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Lesson No.

2.1: Physical Fitness: Concept and Components: Aerobic, Anerobic and Yogic Exercises, Indigenous Games and Sports

2,2: Yoga: Concept, Yogic Kriya and Asanas with Special Reference to Breathing Exercises (Kapalbharti, Anulom-Vilom, Parvatasna) and Muculokeletal Exercises (Vajrasna, Parvatasna, Gomukhasna and Padamasna) – Their Benefits and Techniques

2.3: First Aid: handling of Dog, Animal and Snake Bites, Fractures, Bleeding, Burns, Sunstroke and Chemical Poisoning

LESSON NO. 2.1

PHYSICAL FITNESS: CONCEPT AND COMPONENTS: AEROBIC, ANEROBIC AND YOGIC EXERCISES, INDIGENOUS GAMES AND SPORTS

STRUCTURE

2.1.1 INTRODUCTION OF PHYSICAL FITNESS

Fitness is the ability to live a full and balanced life. The totally fit person has a healthy and happy outlook towards life. Fitness is the young man's absolute necessity. It breeds self-reliance and keeps man mentally alert. Physical fitness is essential for human beings to adjust well with his environment as his mind and body are in complete harmony. The statement issued by American Medical Association clearly defines physical fitness as "fitness for living rests first of all upon a solid foundation of basis of basic good health … fitness for living implies freedom from disease; enough strength, agility, endurance and skill to meet the demands of daily living, reserves sufficient to withstand ordinary stress without strain; and mental and emotional adjustment appropriate to the nature of the individual. Physical fitness is but one element of total fitness". Physical fitness is not a matter of concern only for individual personality but also for the nation. It is therefore responsibility of every country to promote physical fitness of its citizens because physical fitness is the basic requirement for the tasks to be under taken by an individual in his daily life.

So it is very important and necessary to know about physical fitness. The scientifically and systematically way of training are followed to improve the standard of physical fitness. Healthy living also make a person good citizen.

2.1.2 MEANING AND DEFINITION OF PHYSICAL FITNESS

Meaning:

Different people have different views regarding physical fitness. According to Layman to have a good looking physique is a symbol of physical fitness. According to Physician proper functioning of our every system like respiratory system, circulatory, etc.,

it called fitness. Before knowing to meaning of physical fitness, we should know about the meaning of fitness. Fitness is a state of well-being.

Definition of Fitness

- According to he Centers for Disease Control and Prevention (COC), physical fitness is defined as 'the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure time pursuits and respond to emergencies'.
- According to Dr. Kroles, "Physical fitness is successful adoption to the stresses of one's life style".
- According to Don Hoskins, "The human body's ability to move with the desired speed, balance, agility and strength gained through proper exercise and nutrition".

2.1.3 COMPONENT OF PHYSICAL FITNESS

Physical fitness has eight components which are essential in the field of physical education. The exercises are planned in such a manner that all the elements are developed simultaneously. Depending on the source, the components of fitness vary considerably. Below are common components:

1. **Cardiorespiratory Endurance:** Typically measured by how long or fast a person can perform an activity and how this impacts measurements such as heart rate and oxygen consumption.
2. **Muscular Endurance:** Typically measured by how many repetitions of an exercise a person can perform common tests involves push-ups and sit-ups.
3. **Muscular Strength:** Typically measured by how much weight can be moved in relation to repetitions. Exercises involving multiple joints and muscle groups such as squats or bench press and often used.
4. **Muscular Power:** Typically measured by how much force can be generated during a given activity. Advanced equipment used by biomechists are often needed to measure muscular power.
5. **Flexibility:** Typically measured by how far a muscle group can be stretched or joint can be moved. The four common tests involve the hamstrings and shoulders.
6. **Balance:** Typically measured by how long a particular position can be held with or without some type of activity being performed. Simple tests such as standing one leg can be used to assess balance. More advanced tests may involve standing on an unsteady object while trying to catch a ball.
7. **Speed:** Typically measured by how quickly an individual can move from one point to another. The 40-yard dash is often used to assess speed.
8. **Body Composition:** This is the amount of fat on the body versus other tissues such as muscle, bones and skin. Measured using a variety of tests and devices. Simple tests using mathematical equations or calipers are common and inexpensive. More advanced tests such as underwater weighing are far less common and much more expensive.

2.1.4 FACTORS AFFECTING PHYSICAL FITNESS

1. **Heredity:** Heredity means passing on biological characteristics from are generation to another. The process of heredity is applicable to all living beings. A person having more fast twitch fibers can be physically fit because he/ she already inheres the ability of speed.
2. **Regular Exercise:** Exercise improves the physical fitness or it is earned through daily routine of physical exercise. In the other hand, a healthy, person can be physically unfit if the does not exercise regularly.
3. **Nutrition:** Balance diet directly effect the level of physical fitness. Improper diet can lead to fitness problems and a person was not able to improve the level of fitness.
4. **Age/ Sex:** Physical fitness also related to age and sex level. The level of fitness affect as we grow elder and according to sex. Male has more strength in comparison to female. It is a natural factor given by nature.
5. **Living Style:** The habits and living style has also an important impact on fitness. A person having good habits regarding exercise, diet and personal hygiene etc. is mostly physically fit and people, who have low standard of living, are likely to have less physical fitness.
6. **Training:** Training also affect the level of fitness directly. If training is not given according to the scientific method then it is impossible for a person to maintain level of fitness.
7. **Rest, Relaxation and Recreation:** These factors contribute a lot to health development. Relaxation is essential for better mental health and relaxation is not given to the individual he/ she will not able to attain fitness.
8. **Environment:** Environment includes climate condition, attitude, temperature and our culture. A person residing in a polluted area may face the problems of fitness and a person residing on hills is often found to be more fit.
9. **Psychological Factors:** Psychological factors such as perception emotional stability motivation and intelligence are of vital importance in determining one's fitness level.
10. **Physiological Factors:** Physiological system of the human organism must function effectively to sustain the particular activity that the individual is performing.
11. **Stress:** Each person experiences stress. It has both positive and negative effects. Some time positive effect of stress can motivate a person to keep fit and on the other side, negative effect of stress can lead to many problems like asthma, headache, depression, ulcers etc. These diseases can have adverse effects of fitness and wellness.
12. **Cigarette Smoking/ Drugs:** Cigarette smoking damages the lungs and blood vessels. It raises pulse rate and blood pressure. Drugs like cocaine nicotine, LSD or others are a great threat to fitness and well being of an individual.

2.1.5 IMPORTANCE OF PHYSICAL FITNESS

1. **Total Efficiency is improved:** Physically fit person can perform more and more work with less fatigue.
2. **Health environment:** It is very important to remain fit. Every body requires healthy clean and safe environment and it is built through physical fitness programmes.
3. **Healthy utilization of time:** Time can be utilized by many physical fitness programmes that provide good environment for growth and development.
4. **Improves the better quality of work:** If we are physically fit, we will give better performance in every field with less wastage of energy. We get good responses and better quality of work.
5. **Attractive personality:** Physical fitness help to maintain good physique. It give good shape, size and body structure i.e. an attractive personality.
6. **Develop social qualities:** Co-operation, adjustment, tolerance, patience etc. social qualities can be improve through the help of active participation in games and sport which help us to make good citizen of a nation.
7. **Prevention from psychological problem:** Stress anxiety, depression like psychological problems can be prevented with the help of physical fitness.
8. **Prevention of diseases:** The regular fitness work can prevent many diseases, especially those related to the heart. A physically fit person is less prone to coronary heart diseases because of low level of cholesterol in the body.

2.1.6 AEROBIC EXERCISES

"Aerobic" means "in the presence of, or with, oxygen. Physical exercises performed on the aerobic energy- generating process from low to high intensity that enhance circulatory and respiratory efficiency by involving in activities like jogging, swimming or cycling etc.

1. **Delivery of Oxygen:** Aerobic exercise increase breathing and enhance oxygen supply to the body this oxygen is (1) refined by the lungs, CO_2 exhaled out (2) oxygen is carried by red blood cells to heart. (3) Heart pumps the oxygenated blood to the working muscles to produce energy.
2. **Maximal Oxygen Uptake:** Maximum oxygen uptake (VO2max) refers to the highest rate at which oxygen can be taken up and consumed by the muscles during exercise. Trained athletes have higher levels of oxygen consumption than non trained athletes due to biological changes in the muscles from chronic exercise training. VO2max can increase with training an untrained individual may be able to increase VO2max by as much as 15-20%.

⇒ **Benefits of Aerobic Exercise**

You will accrue many health and fitness benefits if you perform regular aerobic exercise. Here's a partial list:

- Improve general fitness
- Increase your confidence, emotional stability, memory, and brain function

- Improves endurance
- Reduces the risk of diseases like heart disease and diabetes
- Helps in regulating high blood pressure
- Improves bone density and muscle mass
- Reduces the risk of certain cancers (breast, colon)
- Help in reducing pain and relief in arthritis
- Decreased blood triglycerides
- Improve weight control
- Increases energy
- Improves sleep.

⇒ **Some Drawbacks of Aerobic Exercise include:**

Overuse injuries because of repetitive, high-impact exercise such as distance running.

- Not an effective approach to building muscles.
- Only effective for fat loss when used consistently.

2.1.7 ANAEROBIC

Anaerobic means "the absence of, or without, oxygen". Anaerobic exercises are of high intensity and short-lasting, during anaerobic exercise the demand of oxygen is more than the supply of oxygen and the body rely on the energy reserves of the body. Examples all types of sprints, jumping interval training and isometrics exercises.

⇒ **Physiology Basis of Anaerobic Exercise**

During anaerobic exercise the work out is vigorous and there is a temporary shortage of oxygen being delivered to the working muscles blood vessels in muscles dilate and blood flow is increased in order to increase the available oxygen supply to a certain level but after that point the requirement of oxygen to working muscles is not fulfilled and he aerobic breakdown of pyruvic acid cannot produce all the ATP required for further muscle contraction.

⇒ **Benefits of Anaerobic Exercise**

- Develop stronger muscles
- Improve your cardio-respiratory fitness
- Improve your ability to resist fatigue
- Builds and maintains lean muscle mass.
  Increases sports performance regular anaerobic exercise increases strength, speed and power, which will ultimately help improve your sport performance.
- Increases bone strength and density
- Increase metabolism
- Increase glycogen storage capacity of your body.

2.1.8 INDIGENOUS GAMES AND SPORTS

Indigenous – Native to a particular region or environment.

Traditional games were not just games; they were designed in such a way that one can develop lot of skills like logical thinking, building strategy, concentration, basic mathematics, aiming, and lot more. Nowadays we develop these skills by paying money to centres that conduct personal development courses. Traditional games act as learning aids. They teach us many things while playing like to learn to win and lose, develop sensory skills, count, add, improve motor skills, identify color, improve hand-eye co-ordination and finally to have fun, naturally one play or watch a game to have fun.

⇒ **Some Indigenous Games and Sports in India**

1. Shatranj or Chess
2. Kho Kho
3. Kabaddi
4. Gilli Danda or Lippa
5. Pehlwani
6. Buffalo racing in Kerala
7. Kancha
8. Gatka

⇒ **GUTTE**

This simple game requires 5 pieces of small stones. You spin one stone in the air and pick other stones from the ground without dropping the stone in the air. This game can be played by any number of people.

⇒ **POSHAMPA**

Two people stand with their hands locked together above their heads and sing a song. The other kids pass from under that bridge and the one who gets caught (when the hands come down like a cage at the end of the song) is out.

⇒ **CHAUPAR/ PACHISI**

Each player's objective is to move all four of their pieces completely around the board, counter-clockwise, before their opponents do. The pieces start and finish on the Charkoni.

⇒ **KITH KITH**

A popular playground game in which players toss a small object into numbered spaces of a pattern of rectangles outlined on the ground and then hop or jump through the spaces to retrieve the object. This popular game is also played in other countries and is loved by all.

⇒ **DHOPKHEL**

A game popular in Assam is similar to Kabbadi. Dhop is the name given to a rubber ball that two teams throw across a central line each other's courts. Each team

sends a player into the opponent's court; the aim is to catch the ball his team throws and make his way back to his team without allowing the opponents to touch him to earn points.

⇒ **PALLANGULI**

This board game with 14 cups is set out with six seeds in each cup; the players distribute these seeds into the other cups until there are no seeds left. The person who reaches two consecutive cups without seeds has to bow out of the game.

2.1.9 YOGIC EXERCISES

The term yoga comes from a Sanskrit word which means union i.e. union of individual with divine/ god. On the physical level, yoga postures, called asanas are designed to tone, strengthen, and align the body.

⇒ **Parts of Yoga**

1. Yama (Principles)
2. Niyama (Personal Disciplines)
3. Asana (Yoga Positions or Yogic Postures)
4. Pranayama (Yoga Breathing)
5. Pratyahara (Withdrawal of Senses)
6. Dharana (Concentration on Object)
7. Dhyan (Meditation)
8. Samadhi (Salvation)

⇒ **Importance of Yoga Exercise**

- Increase your flexibility
- Increase muscle tone and strength
- Improve your circulatory and cardio health
- Helps you sleep better
- Increase your energy levels
- Improve athletic performance
- Reduce injuries
- Detoxify your organs
- Improve your posture
- Improves anxiety and depression
- Helps with chronic pain
- Release endorphins that improve your mood
- Attainment of perfect equilibrium and harmony
- Promotes self-healing
- Removes negative blocks from the mind and toxins from the body
- Enhances personal power
- Increases self-awareness

- Helps in attention, focus and concentration, especially important for children.

2.1.10 SUGGESTED QUESTIONS

1. Define physical fitness, explain various components of physical fitness in detail.
2. What are the factors influencing physical fitness?
3. Define indigenous games and describe various indigenous games in India.

2.1.11 BOOKS RECOMMENDED

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LESSON NO. 2.2

YOGA: CONCEPT, YOGIC KRIYA AND ASANAS WITH SPECIAL REFERENCE TO BREATHING EXERCISES (KAPALBHARTI, ANULOM-VILOM, PARVATASNA) AND MUCULOKELETAL EXERCISES (VAJRASNA, PARVATASNA, GOMUKHASNA AND PADAMASNA) – THEIR BENEFITS AND TECHNIQUES

STRUCTURE

2.2.1 CONCEPT

Yoga is one of the best ways to soothe, relax and uplift the trinity of body, mind and soul. It is a holistic approach to attain the silencing of mind, muting the cacophony of thoughts and to fix all possible imbalances present in body. Yoga heals inside out; it is one of the most inexperience and easiest ways to stay fit physically as well as mentally. The word yoga means 'unity' or 'oneness' and is derived from the Sanskrit word yuj, which means 'to join'. This unity or joining is described in spiritual terms as the union of the individual consciousness with the universal consciousness.

2.2.2 YOGA KRIYA/ EXERCISE

Yogic Kriyas are the techniques used to purify the body and mind which finally clear the pathways of the body and helps in cleaning mind and body. Yogic Kriyas are cleansing proficiencies that cleanse various internal organs of the body. They are also called shatkriyas or shatkarma because they are six in number, commonly known as Neti, Dhauti, Basti, Trataka, Nauli and Kapalbhati.

Following are the Main Kriyas

- Jala Neti (Nasal Cleansing)
- Dugdha Neti (Nasal Cleansing with Milk)
- Ghrita Neti (Nasal Cleansing with Ghee)
- Sutra Neti (Nasal Cleansing with String)
- Nauli Kriya (Churning of Abdomen)
- Agnisar Kriya
- Vaman Dhauti/ Kunjal Kriya (Vomit Wash)

- Shankha-Prakshalana
- Basti/ Vasti (Yogic Enema)
- Kapalbhati

2.2.3 BREATHING EXERCISES

I. Pranayama:

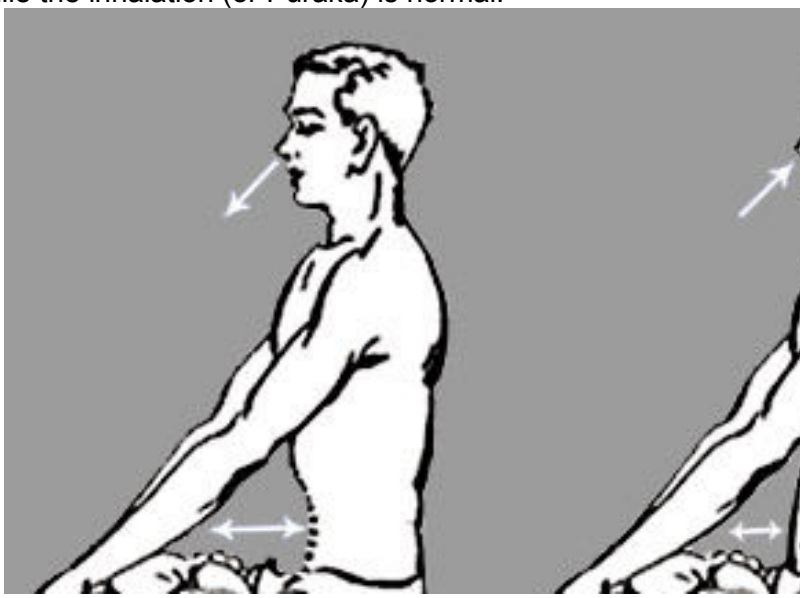
The word pranayama is comprised of two words: 'prana' and 'ayama'. Prana means 'vital energy'. Ayama is defined as 'extension' or 'expansion'. Thus, the word pranayama means 'extension or expansion of the dimension of prana'. Therefore, pranayama should not be considered as mere breathing exercises aimed at introducing extra oxygen into the lungs.

There are two types of Pranayama

1. Kapalbhati
2. Anulom-Vilom

1. Kapalbhati Pranayama (frontal brain cleansing breath):

The word "kapalbhati" is comes from two words, kapal and bhati. Meaning of kapal is skull (in common word head, which includes all the organs under the skull too) and the meaning of bhati Is lighting, illuminating. Kapalbhati is a breathing technique where rapid inhalation and exhalation is done. The exhalation or Rechaka) is forceful and rapid, while the inhalation (or Puraka) is normal.



Technique

Sit in a comfortable meditation asana. The head and spine should be straight with the hands resting on the knees. Close the eyes and relax the whole body.

Sequence:

To clear excess mucus from the nasal passages, kapalbhati should be practiced before pranayama.

Precautions:

Kapalbhati should be performed on an empty stomach, 3 to 4 hours after meals.

Contra-indications:

Kapalbhati should not be practiced by those suffering from heart disease, high blood pressure, vertigo, epilepsy, stroke, hernia or gastric ulcer. It is not recommended during pregnancy.

Benefits:

Kapalbhati has a cleansing effect on the lungs and is a good practice for respiratory disorders. It balances and strengthens the nervous system and tones the digestive organs. It purifies the nadis, and removes sensory distractions. It energizes the mind for mental work and removes sleepiness.

2. Anulom-Vilom:

Anulom Vilom Pranayama is alternate nostril breathing exercise is one of the main practices of Pranayama.

Techniques

Alternate nostril breathing, Sit in any comfortable meditation posture, preferably siddha/siddha yoni asana or padmasana. Keep the head and spine upright. Relax the whole body and close the eyes. Practise yogic breathing for some time.

In this technique the basic pattern of alternate nostril breathing is established.

Stage I: Begin with equal inhalation and exhalation, using the ratio 1: 1.

Close the right nostril with the thumb and inhale through the left nostril.

At the same time count mentally, 1, 2, 3 and so on until the inhalation ends comfortably. This is the basic count.

Breathe deeply without strain.

Close the left nostril with the ring finger and release the pressure of the thumb on the right nostril. While exhaling through the right nostril, simultaneously count, 1, 2, 3 and so on the time for inhalation and exhalation should be equal.

Next, inhale through the right nostril, keeping the same count in the same manner.

At the end of inhalation, close the right nostril and open the left nostril. Exhale through the left nostril, counting as before. This is one round. Practise 5 to 10 rounds.

Benefits of Anulom Vilom Pranayama

- Helps to cure mental problems like depression, anxiety, tension etc.
- Most beneficial for breathing related problems like (Bronchitis, Asthama) etc.
- Improve the working of lungs.
- Thinking becomes positive and you learn to overcome tension, anger, worry and forgetfulness, anxiety, uneasiness, high blood pressure, migraine and lack of sleep.
- Concentration, patience, resoluteness, decision-making ability and creativity also increase as advantages of anulom vilom pranayam.
- Increase oxygen supply throughout the body, making one feel calm and peaceful.
- Relieves stress, fever, eye concerns and ear issues.
- Improves blood circulation.
- Transforms negative thoughts to positive.
- Controls obesity.

2.2.4 MUSCULOSKELETAL EXERCISES (with Reference to Vajrasna, Parvatasna, Gomukhasana, Padamasna)

1. Vajrasna:

Vajrasna is composed of two words, Vajra and asan. Vajra which means diamond and asan means seat. Usually, breathing exercises like Pranayama, Kapalabhati, and Anulon Vilom are done sitting in this position, and it is said that in doing so, the body becomes as strong as a diamond.

Technique

- Sit on the floor on a mat or directly on the ground.

- Fold your legs and sit in such a manner such that your heel touches your butt.
- Place your hands on your lap exactly as shown in the figure above. You may let your palms face the sky as well.
- Hold the sitting pose for two minutes (to start with). You will feel a stinging pain in your feet if you are not habituated to sitting this way. You can stretch your legs and rest for a while and start again.
- Don't give up. Sit for a minimum of two minutes. You should increase the minutes over time. It is even possible to sit on Vajrasana pose for almost half an hour.

Duration

Practice vajrasana for 15 to 20 minutes after lunch or dinner.

Precautions

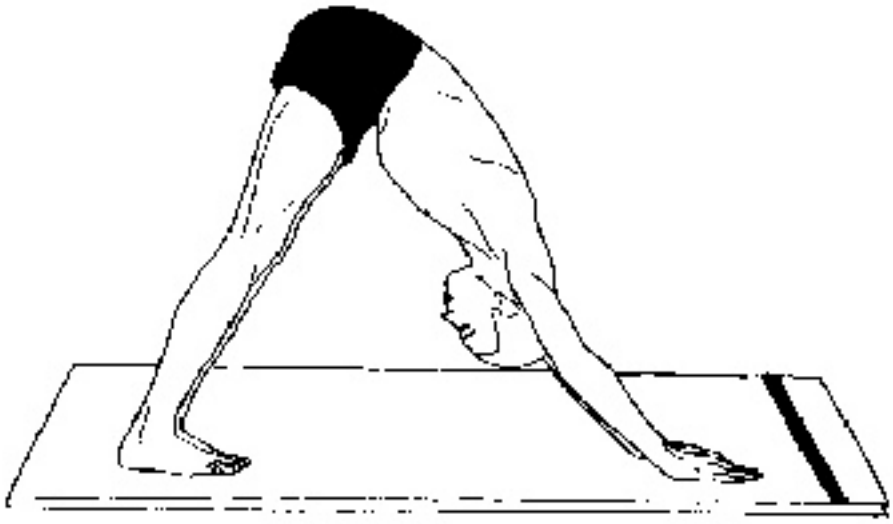
- A person suffering from joint pain should not practice this asana.
- Should practice under expert guidance.

Benefits of Vajrasana

- It helps in digestion.
- Sitting in this pose helps in reduction of the hips.
- It helps in getting rid of constipation.
- It helps to fight stomach disorder.
- A few minutes of Vajrasana and you can feel the mind calming. Thus helps you in relaxing.
- It helps in curing urinary problem.
- It helps in making the lower body flesible.

2. Parvatasna:

In Sanskrit 'Parvata' means mountain. Parvatasana or the Mountain pose is part of the Surya Namaskara series of asanas. The pose looks like a mountain from the sides and hence the name Parvatasana.



Technique

Keep the hands and right foot still, and take the left foot back beside the right foot. Simultaneously, raise the buttocks and lower the head between the arms so that the back and legs form two sides of a triangle.

Breathing:

Exhale while taking the left leg back.

Awareness:

Physical – on the stretch through the Achilles tendons, the back of the legs, shoulders and throat region, and on relaxing the hips.

Spiritual-on vishuddhi charka.

Contra-indications:

Cautions for inverted postures apply.

Benefits:

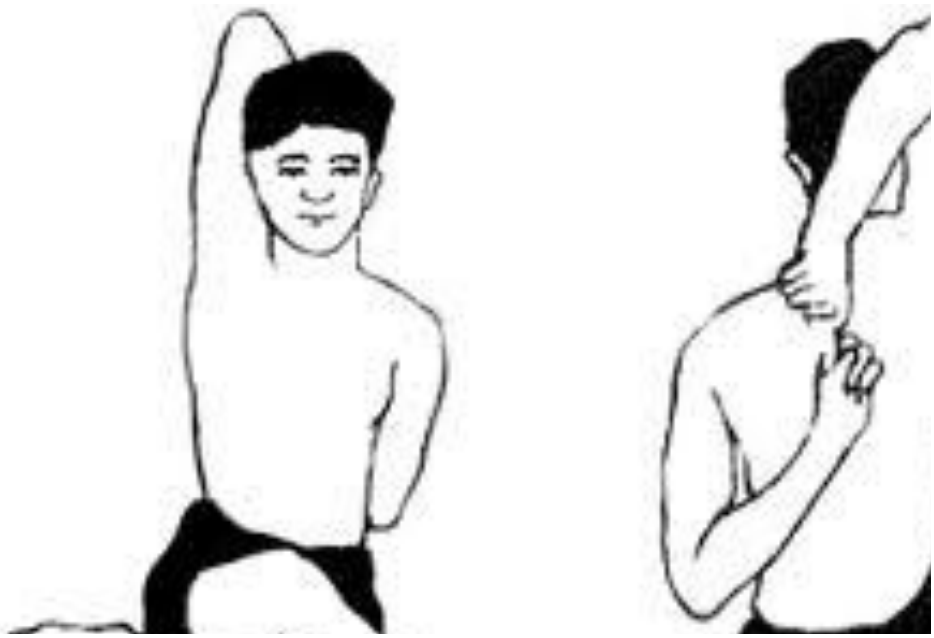
This pose strengthens the nerves and muscles in the limbs and back. It helps to increase height by stretching muscles and ligaments, enabling growing bones to grow longer. Circulation is stimulated, especially in the upper spine between the shoulder blades.

Blood flow to brain increases because of inverted position of upper body.

Abdominals and pelvic pressures will be reduced drastically.

3. Gomukhasna:

Gomukhasna is a Sanskrit word meaning “cow”, Mukha meaning “head” or “mouth” and the Asana meaning “posture” or “seat”.



Techniques of Gomukhasana:

Gomukhasana (cow’s face pose)

- Sit in dhyana veerasana so that the right knee is directly above the left knee.
- Stretch the left arm to the side and then fold it behind the back.
- Stretch the right arm up above the head, then fold it over the right shoulder.
- The back of the left hand should lie in contact with the spine while the palm of the right hand rests against the spine.
- Try to clasp the fingers of both hands behind the back.
- Bring the raised elbow behind the head so that the head presses against the inside of the raised arm.
- The spine should be erect and the head back. Close the eyes.
- Stay in this position for up to 2 minutes.
- Unclasp the hands, straighten the legs and repeat with the left knee uppermost and the left arm over the left shoulder.

Breathing:

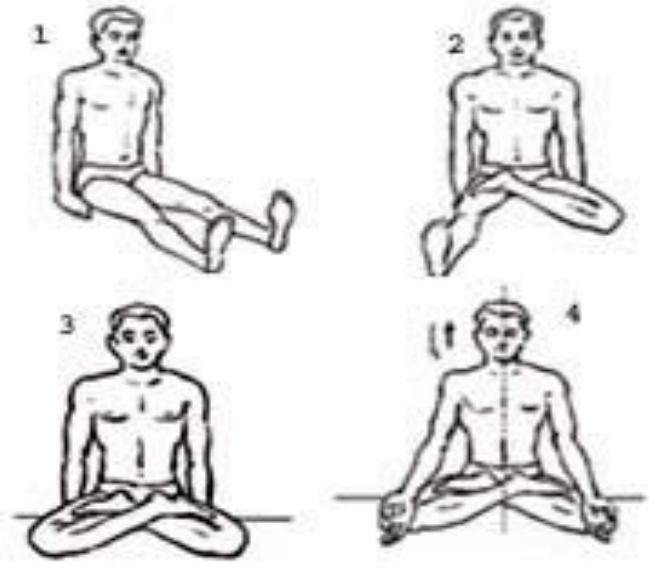
Normal in the final position.

Benefits of Gomukhasana

- This asana helps to flex the back, making it more elastic.
- It helps to cure stiff shoulders and also helps reduce treatment of sciatica.
- Practicing the Gomukhasana also aids in the treatment of sciatica.
- It enhances the working of the kidneys, thereby helping those suffering from diabetes.

4. Padamasna:

The word Padmasana is a Sanskrit word which means “lotus flower” so it’s also known as the “Lotus pose”. It is so called because of the lotus- like formation which made by our legs during this asana. Another name of Padmasana is “Kamalasan”.



Technique

- Padmasana (lotus pose)
- Sit with the legs straight in front of the body.
- Slowly and carefully bend one leg and place the foot on top of the opposite thigh.
- The sole should face upward and the heel should be close to the public bone.
- When this feels comfortable, bend the other leg and place the foot on top of the opposite thigh.
- Both knees should, ideally, touch the ground in the final position.
- The head and spine should be held upright and the shoulders relaxed.
- Place the hands on the knees in chin or jnana mudra.
- Relax the arms with the elbows slightly bent and check that the shoulders are not raised or hunched.
- Close the eyes and relax the whole body.

- Observe the total posture of the body. Make the necessary adjustments by moving forward or backward until balance and alignment are experienced. Perfect alignment indicates the correct posture of padmasana.

Benefits

- It activates the spine, the pelvis, the abdomen and the bladder.
- The knees and ankles get a good stretch.
- Menstrual issues and sciatica are dealt with if this asana is practiced regularly.
- If this asana is practiced through pregnancy, it makes birthing easier.
- This asana opens up the hips, making them more flexible.
- Energy levels are restored with the practice of this asana.

2.2.5 SUGGESTED QUESTIONS

1. Define physical fitness? Explain various components of physical fitness in detail.
2. Importance of yogic exercises.

2.2.6 BOOKS RECOMMENDED

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LESSON NO. 2.3

FIRST AID: HANDLING OF DOG, ANIMAL AND SNAKE BITES, FRACTURES, BLEEDING, BURNS, SUNSTROKE AND CHEMICAL POISONING

STRUCTURE

2.3.1 FIRST AID

First aid is the provision of initial care for an illness or injury. It is usually performed by non-experts sometimes by an expert in case of an emergency, to a sick or injured person until medical treatment can be got at. In case of minor injuries or illness first aid is sufficient and no further medical treatment is required.

Learning first Aid is a civic responsibility of each citizen. Especially, every teacher should have complete acquaintance with first aid so that assistance may be rendered to the injured before the arrival of the doctor.

2.3.1.1 Meaning and Definition

Emergency care or treatment given to an ill or injured person before regular medical aid can be obtained is known as first AID. It is an immediate aid given to the

victim of an accident on sudden illness before medical help is obtained. It is an immediate and temporary care.

First Aid also requires a lot of innovation and versatility to use resources available to the first aider. The first-aider must not overplay his duty of doing what is not in his domain.

2.3.2 AIMS OF FIRST AID

- To save the patients from the jaws of death.
- To sender first aid immediately at the time of need.
- To collect all the first Aid material.
- To stop the bleeding from the wounds.
- To maintain the temperature of the patient at normal.
- To give maximum relief to the patient.

2.3.3 PRINCIPLES OF FIRST AID

- Remove the cause of injury.
- Attend the sever Hemorrhage immediately irrespective other injuries.
- Ensure the free air supply to the patient. See that there is no obstruction to the air passages. Start artificial respiration if breathing has ceased.
- In case of fracture, do not move the patient till bone has been made immovable, unless there is danger to life.
- Poison swallowed should be neutralized according to the nature of the poison.

2.3.4 QUALITIES OF A FIRST AIDER

- A first-aider should never take the duties and responsibilities of a doctor.
- The first Aider should observe carefully and think clearly.
- He should be calm and cool.
- He should be confident.
- He should be assertive in his limits.
- He should be able to use his common sense and use the resources available to him.
- While waiting for a doctor he should render first aid methodically.
- The first aider must not overplay his duty of doing what is not in his domain.
- He should be persevering, that he may continue his efforts, even if he does not see any improvement.

2.3.5 CONTENTS OF A FIRST-AID BOX

The First-Aid Box should contain the following equipments and medicines to enable the first-aider to render effective, timely and appropriate aid.

Equipments or Apparatus

1. Scissors
2. Clean Cotton wool
3. Bandages

4. Measuring tape
5. Adhesive Dressing
6. Safety Pins
7. Tourniquet
8. Tweezers
9. Splints
10. Spoons
11. Pads of various sizes
12. Needle
13. Thermometer

Medicines

1. Smelling salt
2. Common salt
3. Burnol
4. Dettol
5. Iodex
6. Throat paint
7. Balm
8. Potassium permanganate
9. Locula
10. Gum paint
11. Glycerin
12. Dusting powder

2.3.6 IMPORTANCE/ USE OF FIRST AID IN VARIOUS PROBLEMS

2.3.6.1. First Aid in Wounds

A puncture wound doesn't usually cause excessive bleeding. Often the wound seems to close almost instantly. But this doesn't mean treatment is not necessary.

First, Stop the Bleeding:

When a small cut occurs, allow it to bleed for a minute, which actually cleans out any dirt or bacteria naturally. Then clear the area of blood, elevate the wound above the level of your heart (if possible) and apply direct pressure on the cut. When a large cut or wound occurs, stop the bleeding immediately. Any extensive blood loss should be treated by a doctor immediately.

Types of Wounds

1. **Contusions:** Contusions are caused by blunt objects like blow, from blunt weapon, stone, fist, boots and from falling on a street. There is painful swelling with injury to underlying tissue without break in the continuity of skin. It needs no treatment.
2. **Abrasions:** The cause is the same as for contusion but there is injuring to superficial scin only. It can also be caused by finger nails, teeth bite. In such cases, wash the area with soup and warm water to remove all dirt on the surface. Then cover it carefully with sterilized dressing and bandage.

3. **Incised wounds:** Incised wounds are deep cuts, made by broken glass, razor blade or a sharp knife. Bolld come our freely. Bandage the area firmly and taken the patient to a doctor as early as possible.
4. **Lacerated wounds:** Lacerated wounds are torn wounds made by blunt instruments or by violent falls on hard projecting surfaces by machinery or railway or vehicular accidents, by claws or teeth of animal. In such cases the patient should be removed to the hospital.
5. **Punctured wounds:** Punctured wounds are caused by narrow, pointed instruments like nails, needles, thorns or bullets and arrows. In such cases wounds be cleaned. After this a firm pressure bandage should be applied and the patient taken to doctor.

2.3.6.2 Precautions

1. Never leave the wound uncovered because germs in the air find their way into the uncovered wounds.
2. It should be remembered that whenever the skin is broken, there is always danger of infection. So care should be taken not to touch the wound with the tips of finger or with dirty cloth and dirty water.
3. Wash the wound with soap, remove surroundings hair, apply cotton pad and bandage carefully.
4. After applying antiseptic solution and take the patient to a qualified doctor.

2.3.6.3. Cuts

A cut refers to skin wound with separation of the connective tissue elements unlike an abrasion none of the skin is missing the skin is just separated.

Causes of Cuts:

Cuts happen when your skin is accidentally broken or worn away. This can be the result of a fall, banging against a hard object or being cut by something sharp. Children, for instance almost always have some sort of minor skin damage, just for playing others more likely to get cuts including other people and people who have delicate skin cuts can be caused by:

Blunt objects that tear or crush the skin these cuts are more common over bony areas. Such as finger, hand, knee feet etc. but they can occur anywhere on the body.

- Sharp objects injuries are more likely to cut deeper and damage underlying tissue.
- A combination of blunt and sharp objects that tear, crush and slice the skin tissue.

Types of Cuts

- Long or deep cuts.
- Cuts that may scar and affect the appearance or function of body area. A cut on an eyelid or lip which doesn't well or leave a noticeable scar.
- Cuts that open with movement of the body area, such as cut over a joint. A cut over a joint many take a long time to heal because of the movement of the wound edges.
- Cuts that remove all the layers of the skin, such as slicing off tip of a finger. An avulsion injury may take a long time to heal.

- Cuts from an animal or human bite.
- Cuts that have damage to underlying tissues. Injuries to nerves, tendons or joints are more common with cuts on the hands or feet.

2.3.6.3. Hemorrhage

Hemorrhage or bleeding is a common cause of death in accidents. It occurs when the blood vessels are injured. As blood is a nutrient of the body. If some blood comes out the body heart and lungs cannot function properly.

1. **Arterial Hemorrhage:** The bleeding occurring from the blood vessel is in the form of jet and corresponds to the beating of heart. The loss of blood is maximum and if corrective measures are not taken it results in to death. The blood is bright red in colour.
2. **Venous Hemorrhage:** The bleeding is in a continuous stream which is dark red. If a major vein ruptures air may be sucked in where pressure is below atmosphere. The air gets with blood and impedes circulation.
3. **Capillary Hemorrhage:** The blood oozes out slowly, it is not of much importance if on surface but assumes significance if it is internal hemorrhage from some viscera.
    - **Internal Hemorrhage:** It is due to the rupture of blood vessel situated in the brain, abdominal cavity, injury to any organ or gaster intestinal tract. It is very dangerous. A rupture of meningeal blood vessel, rupture of aneurysm, of artery inside the cavity, rupture of blood vessel in tubercular cavity a mild bleeding in kidney or stomach is of serious consequences.
    - **External Hemorrhage:** When the blood vessel reputed is situated on the surface of body. It can be easily stopped by pressure bandage and shift the patient to hospital.

Sign and Symptoms:

The patient complains of cold and giddiness and may vomit. The vision is blurred, the skin becomes clammy and the pulse is rapid feeble. He is air hungry and feels thirsty. Blood pressure falls and the patient gives anxious expression. Air hunger due to loss of blood and consequently loss in oxygen carrying capacity of blood to tissues.

- Stop bleeding by pressure bandage.
- Make to patient lie down on bed or stretcher.
- Raise the food and of bed.
- Give a hot drink.
- Transport causality to hospital.

Treatment in Internal Hemorrhage

To prevent worsening of the condition immediately transport the patient to nearby hospital.

- Lay the casually down with food and raised.
- Keep the patient calm.
- Do not give anything orally.

2.3.6.4 Laceration

A laceration is an injury that result in an irregular break in skin, more commonly referred to as a cut, but defined as a torn and ragged wound. There are five general types of laceration.

1. **Split laceration:** This type of wound is caused when part of the body is crushed between two objects. While not as serious and a crush injury a split laceration is caused in the same manner, with the striking object making a blunt impact and causing the skin and tissues to tear from compression.
2. **Grinding compression:** When and object strikes the skin with a blunt impact at either an angle or with a sweeping motion, the essentially peeled a person's skin is essentially peeled back when this types of laceration occurs.
3. **Over stretching:** This would is typically caused by a single, angular force that strikes the skin and either pusher or pulls the skin, causing it to stretch and break.
4. **Cut laceration:** The most common type of laceration, a cut occurs when any type of blade (knife, scissors etc) comes into contact with the skin, causing a break of the skin and possibly the underlying tissue.
5. **Tearing:** Just as the name implies, type of laceration occurs when the skin is broken by an object and the break is ripped due to pressure pushing the wound in two different, directions, essentially causing the skin to tear like a piece of paper.

Causes:

Laceration are caused where an object strikes the skin and causes a wound to open. Depending on a variety of characteristics (angle, face, depth, object) some lacerations can be serious than others, reaching as far as deep tissue and leading to serious bleeding.

Symptoms:

The predominant symptoms to laceration are mild to serious breaking of the epidermis, tears in the first layer of skin that can range from small slices to deep gashes. Depending on the depth of the laceration, there can be bleeding of different levels of severity. Mild lacerations may experience brief bleeding accompanied by mild pain. Deeper lacerations will experience greater bleeding and more intense pain.

Treatment:

As is the first step in most injuries to the skin, cleaning the wound is of utmost importance as to stave off infection and inflammation. For mild lacerations, the use of a topical ointment, such as Neosporin, is recommended, as it the application of a basic bandage. For deeper wounds, as in those that affect the tissue beneath the skin and experience heavier bleeding, attention from a medical professional should be required, as the wound will likely need to be closed with stitches, staples or even sutures.

As with minor lacerations, while waiting for medical attention with more serious wounds, it is imperative to clean the wound first and then apply pressure with a clean bandage to limit bleeding as much as possible.

Prevention:

With lacerations and any skin wound in general, the best means of prevention is to use the right equipment, wear the proper clothing and exercise strong judgment and reason when in situations that could be detrimental to your health or physical well-being.

2.3.6.5. Contusion

Contusion also called a bruise, refers to an area of skin discoloration (typically back and blue) that occurs after an trauma of the soft tissue. A contusion develops when small blood vessels beneath the skin rupture and blood leaks into the soft tissue beneath the skin. Contusions and bruises are common injuries in sports with a risk of collision or impact.

Contusion are classified as

1. **Subcutaneous:** A contusion beneath the skin.
2. **Intramuscular:** A contusion with in a muscle.
3. **Priosteal:** A contusion to a bone.

Symptoms:

Contusions can occur suddenly and last from days to months. Contusion generally cause pain, swelling and tenderness over a black and blue area of skin discoloration. As it heals, it often changes from black and blue to green and yellow.

Treatment:

Treatment a contusion is similar to other soft tissue injuries. Apply ice to the contusion for 15 minutes, several times per day. Mild contusion or bruises typically heal within five days.

2.3.6.6. Discoloration

If the displacement of one or more bone of the joint, most common are at shoulder or elbow joint after a fall. It is due to the uneven placing of hand or food as a result of falling. So when the bones of joints slip from their natural position it is known as dislocation of bones.

Signs and Symptoms

1. Pain and tenderness
2. Deformity
3. Loss of function of the effected joint.
4. In dislocation of mandibular joint the patient is unable to close the mouth.

Treatment

1. Slipped bones should be tied together.
2. Tie the organ of the patient and take him to the doctor. This may be done with the help of a sling or support.

3. Ice or cold water bandage should be applied on the joint.
4. If there is excessive pain, hot water fermentation should be applied.
5. The joint should be provided with rest motion causes slipping. Dislocated bones should not be moved.

2.3.6.7. Fractures

A fracture is a complete or incomplete break in a bone resulting from the application of excessive force, or fractures are a common occurrence when the physical force exerted on a bone is stronger than the bone itself.

Types of Fractures

There are many types of fractures, but the main categories are:

Among other types, some fractures are caused by a disease that weakens the bones, and a stress facture which is a hair line crack. The severity of a fracture depends on its location and the damage done to the bone and nearby tissue. Serous fractures can have dangerous complications if they are not treated promptly, such as damage to blood vessels or nerves and infection of the bone.

Signs and Symptoms

1. Deformity of an arm or leg.
2. Swelling or bruising our bone.
3. Pain in the injured area that gets worse when the area is moved or pressure is applied.
4. Loss of function in the injured area.
5. In compound fractures, bone protruding from the skin.

Diagnosis

1. An X-ray of the injured area is the most common test used to determine the presence of bone fracture.
2. In some cases CT, MRI or other imaging tests are required to demonstrate fracture.
3. Some times, especially in children, the initial X-ray may not show any fracture but repeat 7 to 14 days later may show changes in the bones of the affected area.
4. If a fracture is open and occurs in conjunction with soft tissue injury. Further laboratory studies are often conducted to determine if blood loss has occurred.

Treatment:

Treatment depends on the type of fracture, its severity, the individual's age and general health. The first priority in treating any fracture is to address the entire medical status of the patient.

First aid is the appropriate initial treatment in emergency situations. It includes proper splinting, control of blood loss and monitoring vital signs such as breathing and circulation.

Prevention:

Adequate calcium intake is necessary for strong bones and can help in decreasing the risk of fractures.

- Exercise can help strengthen bones by increasing bone density.
- Fractures can be prevented if safety measures are taken seriously.

2.3.6.8. Burns

Burns are one of the most common household injuries, especially among children. Burns occurs when the skin comes in contact with something hot source having more temperature than our body. Burns damages tissues of the body the degree of burns depend upon the exposure to the source of heat.

Prevention from Burns

- Be careful when using candles, space heaters, and curling irons.
- Keep children away from radiators.
- Be alert around hot drinks.
- Check the temperature of bath water before putting a child in the tub.
- Check smoke alarm batteries at least once a month.
- Keep a fire extinguisher in the kitchen.
- Do not allow young children to play in the kitchen while someone is cooking.

Causes of Burn

- Scalding from hot, boiling liquids
- Chemical burns
- Electrical burns
- Fires, including flames from matches, candles and lighters

There are 3 Degrees of Burns

Symptoms of First-Degree Burns:

- Redness
- Swelling
- Pain

Symptoms of Second-Degree Burns

- Red, white or splotchy skin
- Swelling
- Pain
- Blisters

Symptoms of Third-Degree Burns

The most serious burns involve all layers of the skin and underlying fat. Muscle and even bone may be affected. Burned areas may be charred black or white. The person may experience:

- Difficulty breathing
- Carbon monoxide poisoning
- Other toxic effects.

First Aid for Burns

Stop the burning process as soon as possible. This may mean removing the person from the area, dousing flames with water, or smothering flames with a blanket. Don't put yourself at risk of getting burnt as well.

Remove any clothing or jewellery near the burnt area of skin, including babies' nappies.

Cool the burn with cool or lukewarm running water for 20 minutes, as soon as possible after the injury. Never use ice, iced water, or any creams or greasy substances such as butter.

Keep yourself or the person warm. Use a blanket or layers of clothing, but avoid putting them on the injured area.

Cover the burn with cling film. Put the cling film in a layer over the burn, rather than wrapping it around a limb. A clean clear plastic bag can be used for burns on your hand.

Treat the pain from a burn with cream or gel**.**

Sit upright as much as possible if the face or eyes are burnt. Avoid lying down for as long as possible as this will help to reduce swelling.

Don't

Do not put butter or oil on burns. Do not put ice or ice water directly on second – or third- degree burns. If blisters form over the burn, do not break them. These things can cause more damage to the skin.

2.3.6.9. Sunstroke

Sunstroke is caused by prolonged exposure to high temperatures and the body fails to regulate the temperature, the core temperature of the body rises to 104 degree Fahrenheit affecting the nervous system causing hyperthermia of brain.

Causes Sunstroke

Cooling mechanism of the body fails due to

a) Excessive humidity
b) Extreme heat
c) Activity in the hot sun
d) Internal body temperature rises, leading to stroke.

Prevention

- Avoid outdoor activity during excessive heat
- Drink plenty of fluids when working outdoors
- During outdoor activity, splash your body frequently with water

- Avoid alcohol/ coffee/ soda/ alcohol

Symptoms of Heat Stroke

- Body temperature, greater than 104°F
- Heat ache
- Dizziness
- Confusion
- Disorientation
- Fatigue
- Disorientation
- Fatigue
- Hot dry skin
- Skin is moist, if stroke is due to exertion
- Rapid/ shallow breathing
- Rapid heartbeat
- Absence of sweating
- Fluctuating blood pressure
- Irritability
- Confusion
- Lack of consciousness/ coma

First Aid for Sunstroke

- Remove the person to a shady place
- Cool the person by sponging with wet towel
- Apply ice packs in armpits and groin
- Water with electrolyte, fruit/ vegetable juice should be given
- Victim must be rested.

2.3.6.10 Chemical Poisoning

Chemical poisoning is a condition in which the body is exposed to a potentially harmful chemical in an amount that causes symptoms, disease and/ or damage to cells, organs and/ or body systems. Chemical poisoning can be intentional or unintentional. Toxicants are synthetic chemicals or natural substances that are not produced by a living organism.

Cause of Chemical Poisoning:

- Carbon monoxide gas (from furnaces, gas engines, fires, space heaters)
- Certain foods
- Chemicals in the workplace
- Drugs, including over-the-counter and prescription medicines (such as an aspirin overdose) and illicit drugs such as cocaine
- Household detergents and cleaning products

- Household and outdoor plants (eating toxic plants)
- Insecticides
- Paints

Symptoms

- Abdominal pain
- Bluish lips
- Chest pain
- Confusion
- Cough
- Diarrhea
- Difficulty breathing or shortness of breath
- Dizziness
- Double vision
- Drowsiness
- Fever
- Headache
- Heart palpitations
- Irritability
- Loss of appetite
- Loss of bladder control
- Muscle twitching

2.3.6.11. Dog/ Animal Bite

Although you can provide first aid for a dog bite at home, it's very important to see a doctor, especially if an unfamiliar dog bit you, the bite is deep, you can't stop the bleeding, or there are any signs of infection (redness, swelling, warmth, pus). Dog bites can cause infections that need to be treated with antibiotics.

Prevention of Dog Bites

- When choosing a dog for a family pet, pick one with a good temperament.
- Stay away from any dogs you don't know.
- Never leave young children alone with a dog – especially an unfamiliar one.
- Don't try to play with any dog that is eating or feeding her puppies.
- Whenever you approach a dog, do so slowly, and give the dog the chance to approach you.
- If a dog becomes aggressive, do not run away or stream. Stay calm, move slowly and don't make eye contact with the dog.

Type of Wound is made by a Dog Bite?

When a dog bites, the front teeth are used to grasp the victim, while the other teeth pull at the surrounding skin as they bite. The result can be a deep hole in the skin

causing a puncture wound, made by the front teeth, and a jagged wound or laceration (cut) with a scraped section of skin, or abrasion.

Symptoms of Rabies

The initial onset of rabies begins with flu-like symptoms, including:

- Fever
- Muscle weakness
- Tingling
- You may also feel burning at the bite site
- Insomnia
- Anxiety
- Confusion
- Agitation
- Hallucinations
- Excess salivation
- Problems swallowing
- Fear of water

First Aid for a Dog Bite

- Place a clean towel over the injury to stop any bleeding.
- Try to keep the injured area elevated.
- Wash the bite carefully with soap and water.
- Apply a sterile bandage to the wound.
- Apply antibiotic ointment to the injury every day to prevent infection.

2.3.6.12. Snake Bite

Snake bites can be deadly if not treated quickly. Snake during bite inject venom that is mostly water into the human body. The venom has enzymatic proteins in it and has destructive properties. The right antivenom can save a person's life if given at the right time.

General Symptoms

- Two puncture wounds
- Swelling and redness around the wounds
- Pain at the bite site
- Difficulty breathing
- Vomiting and nausea
- Blurred vision
- Sweating and salivating
- Numbness in the face and limbs

To Prevent Snake Bites

- Avoid areas where snakes may be hiding, such as under rocks and logs.
- Even though most snakes are not venomous, avoid picking up or playing with any snake unless you have been properly trained.
- Don't provoke a snake. That is when many serious snake bites occur.

- Tap ahead of you with a walking stick before entering an area where you can't see your feet. Snakes will try to avoid you if given enough warning.
- When hiking in an area known to have snakes, wear long pants and boots if possible.

Follow These Precautions during First Aid:

- Do not allow the person to become over-exerted. If necessary, carry the person to safety.
- Do not apply a tourniquet.
- Do not apply cold compresses to a snake bite.
- Do not cut into a snake bite with a knife or razor.
- Do not try to suck out the venom by mouth.
- Do not give the person stimulants or pain medicines unless a doctor tells you to do so.

First Aid

- Keep the person calm. Restrict movement, and keep the affected area below level to reduce the flow of venom.
- Remove any rings or constricting items, because the affected area may swell. Create a loose splint to help restrict movement of the area.
- If the area of the bite begins to swell and change color, the snake was probably venomous.
- Monitor the person's vital signs – temperature, pulse, rate of breathing, and blood pressure – if possible. If there are signs of shock (such as paleness), lay the person flat, raise the feet about a foot (30 centimeters), and cover the person with a blanket.
- Get medical help right away.
- Bring in the dead snake only if this can be done safely. Do not waste time hunting for the snake, and do not risk another bite if it is not easy to kill the snake. Be careful of the head when transporting it – a snake can actually bite (from a reflex) for several hours after it's dead.

2.3.7 SUGGESTED QUESTIONS

1. Define yoga and its benefits.
2. Explain the techniques and benefits of Vajrasna, Parvatasna, Gomukhasna and Padamasna.

2.3.8 BOOKS RECOMMENDED

1. Bucher, C. A. (1964). *Foundations Of Physical Education.* New York: Mosby and Company.
2. Kang Gurpreet Singh & Deol Nishan Singh (2013). *An Introduction to Health and Physical Education,* 21st century publications, India.
3. Dreze, Jean & Aparajita Goyal (2003). Future of Mid-Day Meals, Economic and Political Weekly, November 4673-4683 (special articles).