation

• constructing retention walls / gabion walls.

• constructing drainage systems.

• identifying landslide prone environmental conditions (e.g.: cracks in walls of buildings)

• moving away from relevant areas after identifying early signs of landslides.

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4. Mitigating the effects of earthquakes

• moving to an open area where there are no buildings

• refraining from using elevators / lifts

• disconnecting electricity and gas supplies

• if travelling in a vehicle, stopping the vehicle and getting out of it.

5. Mitigating effects of Tsunami

• using early warning systems

• moving to safe, high land away from the sea coast.

• if a strong, tall building is available, climbing up to an upper floor.

• if in a low-lying area, climbing up a tree.

• if travelling in a vehicle, getting out of it immediately and moving to a safe place.

6. Mitigating effects of lightning

- Lightning could occur in any part of Sri Lanka. Lightning becomes a common phenomenon specially during rainy seasons and inter-monsoonal rains in March, April, October and November.
- Intense heat is created by lightning. Therefore, lightning can cause severe burn injuries. Lightning may even cause death due to such burn injuries and shock. When there is lightning;

• Always stay inside a building. Do not stay in open areas like playgrounds, paddy fields and the beach.

• Do not stay close to electricity and telephone poles.

• Do not engage in activities like flying kites, catching fish with a fish rod, climbing trees or plucking fruits with a crook etc.

• Refrain from using metal tools like axes, knives and mamotees.

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Precautions that can be taken to mitigate the effects of natural disasters

• Always identify possible disasters well in advance.

• Always select safe places for living.

• Always keep additional dry rations, drinking water, medicine and first aid for use in an emergency.

• Be sensitive to the changes of the environment (be alert to the changes of the behaviour of animals and birds).

• Be organized as groups in order to respond to emergencies.

First Aid

- **When a person is hurt in an accident or suddenly becomes ill, the primary medical treatment that is given to him /her as soon as possible according to accepted principles by people with proper training and understanding before that person is taken to hospital or a professional for treatment, is called first aid. Giving first aid helps preventing complications and even saving the life of the patient.**

• Giving first aid without proper knowledge or training could aggravate the condition of the patient.



Importance of giving first aid

1. Possibility of saving the life of the patient.

2. Preventing deterioration of the condition of the patient.

3. Sometimes the patient can be cured completely through first aid.

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Qualities that a first-aider should possess

• Proper knowledge, training and competence in giving first aid.

• Does not get easily ruffled.

• Patience.

• Has the skill of acting as the leader or a member of a group.

• Has presence of mind.

• Assertiveness.



First aid kit

- **It is very important you have a first aid kit in the classroom, sports room, work place and home. A first aid kit can either be a box or a bag which is labelled so that it can be identified easily from a distance and it should be easy to open. A first aid kit contains:**

• sterile gauze • ordinary gauze

• bandage • crape bandage

• plaster • soap • disinfectants (properly diluted Dettol, Savlon, 70% alcohol)

• gloves • a pair of scissors

• a candle and a box of

Giving first aid

- **A first-aider should first find out the nature of the accident that the patient has faced and identify the patient's condition. The first-aider should then identify the types of injuries that have happened to the patient. The following method of basic life support (A,B,C,D,E) can be adopted for that.**

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Basic Life support (BLS)

A-Airway

The first- aider should first check whether the patient's airway has been affected. If something is stuck or if the tongue is blocking the airway, the obstacle should be removed first to facilitate breathing. The patient's posture can be changed for this. If the neck seems to be injured, a hard collar should be put on around the neck. This may help prevent the possibility of an injury to the spinal cord.

B-Breathing

The first-aider should check whether the patient's involuntary breathing takes place as normal. If not, action should be taken to give artificial respiration.

C-Circulation

By feeling the patient's pulse at the wrist area or at the foot, the first-aider should check whether the patient's blood circulation is taking place properly.

D-Deformity

The first-aider should check whether the patient's limbs cannot be moved properly due to some injury to nerves or bones. If any such damage is noticed, particular attention should be paid to it and the affected area should be supported with splints so that the damaged parts are immobilized. A piece of cardboard or strips of wood can be used for this purpose. If there has been any damage to the spinal cord, use either a spinal board or a long wooden plank to support the back.

E-Exposure / Environment

The whole body of the patient should be checked. This may require full exposure of the patient's body.
If the environmental conditions are unfavourable for the patient, he / she should be taken to a safe place. In the case of any injury to the spinal cord he / she should be moved in the manner that a log is rolled. A safer method is for four people to lift the patient with in one command.

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In server condition



1. Make sure the victim, any bystanders at the scene and you are safe.

2. Check the victim for a response.

If he responds:

- Leave him in the position in which you find him provided there is no further danger.

-Try to find out what is wrong with him and get help if needed.



- Reassess him regularly.

If he does not respond:

- Shout for help.

3. Make the victim lie flat on his back and then open the airway using head tilt and chin lift:

- Place your hand on his forehead and gently tilt his head back.

- With your fingertips under the point of the victim's chin, lift the chin to open the airway.



4. Keeping the airway open, look, listen, and feel for normal breathing.

- Look for chest movement.

- Listen close to the victim's mouth for breath sounds.

- Feel for air on your cheek.

5. If he is breathing normally:

- Turn him into the recovery position (step 1,2,3) and get help from the ambulance service.

- Continue to assess that breathing remains normal.



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6. If he is not breathing normally Start chest compression as follows:

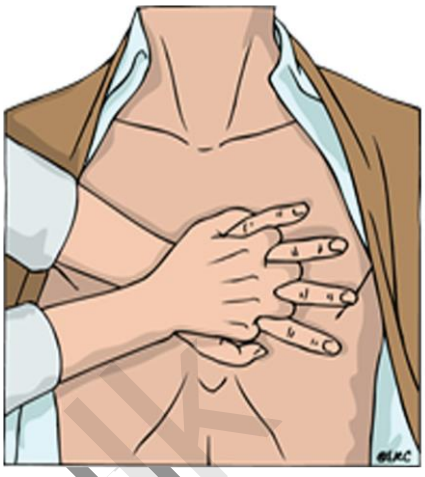
- Place the heel of one hand at the centre of the chest

- Place other hand on top of it

- Interlock fingers

- Compress the chest





• Rate about 100 per minute

• Depth 5-6 cm

• Equal compression and relaxation

- When possible change CPR (Cardiopulmonary resuscitation) operator every 2 minute

7. Combine chest compression with rescue breaths:

- After 30 compressions.

- Pinch the nose, take a normal breath, Place lips over mouth, blow until the chest rises, take about one second, and allow chest to fall.



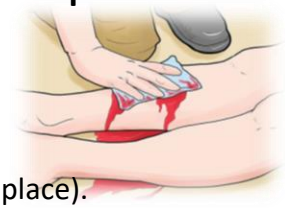
8. Continue with chest compressions and rescue breaths in a ratio of 30:2.

9. Stop to recheck the victim, only if he starts to show signs of regain consciousness, such as coughing, opening his eyes, speaking, or moving purposefully and starts to breathe normally; otherwise, do not interrupt resuscitation.

What we have described up to here is the ABC in Basic Life Support.

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Giving first aid depends on patient's condition. Here are some such important situations.



1. When a person has fainted

- Lay the person flat on his or her back (on the floor or on some suitable place). Elevate the person's legs to restore blood flow to the brain. Loosen the clothes. Provide adequate ventilation. Check whether the patient has any injury.

2. When a person has high fever

- If the patient is wearing warm clothing, remove them and put-on light clothing. Take the patient to a place with good ventilation. Sponge the armpit and groin areas with lukewarm water. Cold water or hot water should not be used for sponging. The patient should drink plenty of fluids to stay hydrated.

3. When a person is bleeding

- Put a piece of clean cloth on the wound and apply, pressure on it or bandage up the area in order to stop bleeding. The injured parts should be kept in an elevated position (higher than the level of the heart). Keep the injured parts immobilized and take the patient to hospital for medical treatment.

4. When a person gets a fit

- The greatest danger that a person who has gone into convulsion is faced is of losing life due to falling, drowning or blocking of airway. When treating a patient with a convulsive (fit), he / she should be made to lie on the left side of his / her body (recovery position) so that the airway does not get blocked with phlegm and vomit. Do not insert anything into the patient's mouth. Keep any object that could cause danger away from the patient.

5. When a person suffers a concussion

- Follow the A, B, C, D, E method described above and take the patient immediately for medical treatment keeping him/her in a posture that is not risky. If the patient is unconscious, he/she should not be given anything to eat or drink.

6. When a person fractures a bone

- If a fracture has occurred or is suspected, support that part to keep it immobilized to reduce the pain (e.g.: with splints, sling, collar, etc.).

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7. When a person dislocates a joint

- A person without proper training should never try to correct a dislocated joint. A dislocation occurring for the first time should never be corrected except by a trained professional. Keep the affected area immobilized using splints or a sling, and seek immediate medical treatment as dislocations are very painful.



8. When a person chokes on some object

- A person may choke on small objects like parts of a toy or pieces of food. This can obstruct the patient's breathing and may even cause death. Immediate action should be taken to remove the object that is blocking the airway. The method of doing this varies depending on the age of the patient.
- In the case of a small child, make the child face downward by keeping the upper part of the stomach on the bent knees and give a few blows on the back with the hand.



- In the case of an adult, stand behind the person, put your arms around the waist and tip the person slightly forward. Press hard into the abdomen with a quick, upward thrust as if trying to lift the person up. Repeat thrusts until the block is dislodged. This method is called the Heimlich manoeuvre.



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9. When a person has got an object stuck in the nose

- Tickle the nose (e.g.: with a coconut fibre) and make the patient sneeze. The object is most likely to come out. If you fail to get it out do not try to take it out using any equipment. Take the patient immediately to a hospital.

10. Snake bites / animal bites

An animal bite or a snake bite may cause pain, infection, shock or even death.

• Take measures to allay the patient's fear.

• Keep the affected area immobilized. (Do not let the patient walk.)

• Wash the area with soap and flowing water.

• Give paracetamol tablets to ease pain. Refrain from giving any other medicine.

• Refrain from giving food items like fruit juice, king coconut or young coconut water which contains high potassium.

• Take the patient immediately to a hospital.



What should not be done when giving first aid for animal / snake bites:

• Using the mouth to suck out the venom.

• Applying tourniquets.

11. Losing consciousness due to electrocution

- A person may get electrocuted if struck by lightning, touching an exposed electric cable or making contact with damaged electric wires in houses or by some other means. It could result in losing consciousness.

• Before giving first aid check if the person has contact with the electricity supply.

• Disconnect the electricity supply by removing the plug or by turning off the main switch.

• If the electricity supply cannot be disconnected, remove the affected person using a dry object (e.g.: a dry stick, a dry broom shank etc.).

• Allay the fear of the patient.

• If there are burn injuries, treat them.

12. Burn injuries

- As a result of severe burn injuries, rapid loss of body fluids, infection and shock can occur. This may even lead to death.

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• Immediately take the victim away from the danger.

• Take immediate measures to cool down the burnt area. Keep the burnt area in water or hold area under flowing water or pour water onto the burnt area. Do this for about 10 minutes or until the pain stops.

• Remove any tight clothing or other objects like a wrist watch before the burnt areas start to swell.

• Carefully cut the clothes that have been soaked in boiling liquids or chemicals.

• Cover the burnt areas with clean cloth.

• Lay the patient on a stretcher.

• Take the patient immediately to hospital.

What should not be done when attending to burn injuries

• Do not remove any material that has been stuck on the burnt areas.

• Do not apply oil or fats on the burnt parts.

• Do not use any sticky substance (plaster) to hold the dressing.

• Do not put cotton wool on the wounds.

• If blisters have been formed, do not break them.

13. Poisoning

- Certain poisons enter the body very fast while others do so very slowly. In the case of some poisons like acids or bases, which could cause burns, entering the body:

• Give some sips of hot water.

• Take the patient immediately to hospital.

- If a highly volatile substance like acids, detergents, kerosene or petrol has entered the body, do not make the patient vomit. It may cause the mouth, larynx and the stomach to burn.
- When some poison that does not cause any burn (e.g.: poisonous seeds, roots, mushrooms etc.) has entered the body:

• Make the patient vomit.

• After the patient has vomited, give more liquids to drink.

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• Take the patient to hospital.

When poisoning is suspected

• Remove any clothing which has come in to contact with the poison. If any poison has come into contact with the body, wash the affected parts well with soap.

• Make the patient feel comfortable; allay any fear.

• If the patient is unconscious or confused, turn the patient so that he/she lies on the left side of his/her body and keep him/her in a position so that the head lies at a slightly lower level. Do not give anything to drink.

• Take the patient immediately to hospital.

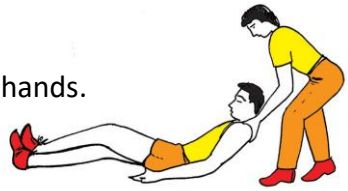
• If possible, take the poisonous substance to the hospital for the doctor to see.

Transporting a patient

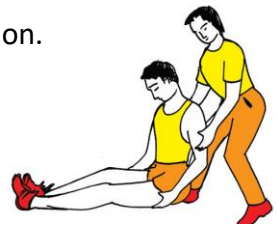
- ***When lifting or carrying a person who has had an accident, there is possibility of the spinal cord getting damaged. To prevent this when the patient is being taken to hospital, make him/her lie on a flat surface (e.g.: a plank of wood) so that the back and the neck of the patient is not bent.***
- **The following are some of the ways which can be adopted in transporting patients. These methods can be adopted when carrying a person who suffers injury to a safer place (e.g.: out of a fire, out of a pool of water). However, these methods should not be followed when the vertebral column or the neck of the patient has been damaged.**

How a patient should be carried if you are alone

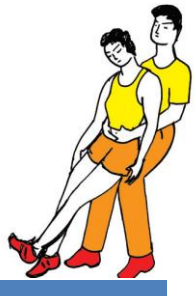
1. Bend down and hold the patient by the shoulders with both your hands.



2. Raise him/her up with a single, gentle lift and put him in a sitting position.



3. When the patient is in this posture, support him with your knees.



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4. Put your arm under his armpit and hold him by the upper arms with both your hands. Now lift him and bring him to a safe place.



How to support a patient who is able to walk or limp

1. Stand by the side of the patient's wound.

2. Put the patients arm over your shoulders and hold the patient's wrist with your hand.

3. Put your other arm across the patient's back and under his/her free arm.

4. Hold the patient's upper arm and support him to walk.

How to carry a patient who is conscious with the support of another

1. Hold each other's arms as shown in the picture and form a chair for the patient to sit. The chair is formed with three hands and the free hand is used as a support to the patient's back.



2. Make the patient sit on your arms holding onto your shoulders with both hands.



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How to carry an injured person seated on a chair

- This method can be used to lift or carry an injured person who is in critical condition (e.g.: when carrying up or down a narrow corridor).



- **If the first aider is unable to support the injured person single-handedly, tie the person's chest area onto the back of the chair with a towel or a blanket. Tie the person's legs with another onto the front legs of the chair.**

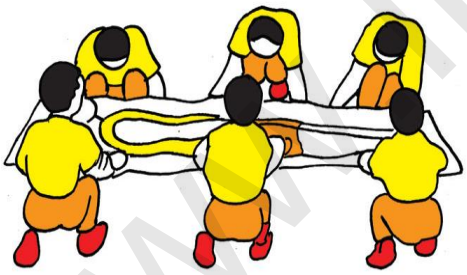
How to use a blanket as a stretcher

- There should be 4 to 6 supporters in order to use a blanket as a stretcher.

1. Lay the patient on the blanket



2. Roll the edges of the blanket.



3. Kneel down face to face with the person in the opposite side and hold the rolled edge of the blanket firmly. Every person should stand up lifting the patient at a single command.

How to carry a patient with three people

1. Every person should follow the same command. Use clear commands for every move.

2. Decide on the place the patient is going to be carried to.

3. All three people should kneel on one knee in identical manner on one side of the patient.

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4. Put the hands under and across the patient's body. The patient's neck should be supported with one hand. Gently and slowly lift the patient onto your knees at a single command. Now turn the patient towards your body.



5. Now all three persons should stand up at the same time lifting the patient. Carry the patient to the relevant place and put the patient down in the same manner.

Author – M.H.M Musthanzir – Zahira College Kalmunai (National School)

Contact Number – 0758424573

Purpose - I expect this Grade 10 self-study book is designed to learn their lessons easily to my beloved students.

I think it's an easy way to study your lessons.

Thank you...

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