GOVERNMENT OF TAMIL NADU

PHYSICAL EDUCATION

TEACHER'S RESOURCE BOOK

CLASSES : 11 & 12

UDARKALVI - UYIRKKALVI

Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

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PREFACE

"Movement is life and life is movement".

Udarkalvi Uyirkkalvi

The Department of School Education has launched a comprehensive physical education programme for holistic development across all the schools of the state. This initiative aims not only to boost physical fitness but also to foster character building, social skills and overall well-being among students.

The regular lifestyle of students was affected due to the restrictions that prevailed during the COVID-19 pandemic period and thereafter. They were unable to use the playgrounds for regular physical activities, which reduced the functioning of their immune system. To change the situation, proper physical education curriculum for students is mandatory. Hence, the Department of School Education has taken steps to implement a physical education curriculum. This initiative is not merely a response to current trends but a proactive step towards nurturing all-rounded students who are equipped to face the challenges of the 21st century.

The curriculum framework-2017 by the Tamil Nadu government emphasises, "It is important to make our students understand and feel proud of our rich cultural heritage, tradition, history, art and literature". Keeping this in mind, this initiative focuses on the students' overall development of physical and cognitive abilities with a wide range of activities that will help to nurture their values and attitudes towards our culture and heritage. Special provisions are made to ensure that children with special needs (CWSN) are fully integrated into the programme. Adaptations and modifications are implemented to make physical activities accessible and enjoyable for all students, regardless of their physical abilities or limitations.

There is a popular saying that "**உடற்பயிற்சி உடல் ஆரோக்கியம்** " which means excercise is physical health. Scientific practise is mandatory to excel in competitive sports and become an elite sportsmen. For higher secondary level, advanced skills of sports and games, scientific basis of sports and games, asanas and breathing techniques, health and exercise nutrition and exercise therapy for lifestyle diseases are added. It will encourage the higher secondary students to lead a healthy lifestyle and refine their moral values.

This programme provides opportunities for students to excel and win medals at state, national and even international levels, further enhancing their sense of achievement and pride in their physical endeavours. Let us wholeheartedly welcome this initiative and collaborate towards creating a healthy and happy future for the students.

GENERAL GUIDELINES

Tips for Physical Education Teachers

Tips for physical directors and physical education teachers to effectively teach various aspects of physical education, including sports education, asanas and breathing techniques.

1. Sports Education

Sports education refers to the integration of sports and physical activity into the educational curriculum to promote holistic development. It teaches sportsmanship, fair play, values and integrity. It is important for personal and social development.

- **Teach rules and strategy:** Provide clear explanations of the rules and strategies for various sports, emphasising fair play and sportsmanship.
- **Organise tournaments:** Arrange intra-class or interschool tournaments to give students opportunities to apply their skills in competitive setting.
- **Foster teamwork:** Emphasise the importance of teamwork, communication and cooperation in team sports and encourage positive interactions among students.

2. Track and Field Events

- **Cover all events:** Introduce students to a variety of track and field events, including running, jumping, throwing and relay races.
- **Teach proper techniques:** Focus on teaching correct techniques for each event to maximise performance and reduce the risk of injury.
- **Provide practise opportunities:** Set up drills and practise sessions for students to refine their skills in track and field events.

3. Asana and Breathing Techniques

- **Teach proper form:** Demonstrate and explain the correct alignment and technique for various asanas (poses) and breathing exercises.
- **Emphasise mindfulness:** Encourage students to focus on their breath and cultivate awareness of their bodies and minds during asana practise.
- **Provide modifications:** Offer modifications and adaptations for students with different abilities or physical limitations to ensure inclusivity and accessibility.

4. Inclusion of Children with Special Needs (CWSN)

- **Individualise instruction:** Adapt activities and instruction to meet the unique needs and abilities of students with special needs, providing appropriate accommodations and support.
- **Facilitate inclusion:** Create a supportive and inclusive environment where all students feel valued and included, promoting empathy, respect and understanding among peers.
- **Collaborate with specialists:** Work closely with special education teachers.

WARM-UP EXERCISES

Arm circles: Rotate arms forward and backward in circular motions.

Shoulder shrugs: Lift the shoulders up towards the ears, then relax them down.

Neck stretches: Slowly tilt the head from side to side and forwards and backwards.

Torso twists: Stand with feet shoulder-width apart and twist torso from side to side.

Jumping jacks: Jump feet apart while raising arms overhead, then return to the starting position.

Skipping in place: Jumpoff the ground and swing arms in rythm while skipping on the spot.

Light apparatus warm-up: Perform gentle swings or circles with rhythmic apparatus like ribbons or hoops.

Indigenous dance movements: Incorporate traditional dance steps or movements from local cultural practises.

Dynamic stretches: Perform leg swings and arm swings to prepare muscles for explosive movements. It loosens up leg muscles.

Plyometric exercises: Include squat jumps, box jumps or lateral bounds to activate muscle fibres.

Joint rotations: Rotate wrists, ankles, shoulders and hip to improve mobility and flexibility.

Jogging: Start with a light jog to elevate heart rate and to increase blood flow to muscles.

High knees: Lift knees up towards chest while jogging to activate hip flexors and to warm-up leg muscles.

Butt kicks: Kick heels up towards the gluteus while jogging to warm-up hamstrings and calf muscles.

Agility ladder drills: Perform various footwork patterns such as high knees, side shuffles and quick steps through an agility ladder.

Dynamic leg swings

- **Forward swings:** Activates the hip flexors, hamstrings and quadriceps, improving flexibility and range of motion in the legs.
- **Side-to-side swings:** Engages the adductors and abductors, promoting lateral mobility and stability in the hip.
- **Across-the-body swings:** Enhances hip mobility and coordination while stretching the gluteus and outer hip muscles.

Dynamic arm swings

- **Swings across-the-body:** Mobilise the shoulders, chest and upper back, preparing the upper body for dynamic movements.

- **Overhead swings:** Loosen up the shoulder joints and improve shoulder flexibility, crucial for overhead movements and reaching actions.
- **Side swings:** Activate the deltoids and trapezius muscles, promoting shoulder stability and mobility in various planes of motion.

Leg raises

- **Front leg raises:** Strengthen the hip flexors and core muscles, improving balance and stability during leg movements.
- **Side leg raises:** Target the abductors and gluteus medius, enhancing hip abduction strength and stability.
- **Back leg raises:** Activate the hamstrings and gluteus, improving hip extensions and posterior chain strength.

Ankle circles

Improve ankle mobility and proprioception, reducing the risk of ankle sprains and enhancing overall lower limb function and agility.

Dynamic trunk twists

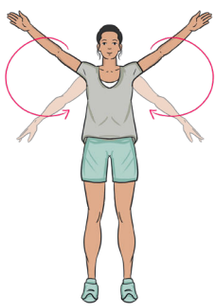
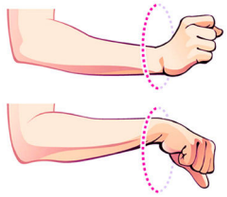
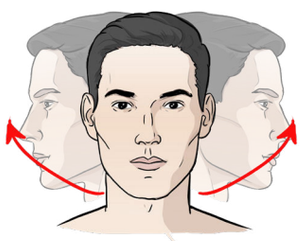
Mobilise the thoracic spine and oblique muscles, improving spinal rotation and core stability for rotational movements.

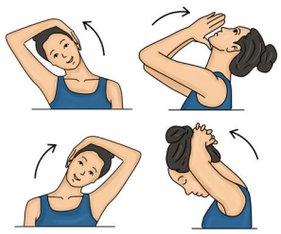
Hurdle mobility drills

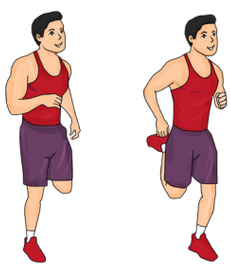
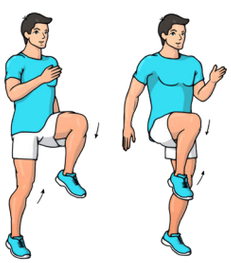
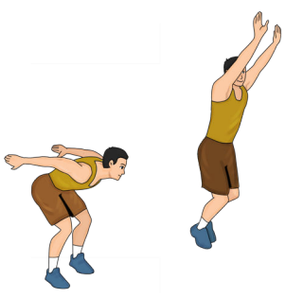
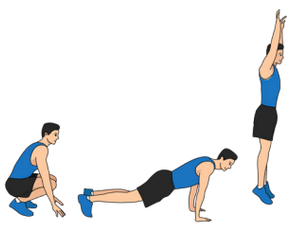
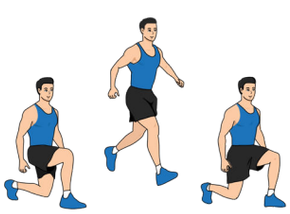
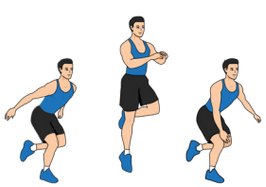
Enhance agility, coordination and dynamic balance, mimicking the movement patterns involved in sports and athletic activities.

Dynamic Hamstring Stretch

Increases flexibility in the hamstrings and lower back, reduces the risk of muscle strain and improves the functional movement patterns like bending and reaching.

Warm-Up Exercises			
Mobility Exercises			
Shoulder Rotation	**Wrist Rotation**	**Ankle Rotation**	**Neck Semi Rotation**
			

Stretching Exercises			
Neck	**Shoulder**	**Triceps**	**Chest**
			
Lateral	**Hamstring & Calf**	**Quadriceps**	**Groin**
			

Athletics Warm-Up Exercises			
Butt Kick	**Galloping**	**High Knee**	**Vertical Jump**
			
Burpee	**Jump Lunge**	**Single Leg Hop**	**Bounding**
			

WARM-DOWN ROUTINE

After physical activity, it's essential to cool down properly to help the body recover and prevent injury. Here's a simple warm-down routine to follow:

1. **Walking:** Begin by walking slowly for about 5 to 10 minutes. This helps to gradually lower the heart rate and relax the muscles back to the resting state.
2. **Stretching:** Perform static stretches for all major muscle groups that were involved in the activity. Hold each stretch for 15 to 30 seconds. Focus on areas like calves, hamstrings, quadriceps, groin, hip, lower back, shoulders and chest. Static stretches improve flexibility.
3. **Deep Breathing:** Spend a few minutes and practise deep breathing exercises. Inhale deeply through nose, expanding the belly exhale slowly through mouth by contracting the belly. This can help to relax the body and reduce tension.
4. **Hydration:** Drink plenty of water to rehydrate the body after exercise. Aim to replenish any fluids lost during the workout to help with recovery.
5. **Reflection:** Take a moment to reflect on the workout. Consider what went well and identify any areas that require improvement. These experience helps in the modifying the workout in the future.
6. **Light Cardio:** After walking, students can engage in some light cardiovascular activity such as cycling on a stationary bike or using an elliptical machine at a low intensity. This brings the heart rate to normal and promotes proper blood circulation.
7. **Dynamic Stretching:** Dynamic stretching helps to improve flexibility, mobility and muscle coordination. It involves moving parts of the body through a range of motion. Examples: leg swings, arm circles, hip circles and trunk rotations.
8. **Pilates:** Consider ending the workout with a few pilates poses to enhance flexibility, balance and core strength. Poses like downward-facing dog, child's pose, cat-cow stretch and spinal twists can help to release tension and promote relaxation.
9. **Self-Massage:** Use a tennis ball or massage roller to perform self-myofascial release techniques on areas of tightness or discomfort. Apply gentle pressure to target knots or trigger points in the muscles to gradually relieve tension.
10. **Progressive Relaxation:** Lie down in an accustomed position and practise progressive muscle relaxation. Tense each muscle group in the body for a few seconds, then release and relax completely. Focus on each muscle group, starting from the toes to the head.
11. **Cool down Walk:** Finish the warm-down routine with another short walk to allow the body to gradually return to its pre-exercise state. This can also be a good opportunity for mental relaxation and reflection on the workout.

During the warm-down routine, pay attention to the body and adjust exercise intensity. Provide guidance when the students feel discomfort. Prioritise the cool down exercises based on personal preferences, fitness level and the demands of the activity to enhance recovery, flexibility and well-being.

METHODS OF TEACHING

Teaching physical education to students from class 11 requires a diverse range of methods to engage learners effectively. Here are some approaches commonly used:

1. **Demonstration:** Teachers can demonstrate proper techniques for various exercises, sports and activities. Visual learning aids such as videos or live demonstrations, help students to understand the correct forms of execution.
2. **Instructional Games:** Incorporating games that teach specific skills or concepts related to physical education can make learning enjoyable and interactive. These games can focus on teamwork, strategy, coordination and other fundamental sports skills.
3. **Part Method:** This approach involves breaking down complex skills or movements into smaller parts and teaching them separately before integrating them into the whole skill. For example, in teaching a basketball layup, students must be taught to learn proper footwork, then trained for proper arm motion and finally combine both actions into a complete layup.
4. **Progressive by Part Method:** Similar to the part method, this approach focuses on teaching individual components of a skill, but it emphasises sequential mastery of each part before progressing to the next. Students master one part before moving on to the next, ensuring a solid foundation before advancing. For instance, in teaching a tennis serve, students might first learn the grip and then focus on the tossing motion, followed by the swing.
5. **Whole-Part-Whole Method:** In this method in physical education, students are provided with a holistic understanding of the skill or activity. The students also receive focused instruction on the specific components that make up the skill.
   - **Whole Method:** Begin by demonstrating or introducing the complete skill or activity to the students. For example, if teaching a volleyball serve, demonstrate the entire serving motion, from the starting position to the contact with the ball and the follow through.
   - **Part Method:** After demonstrating the whole skill, break it down into its component parts. Focus on teaching each part separately, emphasising proper technique and execution. For example, in a volleyball serve, it involves tossing the ball, footwork, swinging the arm in contact with the ball.
   - **Whole (again) Method:** Once students have had the opportunity to practise and master the individual parts of the skill, integrate them back into the whole skill. Encourage students to apply what they've learnt by performing the complete skill, incorporating all the individual parts they've practised.
6. **Set-Drill Method:** In this method, a set of related skills or exercises is taught together in a structured sequence. For example, a set method could involve teaching a series of asanas in a specific order, gradually increasing in difficulty.
7. **At-will Method:** This method gives students autonomy to choose the activities or exercises they want to participate in, based on their interest and fitness goals. Teachers provide guidance and support as students select and engage in activities that align with their individual needs and motivations. This approach promotes student ownership and autonomy in their physical education experience.

8. **Imitation Method:** This method involves demonstrating a skill or activity for students to observe, then asking students to replicate the demonstrated action. For example, a teacher might demonstrate a proper push-up technique and students would imitate the movement. Students receive feedback on their form. This method emphasises observational learning and can be effective for teaching basic skills or movements.

9. **Skill Stations:** Setting up skill stations allows students to rotate through different activities. Students practise various skills or drills in small groups. This approach promotes individualised learning skills and provides opportunities for hands-on practice.

10. **Peer Teaching:** Assigning students to teach specific skills or activities to their peers. This encourages collaboration. This method reinforces learning. Peer teaching also helps build leadership skills and fosters a supportive learning environment.

11. **Problem-Based Learning:** Students are presented with real-life scenarios or challenges related to the activity. The students are asked this to find solutions encourages critical thinking and decision-making. This method promotes active learning and application of knowledge.

12. **Fitness Circuits:** Organising fitness circuits with different exercise stations allows students to work on various aspects of physical fitness. Rotating through stations keeps the practice of engaging and activating different muscle groups.

13. **Inquiry-Based Learning:** Encouraging students to ask questions and explore topics related to physical education promotes curiosity and deeper understanding. Teachers can facilitate discussions, research projects or experiments.

14. **Technology Integration:** Incorporating technology such as fitness apps, wearable devices or interactive software will enhance learning experiences in physical education. Virtual simulations, online resources and video analysis tools provide additional opportunities for skill development and feedback.

15. **Adventure Education:** Outdoor activities, adventure sports and team-building challenges provide opportunities for experiential learning and personal growth. These activities promote risk-taking, problem-solving, leadership and resilience.

16. **Differentiated Instruction:** Recognising and accommodating students' diverse learning needs and abilities is essential in physical education. Teachers can modify physical activities and provide alternative options to ensure all students to participate and succeed.

Note: Teachers should teach activities ensuring the health, environment and safety of students while engaging them in games, exercises, asanas and breathing exercises.

General Lesson		
S. No.	**Methods of Physical Education Lesson**	**Duration (45 min)**
1.	Assembly and Roll Call	2 min
2.	Warm-Up Part	5 min
3.	Formal Part	10 min
4.	Special Part	8 min
5.	Recreation Part	18 min
6.	Assembly and Dismissal	2 min

Particular Lesson		
S. No.	**Methods of Physical Education Lesson**	**Duration (45 min)**
1.	Assembly and Roll Call	2 min
2.	Suitable Warm-Up Exercises	5 min
3.	Teaching the Skill	8 min
4.	Practising the Skill	15 min
5.	Lead Up Activity	12 min
6.	Assembly and Dismissal	3 min

Note – Assembly and Roll Call, Assembly and Dismissal to be done in all Physical Education Classes.

LEARNING OBJECTIVES

Classes : 11 & 12

Unit- I Scientific Basis of Physical Education

- To gain knowledge and understand the key principles of Physical Education.
- To understand the impact of science in Physical Education.

Unit-II Sports Education

- To learn skills and techniques of games and sports.
- To interpret the rules and regulations of games and sports.
- To improve sports performance and excel in competitions.
- To develop sportsman spirit among students.

Unit-III Asanas and Breathing Techniques

- To know the different body postures in asanas.
- To understand the importance of breathing while practising asanas.
- To understand the different types of breathing techniques.
- To develop neuromuscular coordination and concentration.

Unit-IV Health and Exercise Nutrition

- To know the concept and different dimensions of health.
- To recognise various indicators of health.
- To orient students on the risks associated with dehydration and its impact on performance.
- To practise proper hydration methods during exercises.
- To know the importance of homemade sports drinks and how to prepare different homemade sports drinks.

Unit-V Career Opportunities in Sports

- To understand academic eligibility and sports performance requirements for Physical Education courses.
- To recognise educational requirements and job responsibilities associated with different sports related professions.

Unit-VI Exercise Therapy for Lifestyle Diseases

- To understand lifestyle diseases and its risk factors.
- To learn simple exercise therapy techniques in prevention and management of lifestyle diseases.

CLASS – 11

INDEX

Day 1

Kabaddi
Toe Touch

45 Minutes

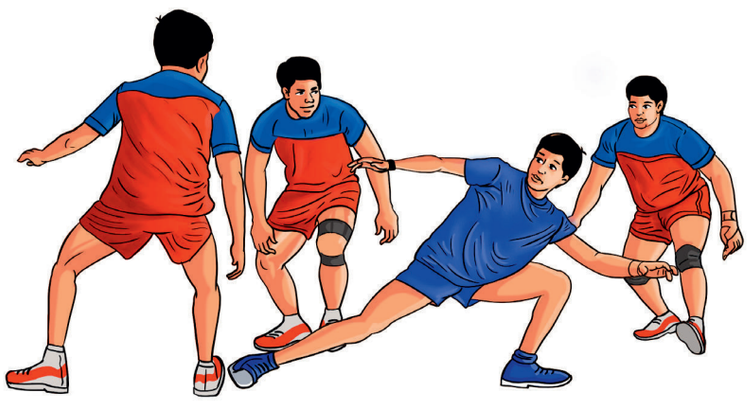
LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- A raider should stand in a balanced position with knees slightly bent and feet apart. This stance helps him move his legs quickly towards his opponents.
- After watching the movements of the opponents, the raider quickly extends his leg to touch the opponent's foot with his toe.

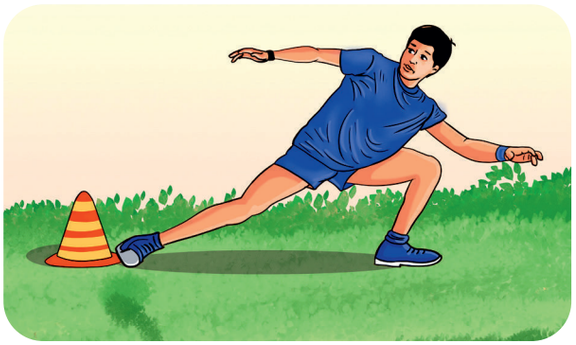


- The raider should stretch his hands a little forward to defend himself, if the opponents try to catch him.
- During this attempt, the raider's body should lean towards the midline and body weight should be shifted to the rear leg.
- As soon as he touches the anti, he quickly withdraws the leg and moves quickly toward the midline.

Practising the Skill

- Set up multiple practise stations, each focusing on a different aspect of the toe touch skill.
- Organise the class into smaller groups and schedule rotations at regular intervals.
- This ensures that students get exposed to a variety of drills and exercises, to enhance their learning of the toe touch skill.

Lead Up Activity



Place cones in a straight line, approximately 5 to 10 metres apart, depending on the skill level. Ensure that there's enough space around the area to move freely. The players line up from the starting cone. After the signal, the first player runs towards the next cone and touches it with the toe. Then, the player quickly returns to the starting cone and touches it with the hand. Repeat this back-and-forth movement for 30 seconds, emphasising the importance of technique over speed. All students should do the same.

Day 2

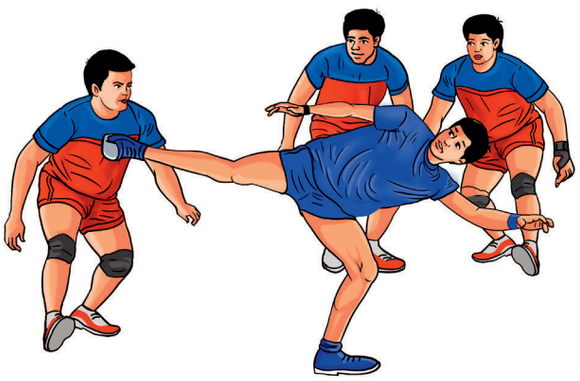
Kabaddi

Kicking

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



- A raider should stand in a balanced position with feet apart.
- The stance should help the raider to move his legs quickly forward and backward.
- After watching the movements of the opponents, the raider quickly swings the nearest leg to touch the opponent while moving from one corner to another.
- During this attempt, the raider's body should lean towards the midline and his body weight should be shifted to the rear leg.
- Immediately after the kick, the player should withdraw his leg quickly and move fast towards the midline.

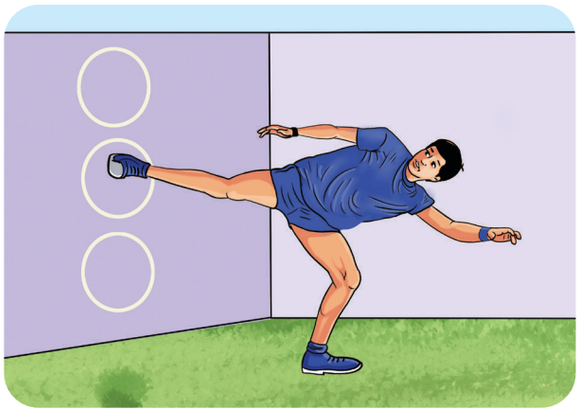
Practising the Skill

- Pair students for partner drills where they take turns and attempt to touch each other with kicks.
- This simulates real-game situations and helps students practise speed, strategy and timing.
- Ensure that safety protocols are followed to prevent injuries.

Lead Up Activity

Target Practise

Set targets for students to aim their kicks during the practise session. It could be a designated area on a wall or a hanging target. Encourage students to focus on accuracy and precision while kicking.



Day 3

Kabaddi

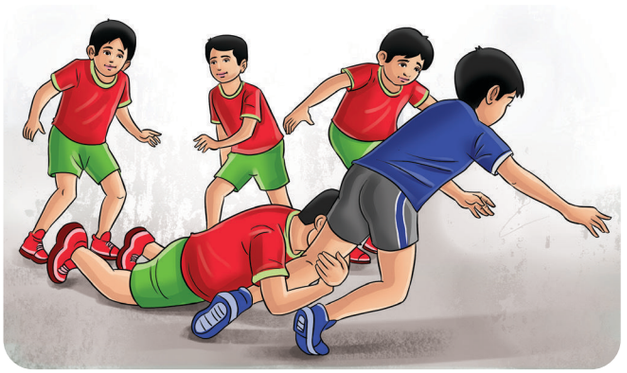
Knee Catch

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- A defender should stand in a balanced position with the knees slightly bent.
- The defender should lean the body backward and keep the hands close to the knees.
- The defender should always be ready to catch the raider if he keeps one leg forward and very closer to the defender.
- As soon as he catches the knee, the defender should raise the raider's leg upward to unbalance the opponent.



Practising the Skill

- Organise the students into smaller groups and set up different skill stations focusing on specific aspects of knee catch.
- Rotate groups through these stations to ensure that everyone gets ample practise of knee catch.

Lead Up Activity

Pair-up with a teammate to practise the knee catch technique in a controlled setting. One student acts as a raider while the other focuses on executing the knee catch. Switch roles periodically to allow both students to practise the skill.

Day 4

Kabaddi
Waist Catch

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- A defender should stand in a balanced position with knees slightly bent.
- The defender should lean his body a little forward and keep his hands ready.
- When the raider is not aware of the corner defender, move forward and catch his waist firmly.
- The defender should always be ready to catch the raider's waist, when the raider fails to notice the defender behind.
- As soon as the defender catches the raider's waist, the defender should pull the raider towards the end line.

Practising the Skill

- Organise the students into smaller groups and set up different skill stations focusing on specific aspects of waist catch.
- Rotate groups through these stations to ensure everyone gets ample practise of waist catch.

Lead Up Activity

Pair-up with a teammate to practise waist catch technique in a controlled setting. One student acts as a raider while the other focuses on executing the waist catch. Switch roles periodically to allow both students to practise the skill. The player who catches more number of times is the winner.

Day 5

12 Stage Asana

45 Minutes

This is generally known as 'Surya Namaskar'.

1 Pranamasana (Invocation Pose)

Face east, stand on the mat with feet together and hands in invocation position (normal breathing).

2. Hasta Uttanasana (Backward Bending Pose)

Inhale and raise the hands upward and bend backward without bending the knees.

3. Padahastasana (Forward Bending Pose)

Exhale and bend the body forward without bending the knees and touch the floor in front of the foot with the hands. Try to touch the knee with the forehead.

4. Ashwa Sanchalanasana (Equestrian Pose)

Inhale and move the left leg backwards. Keep the right leg in between both hands and look straight.

5. Parvatasana (Mountain Pose)

Inhale and move the left leg back in line with the right leg and place palms on the ground. Then exhale and raise the hip upward to bring the head towards the floor without moving the hands and legs. Keep the palms in line with the foot in a straight line. The position will be like an inverted alphabet "v".

6. Ashtangaasana

Exhale and bring the body forward to touch the floor except the lower abdomen. The eight body parts, namely the forehead, chest, two knees, two palms and two feet touch the floor.

7. Bhujangasana (Cobra Pose)

Inhale, raise the head and chest up, keep the elbows flexed, slightly bent while the lower abdomen touches the floor.

8. Parvatasana (Mountain Pose)

Exhale and raise the hip upward to bring the head towards the floor without moving the hands and legs. The position will be like an inverted alphabet "v".

9. Ashwa Sanchalanasana (Equestrian Pose)

Inhale and move the right leg forward and place the left leg in between both hands and look straight.

10. Padahastasana (Forward Bending Pose)

Exhale and bend the body forward without bending the knees and touch the floor in front of the foot with the hands.

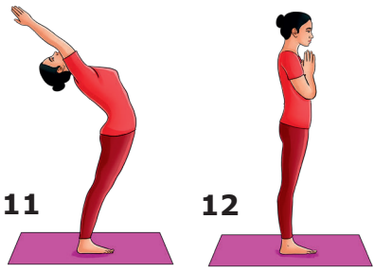
11. Hasta Uttanasana (Backward Bending Pose)

Inhale and raise the hands upward and bend the body backward without bending the knees. (Inhale).

12. Pranamasana (Invocation Pose)

Back to stage one – Pranamasana pose (normal breathing).

Note: When continuing the second time, stage 4 and 9 should be done with alternate legs.



Benefits

- Helps to maintain cardiovascular health.
- Stimulates the nervous system.
- Helps with stretching, flexing and toning the muscles.
- Excellent exercise for weight management.
- Strengthens the immune system.
- Enhances cognitive functions.
- Strengthens the body and relaxes the mind.
- Improves overall health.

Savasana

Pose : Death Pose

Position: Supine lying position

Procedure

- Lie down with hands and feet apart. Palms should face upwards and drop feet sideways freely. Keep head sideward.
- Be aware of different parts of the body. Starting from toes to head. Feel, the spread of relaxation in all parts of the body progressively.
- Inhale and exhale slowly and deeply.
- Retain the same position for a few minutes.

Benefits

1. Freshens the mind and relaxes the whole body.
2. Reduces mental stress and physical strain.

Day 6

Beach Volleyball

Passing

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Passing

- It is a forearm pass, also called as bump.
- In this technique, the ball touches the inner part of the forearms at waist level. The ball should hit between the lower limb and the wrist.

Practising the Skill

Two-on-Two Drill

- Simulate game situations by playing two-on-two drills. Focus on communication, positioning and teamwork.

Lead Up Activity

Three-Touch Game

Group the students in pairs. Each pair plays against the other. Students are restricted to three touches per rally (passing, setting, spiking). The pair which scores 10 points first is the winner. The winning team can play against the next team. The team winning the final match is the winner. This game encourages efficient passing, setting and spiking.

Day 7

Beach Volleyball

Attacking & Blocking

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Attacking

- The beach volleyball attack should be either a spike or a shot.
- A spike involves hitting the ball hard with one hand in a downward curve, whereas a shot is a soft attack in order to place a ball in a no man's area.

Blocking

- Blocking in beach volleyball is a defensive play where players jump to use their arms to block the opposing hitters over the net.

Practising the Skill

- Practising the attack skill with the help of the partner.

Lead Up Activity

Hitting and Blocking Game

Group the students equally into two teams. One team of students has to hit the ball one by one and another team of students has to block the ball one by one. Each successful hit and block gets one point. Each student hits and blocks on a rotational basis. The total points scored on hitting and blocking will be added and the team scoring the most points will be the winner.

Day 8

200m Run

Start and Acceleration Phase

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills in the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

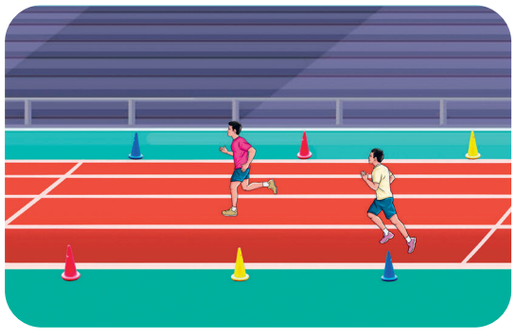
Types of Start

- Bullet / Bunch start
- Medium start
- Elongated start

Procedure

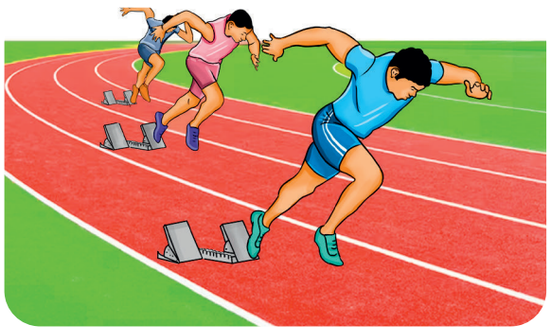
- Athletes start in a crouched position with their hands placed at shoulder level from the starting block.
- The front foot is placed slightly ahead of the back foot, with the knees positioned approximately at a 90° angle.
- Athletes should keep their hips low, back flat and head aligned with their spine to maximise power and acceleration when driving out of the blocks.
- Athletes must react quickly to the starter's gun or signal.
- Explosive drive with the legs, focusing on pushing off forcefully with the front foot while driving the back knee forward.
- Athletes should pump their arms forcefully backward, maintaining a 90° angle at the elbow.
- The arms should move in sync with the legs, driving back and forth rhythmically.
- The atheletes should lean forward at an angle of 45°.
- Athletes should keep their head down and aligned with their spine during the initial drive phase.
- Clear the drive phase, transition into the upright sprinting position.
- Gradually rise to an upright stance while maintaining forward momentum.

Practising the Skill



- Set cones or markers for a 30-metre sprint.
- Start with a gradual acceleration over the first 10 metres, then sprint at maximum effort for the remaining 20 metres.
- It helps to simulate the transition from acceleration to top speed.

Lead Up Activity



Acceleration Runs

Mark a distance of about 30 to 40 metres on the track. Start from a standing position or crouched position and accelerate as quickly as possible over the marked distance. Focus on driving the knees up, swinging the arms forcefully and maintain a forward lean.

Day 9

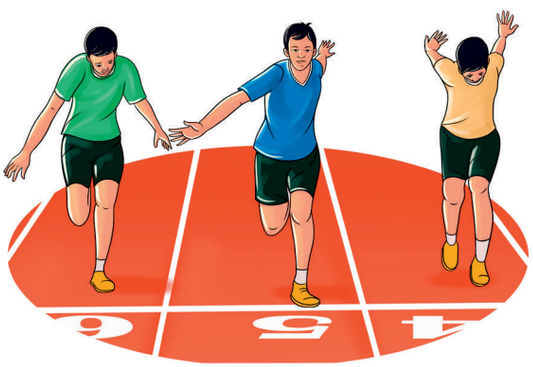
200m Run

Curve Running and Finish

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



- After about 40 to 60 metres of sprinting, transition from acceleration to maximum speed.
- Focus on quick leg turnover, powerful arm movement and relaxed shoulders.
- Raise knees high and extend legs forcefully to maximise stride length and frequency.
- Pump arms back and forth forcefully in sync with leg drive, elbows at 90° angle.
- Lean slightly into the curve, take shorter, quicker strides and swing arms across the body for balance.
- Transit gradually to an upright position to maintain speed.
- Lean forward in the final strides, extending the torso towards the finish line for maximum momentum.

Practising the Skill

- Organise the group into pairs or small teams.
- Start with short sprints (e.g. 30m) and gradually increase the distance with each repetition (e.g. 50m, 80m, 100m).
- Focus on maintaining speed and form throughout the entire distance, especially during the final portion of the sprint.

Lead Up Activity

Chase and Catch

Assign one participant as the "chaser" and the others as the "runners." The chaser starts a short distance behind the runners. The runners sprint for a predetermined distance (e.g. 150m), aiming to finish before the chaser catches them. This drill simulates the competitive aspect of finishing strong while under pressure.

Day 10 — Tadasana and Breathing Techniques

45 Minutes

Preparatory Exercises

- Stand normally and do the following sequence for 1minute.
- Inhale and stretch the arms upward.
- Exhale and bring the arms to shoulder level.
- Inhale again at shoulder level.
- Exhale and bring down the hands.

Posture: Palm Tree

Position: Standing

Procedure

- Stand in an erect position, bring the legs together and place the hands on the side of the thighs.
- Look straight ahead, slowly raise the hands upward through sideways with the palms facing each other.
- Raise the hands towards the sky with the palms facing upward, slowly raise the heels and try standing on toes. Raise the heel and stretch the body 10 to 15 seconds as much as possible.
- Now, return to the original position with the heels going back on the ground first. Slowly bring down the arms.

Benefits

- It helps to increase height and correct posture as the spine becomes flexible.
- It improves digestion and respiration.
- It tones up the leg muscles and strengthens knees, ankles and thighs.
- It helps to relieve sciatica (pain radiating along sciatic nerves) and also rectify flat feet.

Breathing Techniques - Focused Attention

Find an accustomed position with minimal distractions. Close the eyes and take attention to the sensation of respiration (inhale and exhale). It helps to develop focused attention amongst students.

Savasana: After completing Focused Attention Breathing, do Savasana.

Day 11

Basketball

Dribbling

45 Minutes

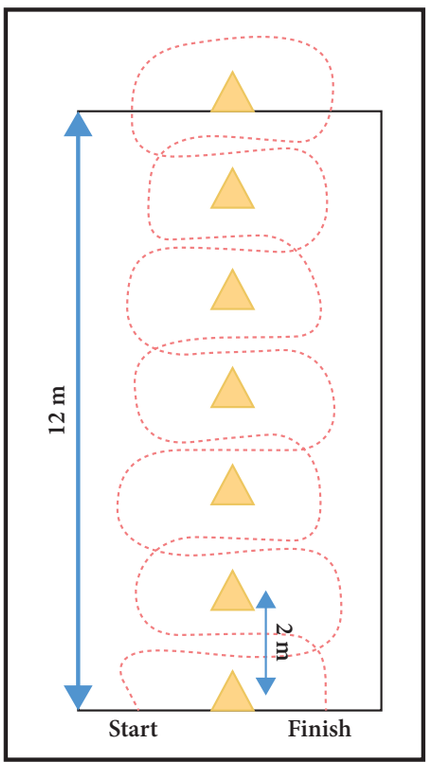
LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- The students are asked to stand in a proper formation. The students observe the teacher's demonstration of dribbling with an adequate explanation of the following steps.
- Mark a start or finish line with 12m distance and place a cone in the centre of the start or finish line.
- In between, place a cone for every 2m.
- The students begin dibbling from the starting line.
- The students must dribble in a zigzag way.



Practising the Skill

Organise the class equally into two or more groups. Each group occupies the field where they are practising the skill of dribbling. The teacher has to supervise and guide the students during the practice session.

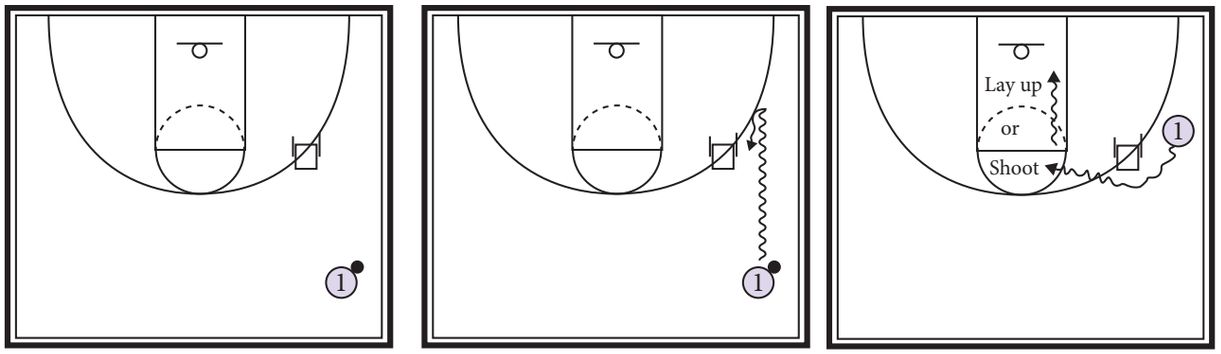
Procedure

- The students start on the left or right side of the cone on the start or finish line.
- The students dribble the ball, weaving in and out of all the cones.
- The time starts when the students begin to dribble and its stops once they have returned and crossed the line.
- During the second turn, they start dribbling on the other side of the cone.
- The students must properly dribble the ball during their turns.

Lead Up Activity

Dribble Screens

Set a chair 20 feet away from the base line. Students start with the ball near mid-court. Students dribble the ball towards the chair and pass the ball through it. Then change the side of the dribble and finish with the shoot.



Day 12

Basketball

Catch and Pass

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

The students are asked to stand in proper formation. The students observe the teacher's demonstration of the catch and pass with an adequate explanation of the following steps.

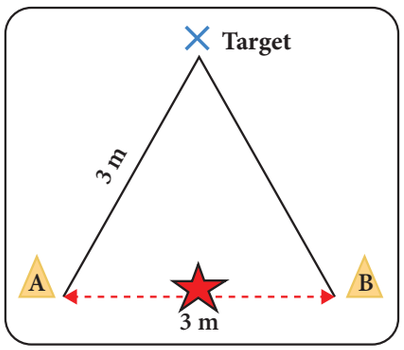
Catching

- Stretch the hands out from chest level with fingers pointed up and spread.
- Hold the ball with thumbs.
- Keep the eyes on the direction of the ball when receiving.
- Bring the arms back slightly to absorb the force of the ball.

Passing

- Pass the ball into the receiver's hands.
- Grip the ball firmly by holding the ball with thumbs behind it.
- Step forward and throw the ball.
- Thumbs pointing downwards after release.

Practising the Skill



The class is organised equally into two or more groups. Each group occupies the field where they are practising the skill taught to them. The teacher moves from one group to another, supervising and guiding the students.

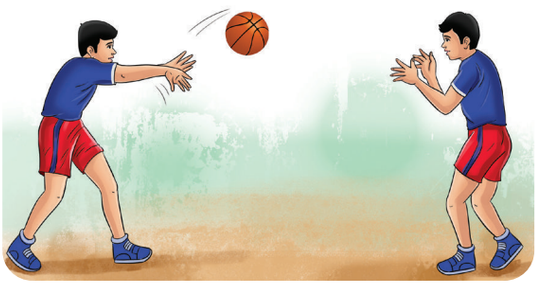
Procedure

- Draw a 3m x 3m triangle.
- At one point, the target (student) is standing to receive and pass the ball.
- At the other two points are marked as △, place cones (A and B).
- Between the two cones, mark a ★ to indicate the middle of the 3m line.
- The students stand in the middle of cones A and B.
- Pass the ball to the target and then move quickly to cone A or B, to receive the ball from the target.
- The students continue to move between cones A and B to catch and pass the ball for 60 seconds.

Scoring

- 1 point will be awarded for perfect pass and catch.

Lead Up Activity



Pair Passing

Students are paired up and face one another about 8 feet apart. They then pass the ball back and forth, making sure that they step toward their partner to pass and receive the ball. Gradually, partners move further apart as they master this game.

The pair which continuously does the catch and pass without missing the ball is declared the winner.

Day 13 — Basketball

Perimeter Shooting

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

The students are asked to stand in a proper formation. The students observe the teacher's demonstration of the perimeter shooting with an adequate explanation of the following steps.

Shooting Rules

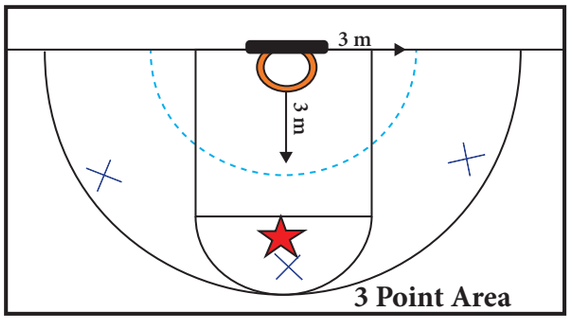
- Measure and mark 3m to the right, left and centre from the middle of the backboard.
- Connect all the 3 marks to form a semicircle. They can be connected with dotted lines.
- The students must shoot the ball for 60 seconds.

Practising the Skill

Organise the class into two or more groups. Each group occupies the field where they are practising the skill taught to them. The teacher moves from one group to another, supervising and guiding the students.

Procedure

- The students stand behind the free throw line.
- The time starts and the students dribble to the 3m and attempt their shots.
- The students then retrieve their own rebound and return to free throw line to make another attempt.
- The students have 60 seconds to complete as many shots as they can.



- If the students performed well, they can take shoots from behind the 3 point line.

Scoring

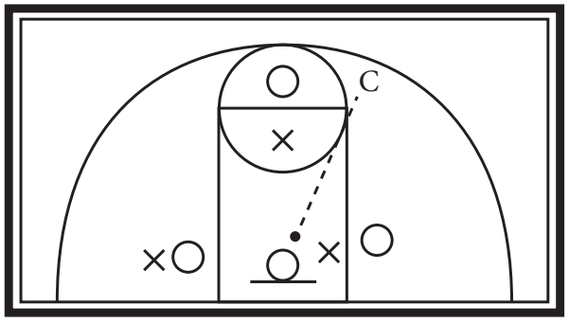
- A ball is thrown from behind a 3 metre arc if it falls into the basket, 2 points will be awarded.
- A ball is thrown from behind a 3 point area if it falls into the basket, 3 points will be awarded.
- No points are awarded for any missed shot.

Lead Up Activity

Niner

Focusing Skill: Shooting

Using cones, mark out nine spots over the court area. The students should shoot from each spot. A student can move to the next spot after making a shot. Each student counts the number of attempts it takes to complete all nine shots. Students who take minimum number of attempts to complete nine shots should be the winner, who is also called as "Niner".



Day 14

Basketball

Four Corners Pivoting Skill

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

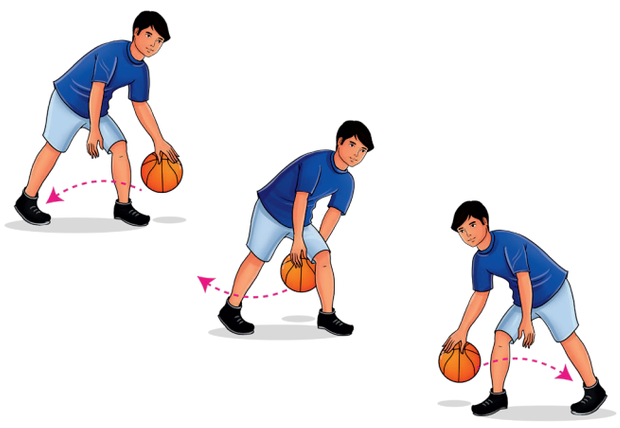
The students are asked to stand in a proper formation. The students observe the teacher's demonstration of the catch and pass with an adequate explanation of the following steps.

Procedure

- From a large square in the half-court by placing four cones at an even distance apart.
- Place another cone in the exact middle of the square.
- The students are organised into four groups and assembled near each cone.
- Basketball is given to students who stand in front of each team. The teacher demonstrates both left and right dribbles as well as appropriate pivot too.
- When the teacher calls out 'go', each student with a basketball dribbles in towards the middle cone, performs a jump, stops a couple of feet away, pivots and then passes to the next student and joins the team.
- The next student who catches the basketball starts only after the teacher's instructions.

Practising the Skill

The class is organised into two or more groups. Each group occupies the field where they are practising the skill taught to them. The teacher moves from one group to another, supervising and guiding the students.



8 Shape Dribble

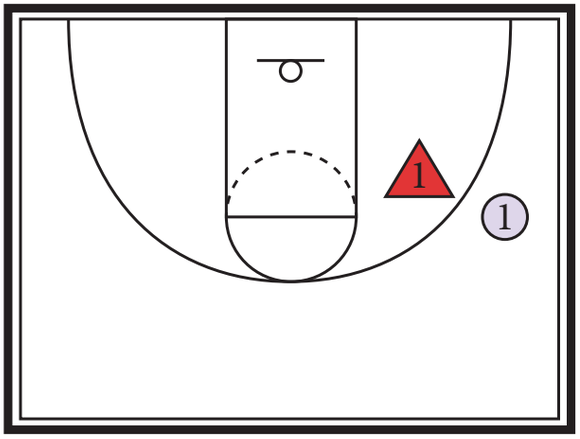
Procedure

- The students dribble the ball around one leg, between the legs, then around the other leg, forming a figure of 8 pattern.
- Repeat for 30 to 60 seconds.
- Then practise in the opposite direction.

Lead Up Activity

5 Seconds Pivot, 5 Seconds Dribble

Students shall be paired and each take the role of offensive and defensive player. The offensive students with the ball do pivot and fake for 5 seconds, then perform a stationary dribble for 5 seconds. The defensive students can go for tackle. One point should be awarded for a successful offensive pivot, dribble and vice versa.



Day 15 — Padahastasana and Breathing Techniques

45 Minutes

Preparatory Exercises

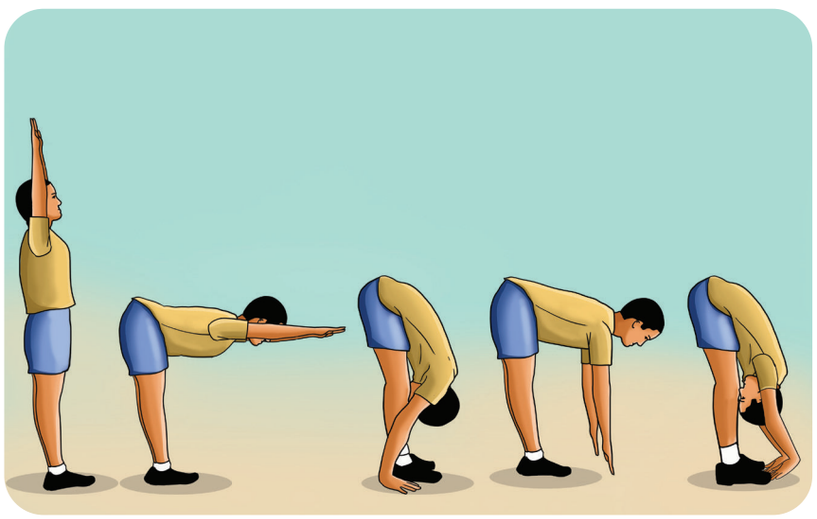
Students assemble in a well ventilated place, leaving enough space in between them and do the following exercises namely, neck stretching, shoulder rotation, arm swings, spinal twists-trunk twisting both sides and hamstring stretches, long sitting and forward bend.

Posture: Joining Palm And Feet

Position: Standing

Procedure

- Stand upright with feet together. Distribute body weight evenly across both feet. Inhale and stretch out the arms in line with the shoulders to raise the arms upward, palms facing front.
- Exhale and bend forward at the hip, keeping the spine long and straight. As fold, bring the hands down towards the floor. Aim to keep the knees as erect as possible.
- Then place the palms on the sides and let the hands rest on the ground beside the feet. Exhale, deepen and touch the forehead with the knee.
- Hold this position for 10 to 15 seconds. Maintain steady and even breaths throughout the hold.
- Gradually release the hands and inhale to return to the starting position.



Benefits

- Stretches and strengthens the thighs and knees.
- Improves digestion through abdominal compression.
- Calms the mind and helps to relieve stress.
- Help to alleviate headache and insomnia symptoms.

Breathing Techniques - Breathe Count

With focused attention, students silently count each inhalation and exhalation. For example, "In (one), out (two), in (three) and so on."

Savasana: After completing breathe count, practise Savasana.

Day 16

Boxing
Parrying

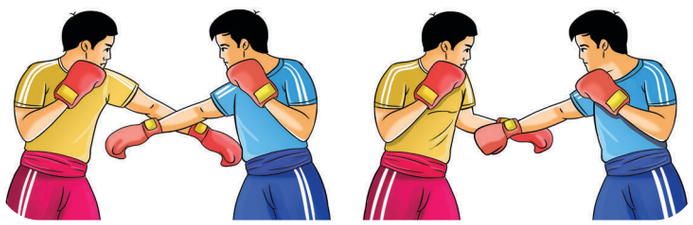
45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



- Keep the hands up, protecting the face and upper body.
- Boxers' lead hand is typically used for parrying.
- Watch the opponent closely and anticipate their punches.
- React quickly to their movements to effectively parry their strikes.
- Position oneself at an angle to the opponent, maintaining a suitable distance to effectively parry their punches.
- This allows the boxer to have better control and leverage to redirect the opponent's strikes.

Practising the Skill

- A pair of boxers can start in a boxing stance facing each other with gloves on.
- Begin at a distance where one can comfortably reach each other with jabs.
- The partner will start by throwing a jab towards the student's face at a moderate speed.

- The goal is to parry the jab with the lead hand while maintaining a solid stance.
- As one parries the jab and immediately returns with a counter jab of his own.
- The partner should be ready to absorb the counter punch on their punch pads.
- After a set number of repetitions or a designated time frame, switch roles with the partner.

Lead Up Activity

Parries with Partner

The partner throws a combination of punches and the student practises parrying each punch in the sequence. Start with simple combinations and gradually increase the complexity to improve the technique. Focus on maintaining proper defensive positioning and transitioning smoothly between parries.

Day 17 — Boxing

The Left Hook

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Move the body to the side and bring the chin down to the inside of the right shoulder to protect it.
- Pivot the toes, hip and the hand in the direction of the punch.
- Bring the left hand into a bending position from the side to the opponent's head.
- Execute a punch which curves toward the opponent's body.

Practising the Skill

- Utilise the heavy bag to practice throwing left hooks with power and precision.
- Start with slow, controlled punches, focusing on the technique.
- Then, gradually increase the speed and the power as one becomes more accustomed.

Lead Up Activity

Mirror Drill

Stand facing the partner at an accustomed distance, both of them in their boxing stances. Decide the observer and the performer for the first round. The observer closely watches the performer's technique and provides feedback at the end. The performer starts by throwing left hooks with moderate

power. Focus on proper form, weight transfer and rotation of the hip. Aim for the partner's midsection (lightly, to avoid injury). Pay attention to the rotation of the hip, the positioning of the elbow and the follow-through of the punch. After a few minutes of practice, the students swap roles. Repeat the drill for multiple rounds. The player who punches more is the winner.

Day 18

1500m Run

Starting and Arm Action

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills in the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Starting Position

The runners assume the standing position following the command.

- "On your mark"
- "Clap/Gunshot"

Arm Action

- Arms at a right angle and driving back from shoulder. (No punching the air in front).
- The arms and hands are carried lower and the heels touch the ground.

Practising the Technique

- **Slow Continuous Run** (Goal: recovery and regeneration) Pace: Easy rhythm; Volume: upto 30 to 60 minutes.
- **Long Slow Distance Run** (Goal: general endurance) Pace: Marathon rhythm and slower; Volume: 60 to 150 minutes.
- **Medium Continuous Run** (Goal: general endurance) Pace: Half-Marathon to Marathon rhythm; Volume: 30 to 60 minutes.
- **Fast Continuous Run** (Goal: general endurance) Pace: 10 Km to Half-Marathon rhythm; Volume: upto 10 to 45 minutes.
- **Extensive Repetition Training** (Goal: aerobic endurance) Pace: 3000m to 10,000m rhythm; Volume: increases with the competition distance; Rest: depends on the individual runs in the sessions.

Lead Up Activity

Time Trial Challenges

Organise time trial challenges where students compete against themselves or each other over a set distance, such as 800 metres or 1000 metres. Organising other test challenges covering a distance within a particular time. Record the times and challenge participants to beat their personal bests in subsequent trials. This fosters a competitive spirit and helps to track individual progress.

Day 19 — 1500m Run

Stride and Finishing — 45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Stride

- The stride is natural and the race is slower than the sprint.

Running

- This is the actual running of the race.

Finishing

- This signifies the end of the race.

Practising the Technique

- **Tempo Runs:** Tempo runs helps to improve the lactate threshold and race pace. This should be run at a pace slightly slower than the 5km race pace but faster than the long run pace. Start with shorter tempo runs and gradually increase the duration of the progress.
- **Fartlek Runs:** (Goal: aerobic and lactate system endurance) Pace: rhythmic 'speed-play'; Volume: 10 to 45 minutes, increases with the competition distance; Rest: not applicable but the 'easier' sections should still be active running.

- **Interval Training:** (high intensity workouts intervened by rest) Interval training is crucial for improving the speed and race pace. Incorporate the runs such as 400m, 800m and 1000m repetitions faster than the race pace with intervals for rest in between. For example, try 6 to 8 times x 400m of race pace with 1-2 minutes of rest in between intervals.

Lead Up Activity

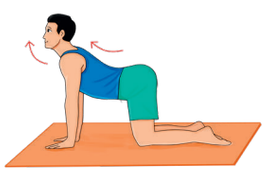
Interval Tag

This game is played similar to traditional tag but with a fitness twist. Designate one runner as the "tagger" and the others as "runners." Set markers around the track or field and the tagger must try to tag the other runners within a specified time interval (e.g. 2 minutes). The runners must continuously move around the designated area, incorporating changes in pace and direction to evade the tagger. This game helps to improve speed, agility and anaerobic endurance.

Day 20 — Trikonasana and Breathing Techniques

45 Minutes

Preparatory Exercises



- Students should do neck and shoulder rotations, to keep their shoulders and necks relaxed.
- Keep hands and knees in a tabletop position, inhale and arch back (cow) and exhale and round the spine (for cat stretch).
- Do this sequence a few times.

Posture: Triangle Pose

Position: Standing

Procedure

- Stand upright with feet together and arms at the sides.
- Step or lightly jump about 3 to 4 feet apart.
- Turn the right foot out 90°, toes point to the short edge of the mat.
- While exhaling, bend the trunk sideways to the right, bring the right palm to the right ankle. Keep the left hands in a vertical position. Visible facing upward towards left hand fingers.
- Breathe smoothly and hold the pose for 10 to 15 seconds.
- Inhale, come up, get the arms down and come back to the starting position, (Tadasana).
- Relax the body and rest. Repeat it for the same length of time on the opposite side.

Benefits

- Strengthens the thighs, eyes, neck, hands, hip joints and muscle groups.
- Stimulates abdominal organs, aiding in improved digestion.
- Helps to relieve stress and improves focus and balance.
- Relieves back pain and improves overall posture.

Alternate Nostril Breathing Technique

- Sit erect and close the eyes.
- Adopt alternate nostril hold with the right hand (fold the right thumb and ring finger), consciousness gesture in the left hand.
- Gently close the right nostril with the right thumb and inhale through the left nostril and then close it with the ring finger. Open and exhale slowly through the right nostril.
- Inhale through right nostril and close it using the thumb and open left nostril to exhale slowly. This is a single cycle. Repeat it 3 to 5 times.

Savasana: After completing alternate nostril breathing, do Savasana.

Day 21

Lawn Tennis

Forehand Volley

45 Minutes

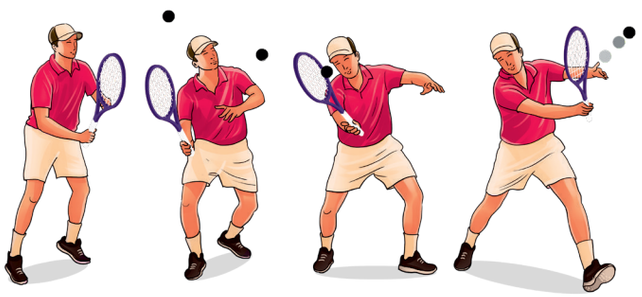
LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

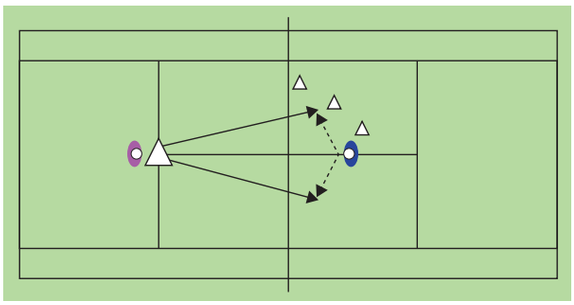


- The body is at right angles to the net and the left foot advanced to the shot.
- The wrist is slightly below the racquet head.
- Place the head of the racquet slightly tilted, to lift the volley and the whole movement is to block the ball.
- The wrist must be stiff so that there is no swing.
- Keep the body crouched and the knees bent.

Practising the Skill

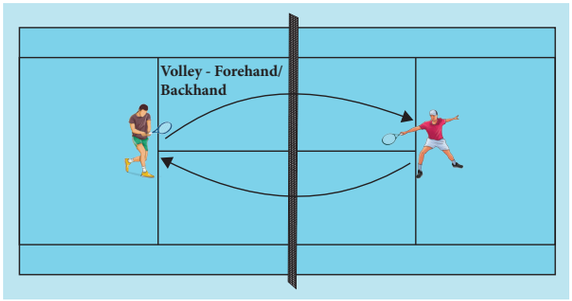
V-Volley Drill

- One side of the tennis court should be marked with cones and the teacher stands on the opposite court as shown in the figure.
- The teacher has to feed the ball to the right hand side of the student who stands in the opposite court.
- Students hit forehand volleys and come back to the centre of the court.
- Students must stay inside the marked lines (cones) and practise.
- Each student is given ten chances.



Lead Up Activity

Volley Game



Organise students into pairs. The first pair stands at the service line on each side of the net. One student starts by hitting the ball to the right of the partner using forehand volley. The partner returns the ball to the right side of the first student using same stroke. A student will then volley it back to their partner. This will continue until one of them misses. If anyone misses the ball, then the opponent will score one point. Likewise, the game continues till all the pairs complete their turn. Points should not be awarded if it lands outside the court. The pair which plays the maximum number of rallies will be the winner.

Day 22

Lawn Tennis

Backhand Volley

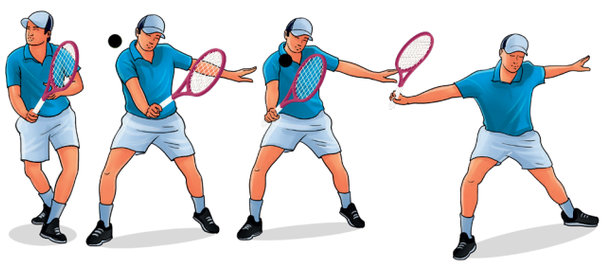
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

- The body is at right angles to the net and the right foot is advanced to the shot.
- The wrist is slightly below the racquet head.



- The crouch is more pronounced as the hitting plane is lower.
- The head of the racquet is firmly held by the handle with the stiff and locked wrist.

Practising the Skill

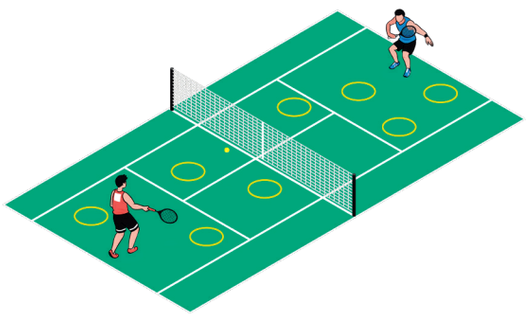
Partner Volley

- Students take partners to lineup along each side of the net.
- One side of the student has the racquet, the other has the ball.
- The student with the ball throws the ball to the left side of a partner student, who tries to volley the ball back to the feeder using a backhand volley.
- Likewise, feeders will throw the ball for one minute and then they interchange their positions and their roles.

Lead Up Activity

Target Game

This game is played using only volleying skills. Four targets are set out on each side of the net. This game is played between two players. If a student hits the ball on to one of the targets, then the plyaer wins a point. The winner will stay on the court and continue playing. Next, a student will come and play with the winner and the loser leaves the court.



Day 23 — Lawn Tennis

Forehand Lob

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

- The body and left shoulder face the net and have a forehand grip.
- Run to the ball and place the foot on the ground.
- Short backswing on defensive lobs.
- Long backswing on offensive lobs.

Swing

- Open the racquet to face the ball.
- Low-to-high swing.

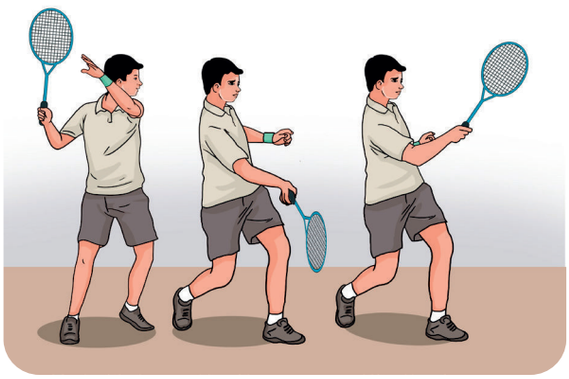
Follow-Through

- Finish with the racquet high on defensive lobs.
- Finish with the racquet higher after hitting the ball high.
- Complete follow-through flat and high on offensive lobs.

Practising the Skill

Shadow Swings

- Practise shadow swings without a ball to focus on the correct technique. Players can practise their grip, footwork and swing path.



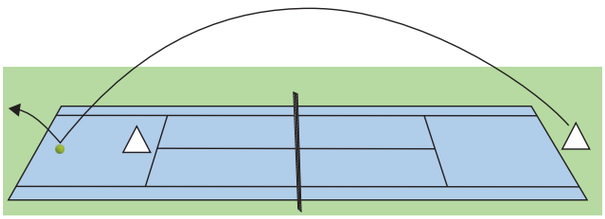
Feed and Hit

- Have a partner feed balls to the player at a moderate pace, allowing them to focus solely on executing the lob technique.

Lead Up Activity

Mini-Game

A mini-set competition with a total of three games should be conducted after practising to hit successful lobs. The player who scores the maximum points using lobs shall be the winner.



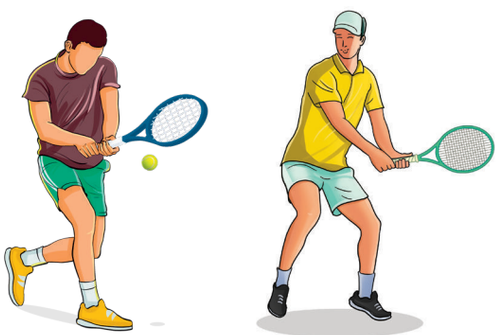
Day 24 — Lawn Tennis
Backhand Lob
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

- The body and right shoulder face the net and have a backhand grip.
- Run to the ball and place the foot on the ground.
- Short backswing on defensive lobs.
- Long backswing on offensive lobs.



Swing

- Open the racquet to face the ball.
- Low-to-high swing.

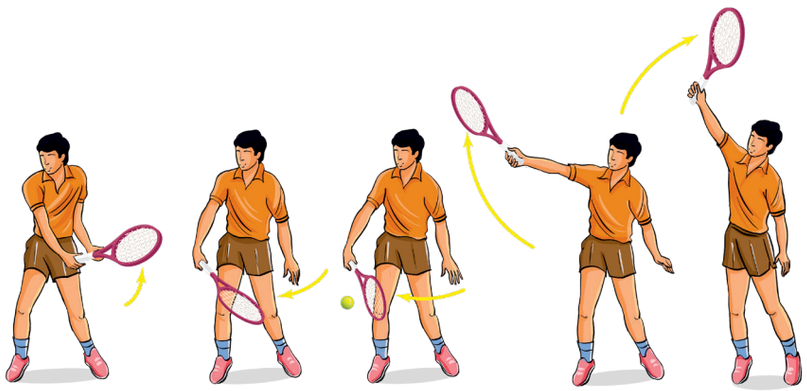
Follow-Through

- Finish with the racquet high on defensive lobs.
- Finish with the racquet higher after hitting the ball high.
- As an attacking game, after hitting the ball high, the racquet should be parellel to the ball and then stop a little higher.

Practising the Skill

Shadow Swings

- Practise shadow swings without a ball to focus on the correct technique. Players can practise the grip, footwork and swing path.



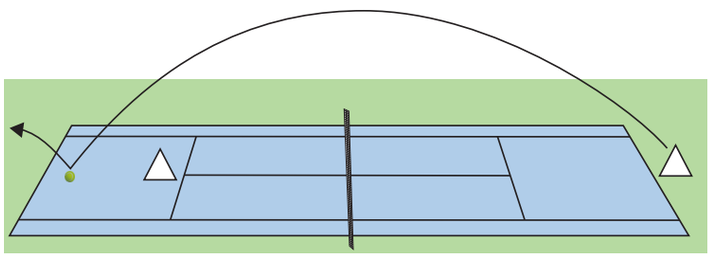
Feed and Hit

- Have a partner to feed balls to the player at a moderate pace, allowing them to focus solely on executing the lob technique.

Lead Up Activity

Match Play

Encourage the students to incorporate lobs into their regular match play. Provide opportunities for them to refine their shot selection and execution under real match conditions.



Day 25 Vajrasana and Breathing Techniques

45 Minutes

Preparatory Exercises

- Students should do flexion and extension of knee and ankle rotation exercises.
- They should do hip opening exercises namely butterfly stretches.

Posture: Diamond or Thunder Bolt Pose

Starting Position: Sitting position

Procedure

- Kneel on the soft blanket or pillows with the knees close together with the big toes touching, while keeping the heels slightly apart.
- Slowly lower the trunk so that they rest on the heels. The heels should be on either side of the trunk.

- Place palms on the thigh and keep the back straight and relaxed.
- Start by holding Vajrasana for about 2 to 5 minutes and breathe normally.
- To come out of the pose, lift the trunk off the heels.
- Sit relaxed in a long sitting position.

Exceptional: This asana can be done even after the consumption of food.

Benefits

- Aids digestion and helps in relieving constipation.
- Strengthens the back and relieves lower back pain.
- Improve flexibility of thighs, knees and ankles.
- Calms the mind and relieves stress.

Breathing Techniques - Sheetali

- Sitting comfortably by keeping the spine straight.
- Take a few natural breaths.
- Curl (form curve or round) tongue and extend out a little to inhale through the tunnel of the tongue.
- Tuck tongue inside the mouth and exhale through the nose.
- Repeat this sequence few times.

Benefits

- Helps to cool the body, nerves and muscles to relax.
- Promotes digestion.
- Controls hunger and thirst.

Savasana: After completing Sheetali, do Savasana.

Day 26

Taekwondo

Rising Block

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- The students are asked to stand in a proper formation.
- The students watch the teacher's demonstration of rising block with an adequate explanation of the following steps.
- The blocking arm's wrist is positioned directly in front of the centre of the face.
- The blocking wrist is approximately one fist's distance from the forehead.
- The other hand's wrist should be situated at the waist side, the palm of the fist has to be kept faced upward.
- The blocking hand should be kept at a level equal to the outer wrist and the trunk blocking.

Practising the Skill

Students are organised into groups with equal numbers. Each group occupies the field where they are practising the skill taught to them. The teacher moves from one group to another, supervising and guiding the students.

Procedure

- Twist the hip towards the chambered arms.
- Pivot the feet towards the crossed arms.
- Poised to utilise the block; the left arm needs to be raised above the head.
- Rotating the other forearm to the outside in the last couple of inches of the move.

Lead Up Activity

Ball Skip

Ball skip is played using a rubber ball. Students standing on the outer circle must roll the ball instead of throwing. While rolling the ball towards the students inside the circle they should move sideways or let it pass in between their legs. Any student attempting to jump over the ball or hit by the ball cannot continue further.

Day 27 — Taekwondo

Reverse Round Kick — 45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

The students are asked to stand in a proper formation. The students watch the teacher's demonstration of the rising block with an adequate explanation of the following steps.

- Lift the right leg up to the head and keep the left leg on the ground. Cover the clenched right fist.
- The forefoot must kick with the toes curving outward toward the target.
- The supporting leg on the ground should not stretch the knee fully before or during the kicking because upright standing is more likely to cause falling down of the attacker or weakening of the kicking force.
- While kicking, the body turns to the left side and then reverses to the right side once kicking is over.

Practising the Skill

Students are organised into groups with equal numbers. Each group occupies the field where they are practising the skill taught to them. The teacher moves from one group to another, supervising and guiding the students.

Procedure

Dominant Hand: Right

- Begin in a fighting stance with the feet shoulder-width apart. If the student is right-handed, his/her left foot should be forward and vice versa.
- Start by pivoting, on the ball of the front foot (left foot if right-handed) to initiate the turn.

- As you pivot, turn the hip and shoulders in the direction of the kick (clockwise for right-handed, counter clockwise for left-handed).
- Complete the turn, lift the rear leg (right leg if right-handed) towards the chest. Keep the Knees bent and close to the body.

Lead Up Activity

Ground Kicking

Students can practise certain kicks while lying on the ground e.g. Heel-front kick while lying on the back; sidekick or round kick while lying on the side. The teacher explains attacking procedures and kicking styles to students if they have fallen.

Day 28 — 400m Hurdles

Approach, Running between Hurdles and Take off — 45 Minutes

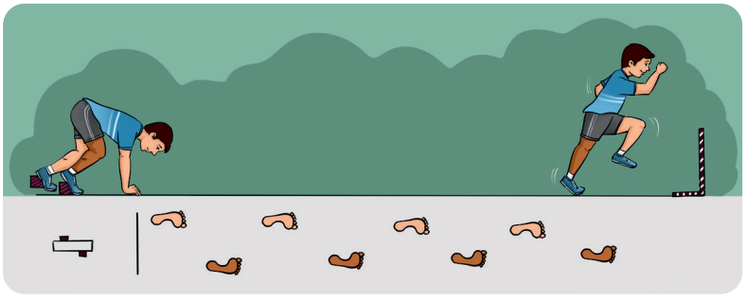
LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

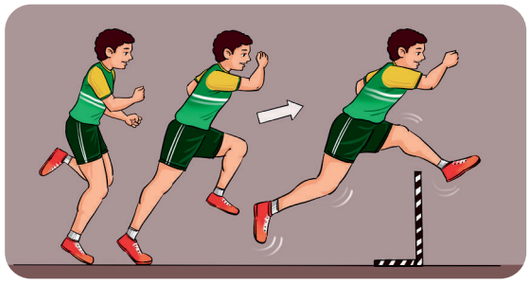
Approach



- The 400 m hurdler uses a normal sprint start.
- The speed and pace at the first hurdle is slightly slower than the flat 400m race.
- While men normally use a stride pattern of 20 to 23 strides, women typically use 22 to 25 strides.
- If any stride adjustment is required, it should be made in the middle of the approach.
- The last four to six strides before the hurdle should be consistent and involve acceleration.

Running Between Hurdles

- Keep the stride length as close as possible to the natural length.
- Get into a stride pattern as soon as possible after the hurdle.
- In the case of even numbers between hurdles, it will lead to alternating legs over the hurdles.
- Try to lead with the left leg around the bend. Leading with the left leg needs less energy to jump over the hurdle perfectly.

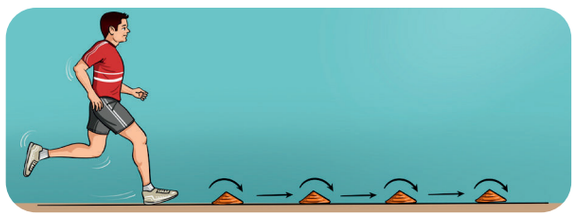


Take off

- High body position for the take off.
- Drive is more forward than upward. (Run 'into' the hurdle, do not jump)
- Hip, knee and ankle joints of the support leg are fully extended.
- Thigh of the lead leg swings rapidly to the horizontal position.

Practising the Technique

Cone Drill



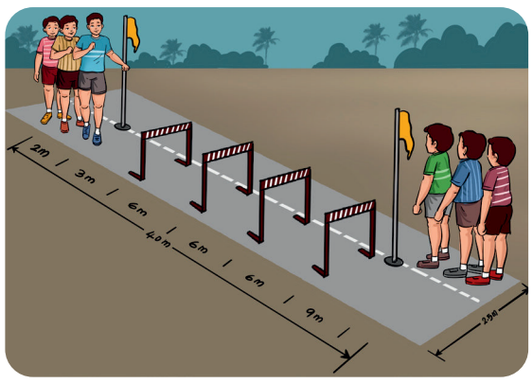
- This drill is used to establish a hurdle rhythm.
- The athlete uses a falling start with a 7 or 8 stride approach to the first obstacle.
- The cones are placed far enough apart to allow for an accustomed 3 stride or 5-stride pattern.
- Emphasis is on a smooth and relaxed rhythm over 8 to 12 cones.

Low Hurdles

- It is a progression from the cone drill with the emphasis on hurdle rhythm.
- The hurdles are a minimum of 7 cm lower than the racing height and placed 20 to 50 cm lesser than racing distance to facilitate a 3-stride pattern.
- For a 5-stride pattern place the hurdles 50 cm greater than the racing distance.

Lead Up Activity

Hurdles Relay



Draw two lanes as shown in the figure. Arrange hurdles in one lane and keep the other lane without hurdles as shown in the figure. Hurdles are placed at equal distances. Students are organised into two groups of equal number. To the signal go, the first student in

both teams completes sprinting and jumps over the hurdles and touch the second student to do the same. Everyone in the team completes the race. The team with the best time is the winner.

Day 29

400m Hurdles

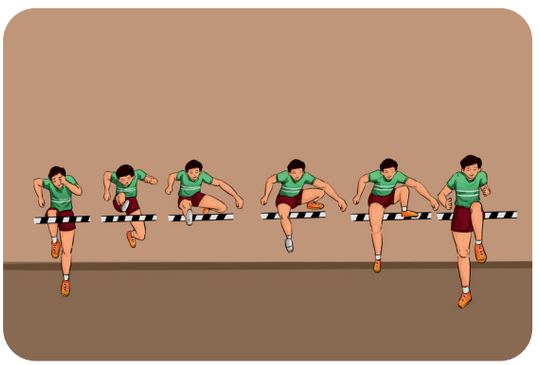
Clearance Phase-Lead Leg, Trail Leg and Landing

45 Minutes

Warm-Up: Give suitable warm-up exercises.

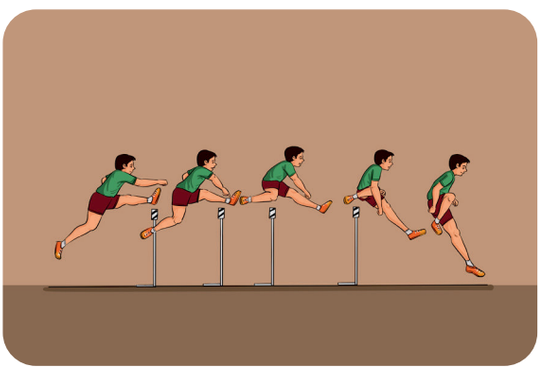
Teaching the Technique

Clearance Phase - Lead Leg



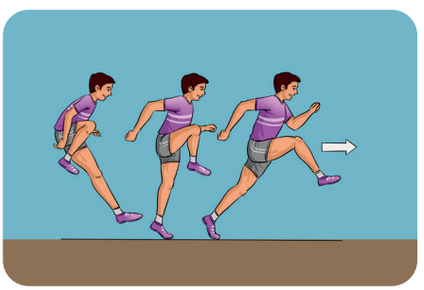
- The lower part of the lead leg is actively extended forward and then downwards in the direction of running.
- The foot of the lead leg is flexed.
- Leaning forward of the trunk is more pronounced for 'higher' (relative to athlete's height) hurdles and only what is necessary for 'lower' hurdles.
- Shoulders remain parallel to the hurdle and face forward.

Clearance Phase - Trail Leg



- The trail leg is drawn alongside the body.
- The thigh of the trail leg is roughly parallel to the ground at clearance.
- The angle between the thigh and lower leg is about 90° or less.
- The ankle of the trail leg is dorsi flexed markedly. Toe is tilted upward.
- The knee of the trail leg is kept high as it pulls through.

Landing Phase



- Landing leg is 'stiff' and is on the ball of the foot.
- The body should not lean backwards when landing.
- The trail leg stays tucked until touchdown, then it pulls quickly and actively forwards.
- After the foot touches the ground, the next step should be taken up aggressively.

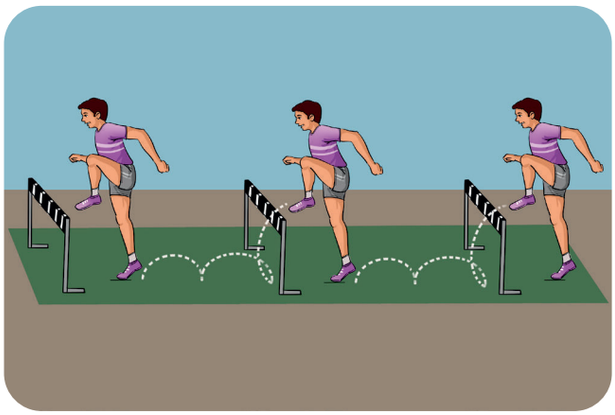
Practising the Technique

Lead Trail Leg Drill

- The aim of this drill is to improve the technique of the lead and trail leg actions on the hurdle.
- The heights and spacing of the hurdles are lower than race specifications.

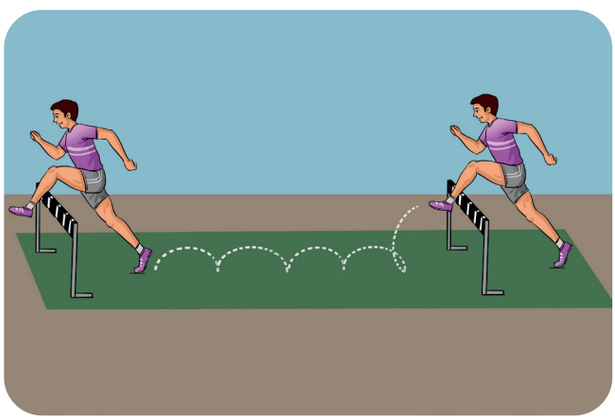
Stride Trail Leg Drill

- Five hurdles are placed two metres apart in a straight line.
- The height is ±8 cm than race height.
- The athlete goes over the side of the hurdle with the trail leg. The lead leg passes alongside the hurdle.
- Give three strides and go over the next hurdle with the trail leg.
- Add hurdles to improve the skill.



Stride Lead Leg Drill

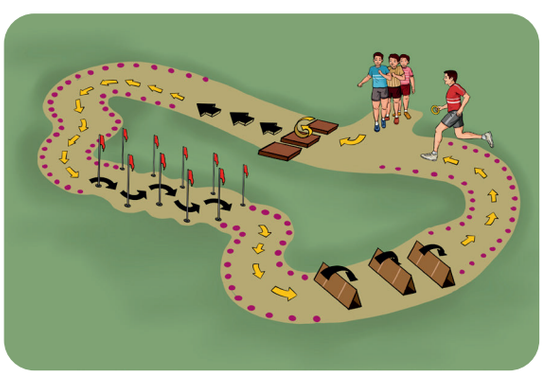
- Five hurdles are placed three metres apart in a straight line.
- The height is ±8 cm than race height.
- The athlete goes over the middle of the hurdle with the lead leg while concentrating on bringing the lead leg down fast.
- Give five strides and go over the next hurdle with the lead leg.



Lead Up Activity

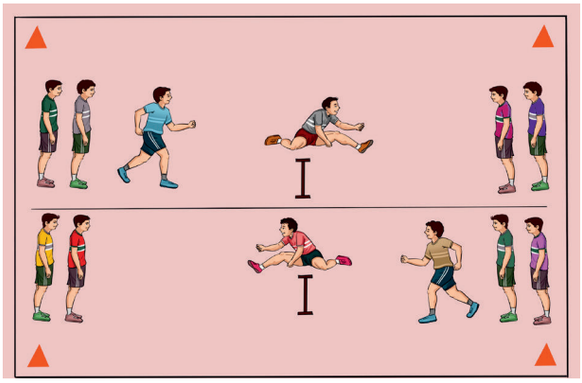
Formula One

The distance is about 60m or 80m long. It is organised for flat sprinting over hurdles and sprinting around slalom poles (made of pvc). A soft ring is used as the relay baton. Each participant has to start with a forward roll on the tumble mat. "Formula-One" is a team event in which each team member has to complete the full course. The winning team is the one at the minimum time.



Jump the Obstacle Relay

Place hurdles at equal distances in between a straight line and a turning line. Organise students into two teams of equal number and assemble behind the starting line. To the signal 'go', first student in each team runs and returns to the starting line by jumping over the hurdles and touches the second student in the line. Everyone in the team does the same. The team that finishes first is the winner.



Day 30 Yogamudra and Breathing Techniques

45 Minutes

Preparatory Exercises

- Stand normally with arms side to bend, arms at elbows and place palms on shoulder.
- Inhale to expand the chest and rotate shoulders clockwise and anticlockwise.
- Exhale and rotate shoulders anticlockwise and clockwise.
- In a supine position, bend and lift the knees perpendicular to the floor one by one to do a hamstring stretching exercise that is bending forward from a long sitting position.

Posture: Moon pose

Starting Position: Long sitting position

Procedure

- Begin by sitting in Padmasana. Ensure the spine is erect and shoulders are relaxed.
- Hold the right hand wrist with the left hand behind the hip.
- Take a deep breath and gently elongate the spine upwards, creating space between the vertebrae.
- Slowly bend forward at hip, bringing the forehead towards the floor. Keep the spine erect and neck relaxed.
- Return slowly to the starting position. Practise this pose 3 to 4 times.

Benefits

- Helps to calm the mind and alleviate stress.
- Stretches the spine and shoulders, improving flexibility.
- Aids digestion by gently compressing the abdominal organs.
- Enhances the respiratory system by encouraging deeper breathing.

Breathing Technique - Kapalabhati

Kapala means skull and bhati means cleaning.

Procedure

- Sit erect in any meditative asana and keep the fingers in the consciousness gesture.
- Exhale forcefully with both nostrils, keeping the abdomen flexed.
- Inhale passively, there is no holding of the breath. Start with 10 to 20 strokes, increase the pace gradually.
- At the end of the minute, there is an automatic suspension of breath. Enjoy the deep peace of mind associated with this.

Savasana: After completing Kapalabhati, do Savasana.

Day 31

Handball

Catching while Running

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

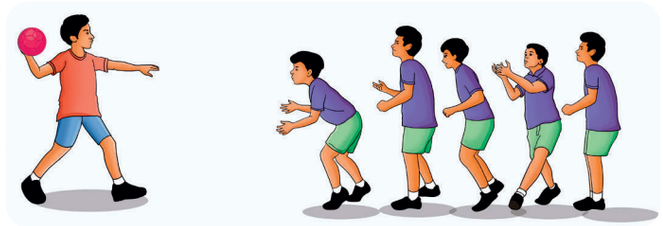
Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

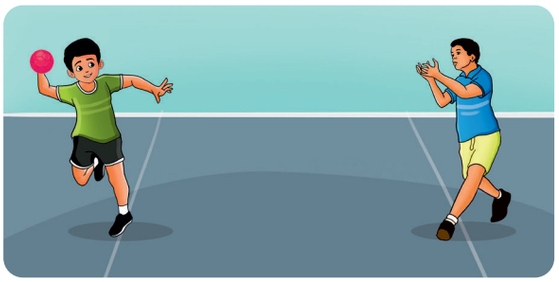
- Catching while running is not as easy as catching while standing. While executing the skill, the player has to run from the starting point and should maintain the running rhythm. To catch the ball push off one leg and extend the arms toward the ball and catch the ball.
- After catching the ball, the player should land on the other foot and bring the ball close to the body, for further action.
- The teacher has to feed the ball to the students for catching.

Practising the Skill

- The students are asked to stand in a file formation infront of the teacher as shown in the figure.
- The teacher feeds the ball to the students who stand in front of him to practise passing and catching.
- Students can practise this skill with the help of a pair of students too.



Lead Up Activity



Fastest Ball Passing Game

The class can be organised into groups of equal number according to the number of students. Each group should stand in a file formation in pairs with a ball. A starting line and an end line should be marked at a distance of 20 metres and the distance between each pair can be 5 metres. As soon as the start signal is given, the pairs have to pass and catch the ball while running from the starting line to the end line and returning to starting line. They have to pass and catch the ball between their partners without entering the 5 metre area. If the pair miss catching the ball in between, the passing has to start from that point. The second pair in each group has to start after the first pair finishes and this has to be continued until the last pair in each group finishes. The group that finishes first is declared the winner.

Day 32 — Handball

Jump Pass

45 Minutes

Warm-Up: Give suitable warm-up exercises.

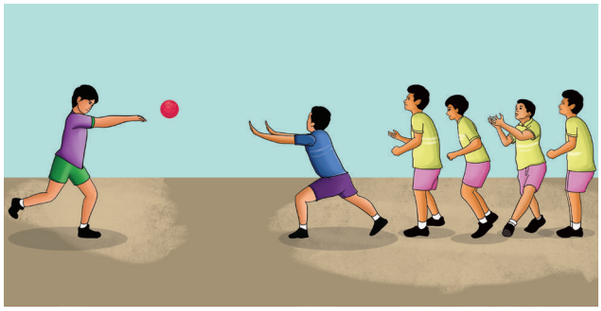
Teaching the Skill

- The Jump Pass can be performed from the basic position or while running. It is a pass in jumping position.
- While preparing for Jump Pass the player should hold the ball firmly in the throwing hand, build up momentum with 1,2 or 3 steps and then jump high from the take-off line and bring the shooting arm up and back, bring the non-shooting arm slightly in front of the players body and keep the head facing up towards the goal.
- While executing the pass, the player reaches the top of the jump, with a twist of the hip, followed by rotation of the shoulders.
- The shoulder, elbow, fore-arm and wrist should be in the proper movement and finally ball is pushed sharply through the player's wrist.
- After executing the pass with the momentum forward, the body lands gently on the ground on the take-off foot.

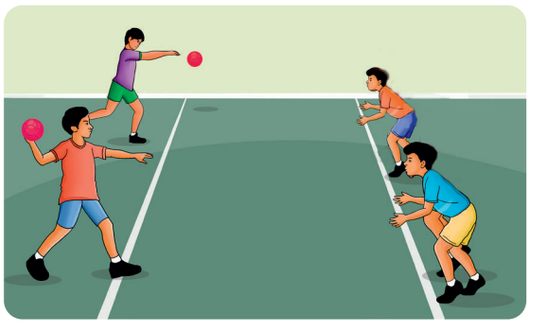
Practising the Skill

- The class can be organised into groups of equal numbers according to the number of students.
- The students practise within the groups the skills that were taught to them.

- For practising the skill, a rectangular field is needed and a take-off line to be marked for taking a jump at a suitable place.
- The teacher moves from one group to other groups to supervise and guide the students.



Lead Up Activity



Speed Pass

Two parallel lines are marked by a 10 metre distance. Players are with a partner, they stand facing each other in parallel lines with a ball. Duration is fixed in advance for the speed pass like 5 or 10 minutes. As soon as the start signal is given, they have to pass the ball to the partner without entering the 10 metre area, but after making a pass, they can step inside the 10 metre area. The total number of successful passes between the pair is the score and the pair scoring the highest number of passes is declared the winner.

Day 33 — Handball

Jump Shot

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- A Jump Shot is a straight shot while jumping. Jump high or jump according to the situation.
- While dribbling the ball, a three-step approach can be used to take-off for jump. Right-hand players should take-off from the left foot and left-hand players should take-off from the right foot to throw the ball.
- A line should be marked for the take-off and it can be 9 metres away from the goal.
- During execution, the body should be stretched with the throwing shoulder drawn back and the shot should be made from the highest point of the jump.
- After completing the jump shot, with the momentum forward, the body lands gently on the ground with the take-off foot.

Practising the Skill

- The students are asked to stand in pairs with a ball.
- They will practise the jump shot skill taught to them and the teacher has to supervise the students while practising the skill.

Lead Up Activity

Jump Shot Game

Players are organised into two equal teams and named 'A' and 'B'. Both teams are asked to line up at the center line in front of the goal. As soon as the start signal is given, one jump shot for each player in team 'A' will be allowed and a player from team 'B' acts as goalkeeper. The player has to dribble the ball and should make a three-step approach before the 9 metre line while taking a jump and can land inside the 9 metre after completing the shot. Once team 'A' finish their turn, team 'B' start their turn to have a jump shot with goalkeeper from team 'A'. Each successful throw towards the goal gets one point and the team's score is determined by adding all the team player's scores. The team with the highest score is declared the winner.

Day 34 — Handball

Wing Shot

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- It is a shot from the attacking player from the right and left side wings of the goal area. With this skill, the ball can be thrown towards the goal at a better angle which may not be saved by the goalkeeper.

- First, the player has to be in motion to receive the ball.
- After receiving the ball in motion, the player has to take three steps towards the 6 metre line and take a shot from the wing position.
- A right hand player always plant left foot opposite to the shooting arm. Drive shooting arm, leg forward and bring the ball up to the shooting position, hold shoulders perpendicular to the goal, head up and watch the goal line for a better angle in the shooting.
- In the execution of shooting, rotate shoulders to face the goal, lead with and extend the elbow and snap the wrist.
- In the follow-through action, shoulders continue to rotate and move forward, arms move across the body and take-off foot land on the ground.

Practising the Skill

- All the students stand in file formation in both wings except one or two to stand in the middle of the handball court.
- Students in wings pass the ball to the students in the middle and move back in the wings to take a wing shot.

Lead Up Activity

Wing Shooting Game

Players are organised into two equal teams named as 'A' and 'B'. Each team can use one feeding player of their choice from their own team. Both teams are lined up on the right and left wings of the goal with the ball in each half and have a goalkeeper from the other team. They will pass the ball to the feeding player then move to receive the pass from the feeding player and take the three step approach before making the throw on goal from the wing. Each team gets to throw shots at goal alternatively with a fixed number of shoots from one wing and they have to change the side after completion of one wing. Each successful throw towards the goal gets one point and the team's score is determined by adding all the team player's scores. The team that has the highest score is declared the winner.

Day 35

Salabasana and Breathing Techniques

45 Minutes

Preparatory Exercises

Prone position and place palms on the floor near shoulder.

Press palms to lift chest and keep legs straight (upward facing). Lift hip upward to form an inverted letter 'V' shape (downward facing).

Posture: Locust

Starting Position: Prone lying.

Procedure

- Lie in the prone position with legs straight, feet together and toes pointing. Stretch the arms back along the body with the palms facing down under the belly. Rest the chin on the blanket or mat.
- Breathe in and press against the blanket. Keep the legs straight and raise the legs as high as usual.
- Hold this pose and breathe slowly.
- Come back to a prone lying position and relax.

Benefits

- Strengthens the muscles of the spine, buttocks and back of the arms and legs.
- Enables to stretch the shoulders, chest, belly and thighs.
- Improves posture.
- Stimulates the abdominal organs and helps in digestion.
- Helps to relieve stress.

Breathing technique - Humming Bee Breathing

Procedure

- Sit in any meditation pose asana.
- Inhale through both nostrils.
- Close both ears with the index fingers. Exhale by making a humming sound loudly as long as by keeping the lips closed so that both sets of teeth (upper and lower) will not touch.
- Repeat this sequence 10 to 15 times.

Benefits

- Calms down the mind, reduces fatigue and mental stress.
- Reduces blood pressure
- Makes the voice clear and melodious.

Savasana: After completing Humming Bee Breathing, do Savasana.

Day 36

Squash

Forehand Stroke and Backhand Drive

45 Minutes

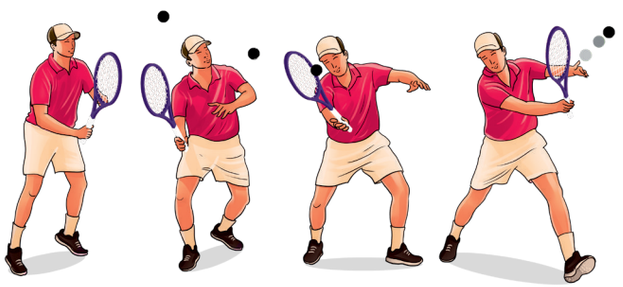
LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To understand the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

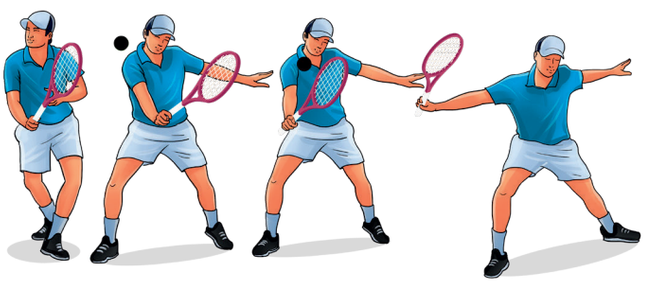
Teaching the Skill

Forehand Stroke



- Keep the left foot forward when the ball comes to the right side.
- Turn to the left shoulder, facing the front wall.
- Raise the racquet at the back on the right hand.
- When the ball reaches near the knee of the front foot, swing the racquet downwards and hit the ball.
- After hitting the ball, swing the racquet upward to follow through and be ready to hit the forthcoming ball.

Backhand Drive



- Keep the right foot forward when the ball comes to the left side.
- Turn to the right shoulder, facing the front wall.
- Bring the racquet in the right hand across the body towards the left side.
- Face the back side of the wrist and racquet towards the front wall.
- While the ball reaches near the right knee, bring the racquet forward and hit the ball with the back side of the racquet.
- After hitting the ball, raise the racquet towards the right side of the body.
- Get ready to hit the forthcoming ball.

Practising the Skill

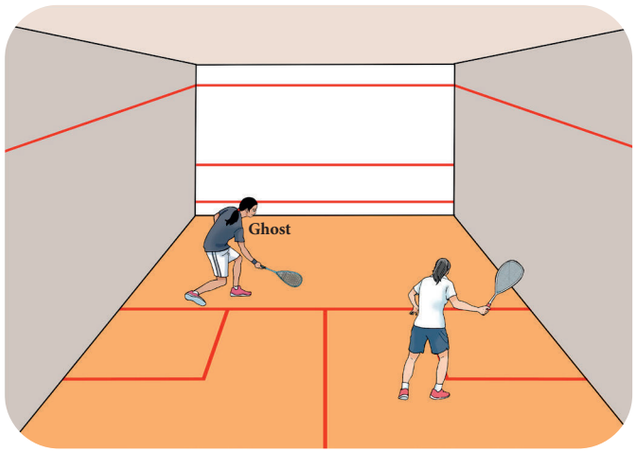
Wall Rally Drill

- Stand a few feet away from the front wall with the racquet and ball.
- Alternate hitting forehand and backhand drives against the wall, aiming for a consistent and accurate return.
- Focus on maintaining proper technique, including a balanced stance, a full swing and good follow-through.
- Gradually increase the pace and intensity of the shots after becoming more accustomed.

Lead Up Activity

Ghost

Only two players play at a time. One player starts as the "ghost" and must hit the ball against the wall before the other player can hit it. If the ghost successfully hits the ball against the wall that ghost earns a point. If the other player hits the ball before it touches the wall, that player becomes a ghost. This game improves reaction time and anticipation.



Day 37

Squash

Volley, Lob and Drop Shot

45 Minutes

Warm-Up: Give suitable warm-up exercises.

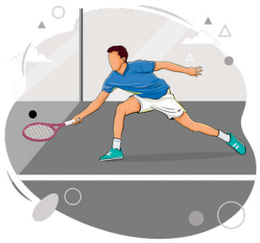
Teaching the Skill

Volley

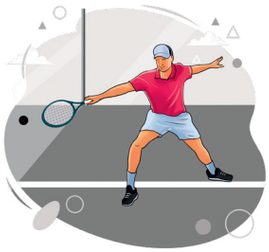
- The opponent's ball hits the wall and bounces back and then hits the volley before it hits the ground.

- As the ball returns before the ball hits the ground, the opponent must hit the ball at the wall.
- After returning the ball, do not raise the hand upwards but stop it in the middle itself.

Lob



- While returning the ball, keep the racquet flat and hit the ball with a little speed against the wall where the ball raises high and falls at the back court.



Drop Shot

- Hit the ball with less force where the ball falls at the edge of the short line.
- It is a kind of shot where the ball travels slowly after hitting the wall and lands near the service box.

Practising the Skill

Solo Wall Volley Drill

- Stand close to the front wall, approximately arms-length away.
- Hit the ball against the wall using volleys, alternating between forehand and backhand volleys.
- Focus on maintaining a stable stance, using a short backswing and keeping the racquet face open to angle the ball downwards.
- Work on controlling the ball's direction and pace, aiming for consistency and accuracy with each volley.
- Gradually increase the pace of the volleys as it becomes more accustomed.

Lead Up Activity

Volley Relay Game

Organise the players into two teams. Position each team at opposite ends of the squash court, with one player from each team standing near the front wall and the other player near the back wall. The game begins with one team serving the ball to start the rally. The server hits the ball against the front wall, aiming for a volley shot. The receiving team must volley

the ball back without letting it bounce on the floor. They can use either forehand or backhand volley to return the ball. After returning the ball, the receiving team quickly switches positions, with the player at the front moving to the back and vice versa. The rally continues until one team fails to volley the ball back properly, either by hitting it out of bounds or letting it bounce on the floor. If a team fails to return the ball, the opposing team earns a point. After each rally, the teams switch roles, with the serving team becoming the receiving team and vice versa. Play until a predetermined number of points or for a set time limit. The team with the highest point at the end of the game wins.

Day 38

High Jump

Straddle Jump or Belly Roll Technique

45 Minutes

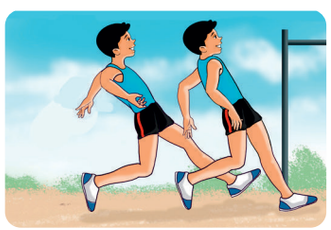
LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

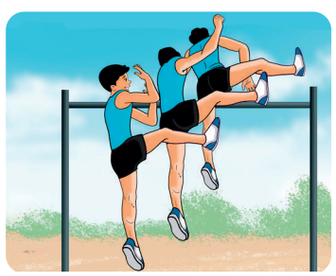
Teaching the Technique

The straddle jump is more efficient than the scissor jump.



Approach Run

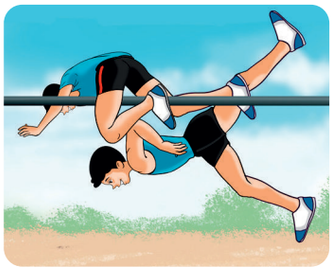
- 7 to 11 stride approach.
- Run erect with trunk upright.
- Jump off leg further from the crossbar.



Take Off

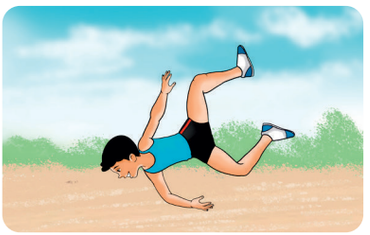
- Keep head and upper body upright.
- Take off from the inside foot, lift the outside leg.
- Drive centre of the body closest to the crossbar up and over the crossbar.

Flight



- Use arms to guide the total body up and over.
- Roll over the crossbar, facedown.
- Land on shoulder be in control of the movements.

Landing



- A jumper can land and roll on the shoulder first followed by the legs.

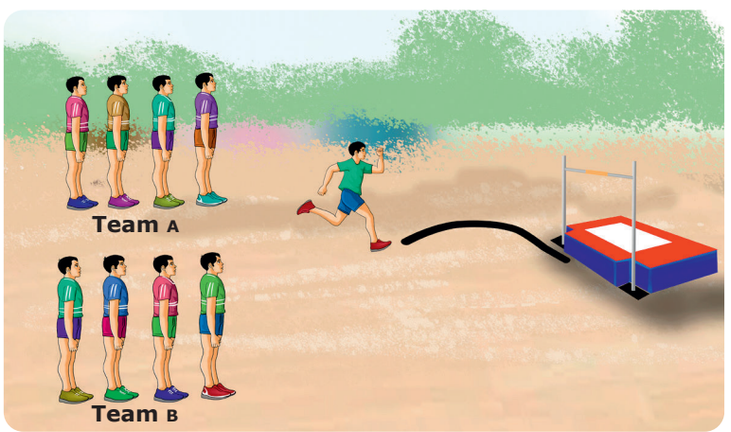
Practising the Technique

- Begin with basic drills to get accustomed to the approach motion. Practise jumping off one leg, focusing on going high.
- Start with lower crossbars and gradually increase the height as the student becomes more accustomed to the technique. Focus on the curve of the body over the crossbar, keeping the head back and arms relaxed.
- While landing, use the shoulder and roll on the back

Lead Up Activity

Rotation Jump

Organise students into teams of two or more. Set a crossbar at a moderate height. Students from each team take turns performing a "Belly Roll Jump" over the crossbar. After clearing the crossbar, the jumper tags the next teammate, who then performs their jump. The team that completes the most rotations (jumps) without knocking down the crossbar wins the relay.



Day 39

High Jump
Fosbury Flop Technique

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Approach Run ('J' shaped or 'C' Shaped)

- Approach run should be 'J' or 'C' shaped.
- The run must be long enough (between 10 and 15 strides).
- The jumper could approach in a straight line or from either the left side or right side.
- The angle of approach is determined by the style that the jumper intends to use.
- The approach run is slower than that of long jump because speed is less important here.

Take Off

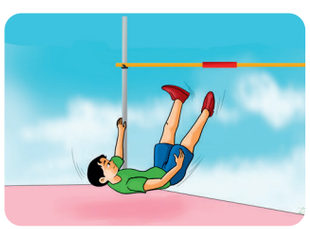
- Take off has only one goal of jumping high.
- This is the point where the jumper leaps from the ground in preparation for clearing the crossbar.
- The take off foot strikes the ground with a bend at the knee and the body leans back and springs forward for a flight.
- The jumper takes off on one leg.

Flight (Clearance of the Crossbar)

- At this stage, the jumper must achieve a high lift before changing to any clearance technique that could be adopted in clearing the crossbar.
- A jumper should use the style that requires the least effort in attempting to clear the crossbar.

Landing

- A jumper can land on the back while using a foam bed.
- The feet can land shoulder-width apart or as close together as the jumper prefers.
- Jumpers should not land on their head or neck.



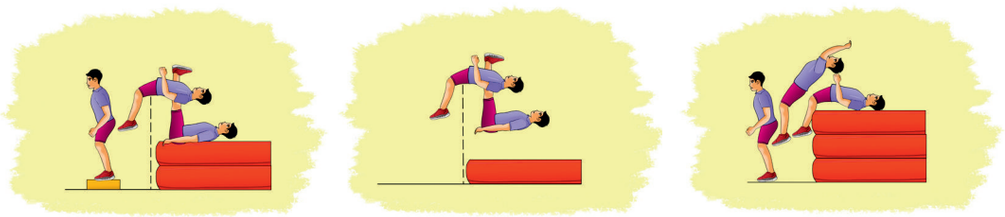
Recovery

- The recovery stage in high jump is a stage of resting after landing.
- After landing, the jumper walks out of the landing area.

Practising the Technique

Standing Flop

- Take off from the ground or use the box as support.
- Use different heights of foam bed for landing.
- Open knees at clearance and landing.
- Use two uprights with a rope or a crossbar.



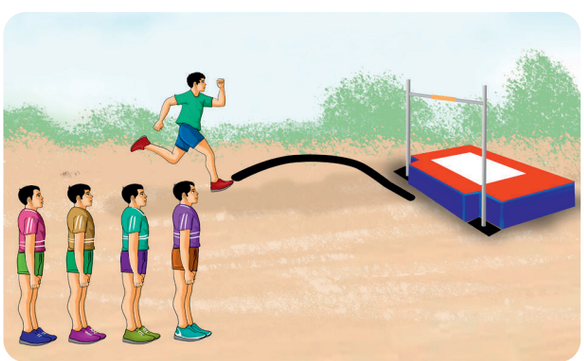
Flop from a High-Knee Approach

- Mark a J-curve and starting point.
- Use a 5-7 stride high-knee approach.
- Use high stride frequency.
- Do not lower the hip in preparation for take off.

Lead Up Activity

Clearance Challenge

Start with a moderate height crossbar and gradually increase the height. Each participant takes turns attempting to clear the highest height crossbar possible using the Fosbury Flop Technique. The participant, who clears the highest height of crossbar, wins the challenge.



Day 40

Pole Vault

Grip and Carry Position, Approach, Pole Plant and Take off

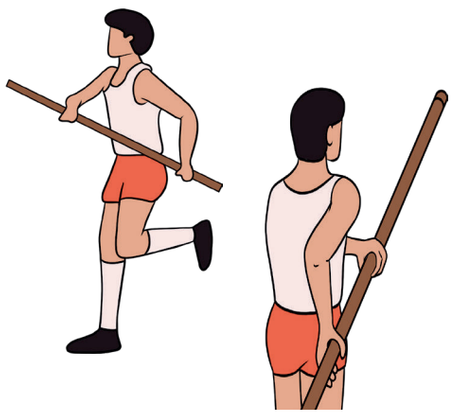
45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique



Grip and Carry Position

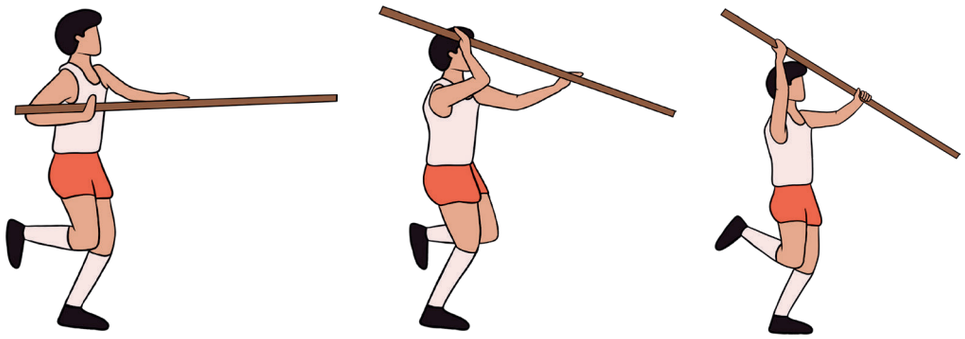
- Hands are kept shoulder-width apart.
- The right hand is kept higher on the pole.
- Both arms are bent, the right hand is kept closer to the hip.
- The tip of the pole is above the head height.
- The elbow of the left arm points to the side.

Approach

- To minimise the loss of speed and prepare for an effective plant phase.
- The approach is active and with gradual acceleration.
- Elbows are relaxed; the pole should not disturb the approach.
- The pole is held obliquely forward, then it is carried horizontally during the run.

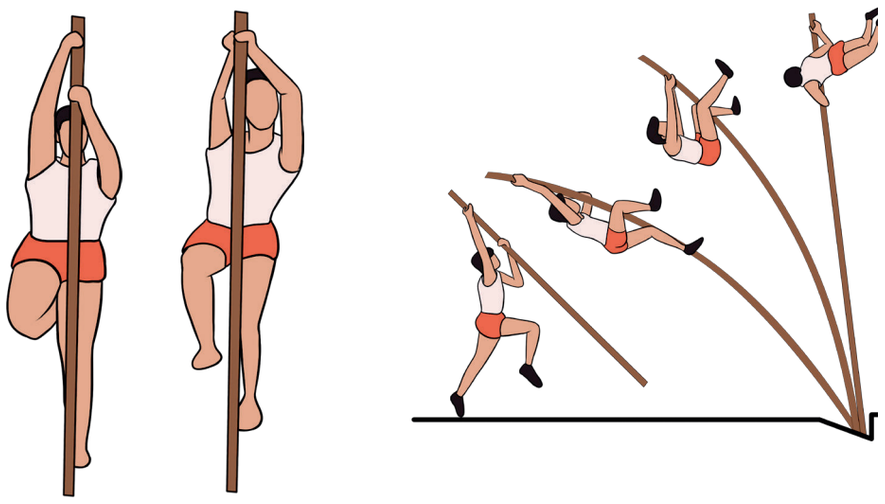
Pole Plant

- The tip of the pole is lowered gradually and smoothly in the last third of the approach.
- The plant commences on the penultimate contact of the left foot with a forward push of the pole.
- The right arm is raised quickly, the hand pushing close to the head is in contact with the right foot.
- Stand upright with the shoulders square to the box.



Take Off

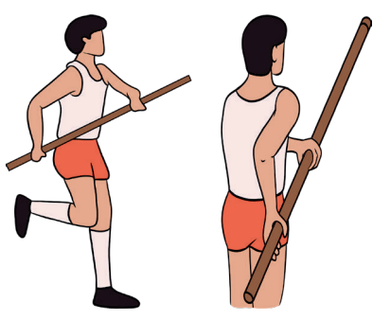
- The foot plant is active and on the entire sole.
- The body is completely stretched with the right arm fully extended.
- The upper (right) hand is directly above or in front of the take-off foot.
- The thigh of the free leg swings actively forwards.



Practising the Technique

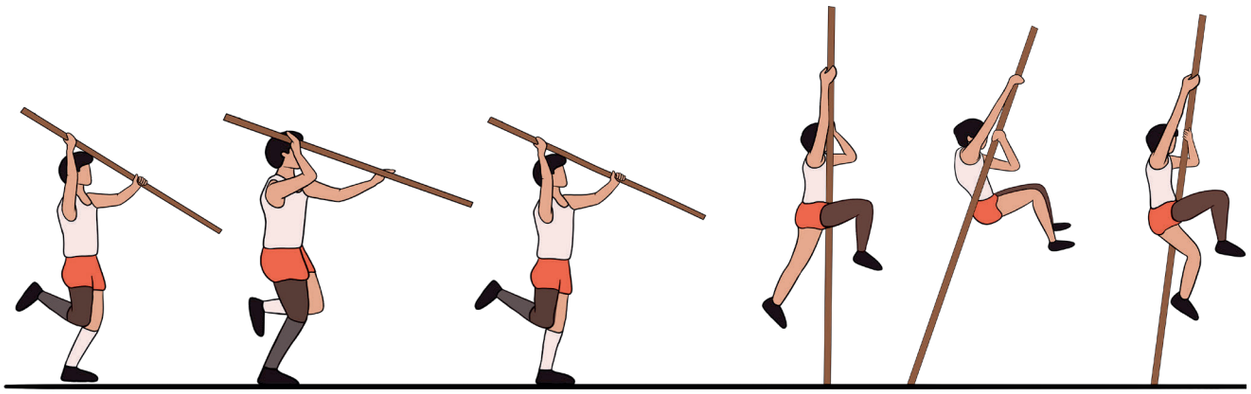
Grip and Carry the Pole

- Place right hand close to the top of the pole and left hand about 50 cm down the pole.
- Keep the right hand close to the hip.
- Holding the pole, start with walking then proceed to easy running and sprinting.



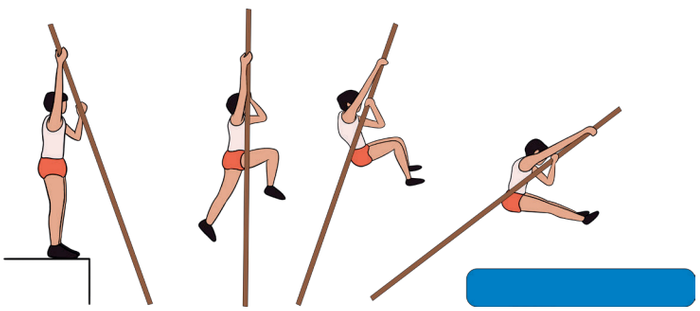
Steps to Swing

- Hold the pole above the head.
- Use a three stride approach (*l* – *r* – *l*).
- Take off from left foot (right-handed vaulters).
- Drive free leg forward and upward.
- Pass the pole on the right side.
- Without turning, land on the left or both feet.



Step to Swing from a Platform

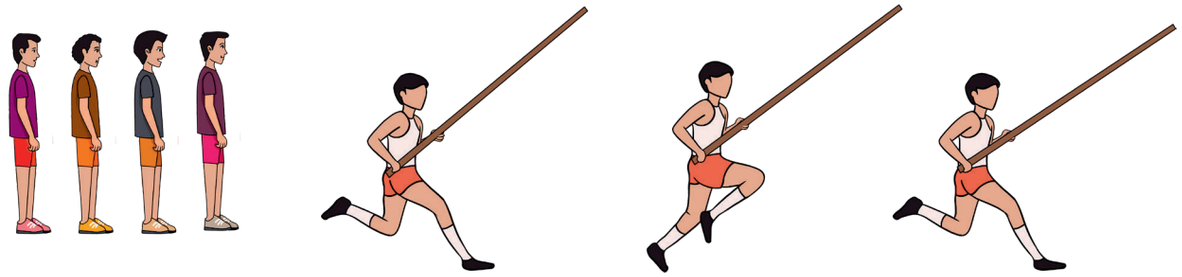
- Set a platform 15cm to 35cm high.
- Use a sandpit if there is no suitable pit.
- Stand upright and grip the pole with the extended upper arm.
- Drive the free leg forward to swing off the platform.
- Do not turn in the air.
- Land sitting on a mat, on feet or sandpit.



Lead Up Activity

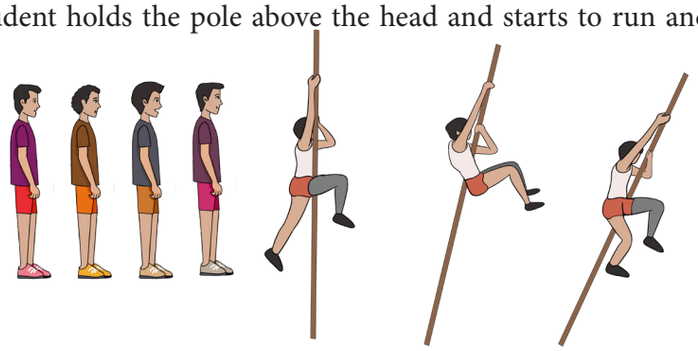
Pole Carry Relay

Mark the starting line and turning line with a gap of 20m. Students are organised into teams of equal number. Students form a line and each student runs with a pole and then comes to the starting position. Next, the student continues and so on. The team that finishes first wins the match.



Jump With Pole

Students stand in a line. First, a student holds the pole above the head and starts to run and plants the pole. Takes off and places the free leg forward and upward. Without turning, land on both feet. Then the first student takes the pole and hands it over to the next student. Remaining students continue the jump The team that finishes within the time wins the competition.



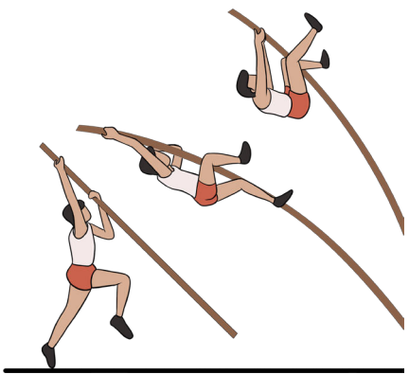
Day 41

Pole Vault

Penetration, Rock back, Stretch and Turn, Bar Clearance and Landing — **45 Minutes**

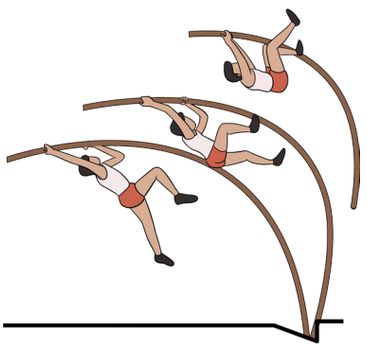
Warm-Up: Give suitable warm-up exercises.

Teaching the Technique



Penetration

- Be in the take off position.
- Long pendulums are created around both shoulders and the hip.
- The left arm is pushed forward and upward.
- The right arm is fully extended.

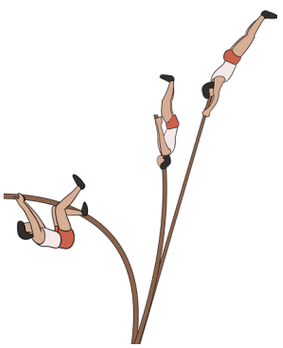


Rock Back

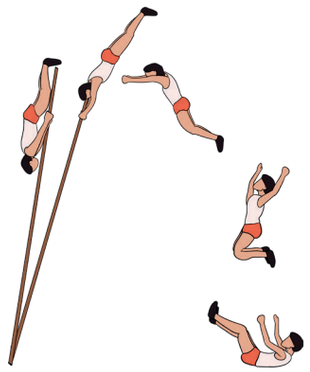
- Both legs are bent and drawn to the chest.
- Both arms are extended and back is roughly parallel to the ground.

Stretch and Turn

- Body moves from the L to the I position.
- The right arm is extended, left arm bends with the elbow on the right side of the pole.
- Hip passes close to the pole.
- The turn is commenced with the pull of both arms and body turns to face the bar.



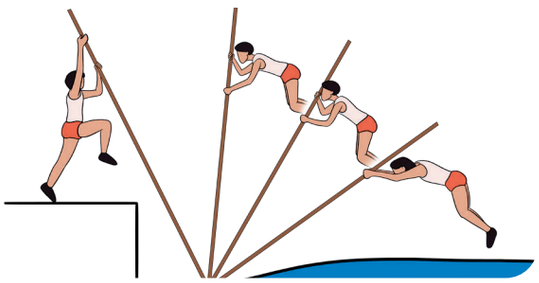
Bar Clearance and Landing



- Push-off from the pole with the right arm and cross the bar in an arched or bent position.
- Straighten the body after crossing the bar.
- Land on the back.

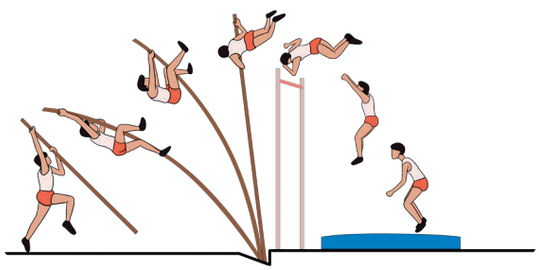
Practising the Technique

Swing and a Turn from Platform



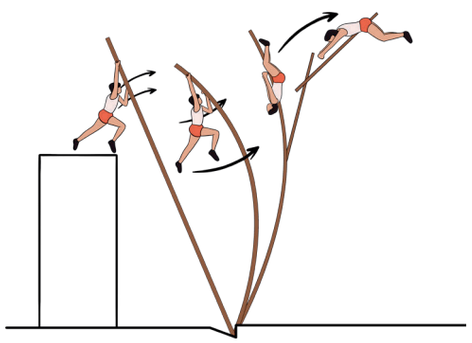
- Set a platform 15cm to 35cm high and stand upright - grip pole with extended arm.
- Drive the free leg forward to swing off the platform and turn the body facing crossbar.
- Land on both feet, face take off point.
- Practise over a low height at the begining.

Steps to Pole Plant and Swing



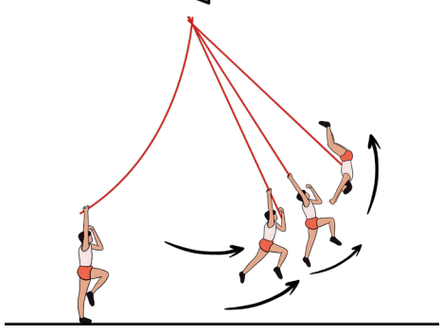
- Practise the pole plant.
- First practise planting the pole while walking, then practise planting the pole while jogging.
- Use a 5 to 7 stride approach to take off, swing and turn.
- Land on both feet.

Bar Clearance from a High Position



- This exercise is necessary to help the athlete to overcome the fear of landing from a high position.
- The athlete stands on a box approximately 3 m high and does the rock-back, stretch, turn and bar clearance, while landing on both legs.

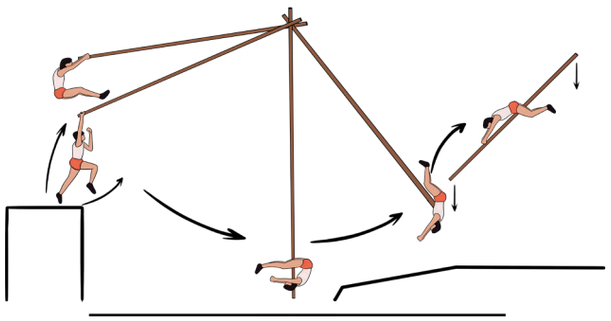
Swing, Rock-Back and Extension



Hold a rope in a high position and take a 3 to 5 stride approach, swing, rock-back and extend the body parallel to the rope.

Swing on Rope Over Bar

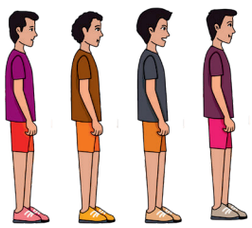
Take a 3 to 5 stride run-up, hold the rope in a high position, take off, swing back in the hang position, rock-back at the beginning of the second swing to gain momentum and stretch, turn and clear an elastic bar.

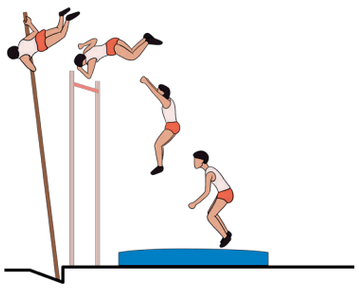


Lead Up Activity

Pole Plant and Vault

Selected students are organised to stand in a line. One by one, they run with the pole and plant the pole to take off the swing, turn and land with both feet in the proper position. The student who jumps at the maximum height wins.





Day 42

Discus Throw

Standing Throw

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To understand the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

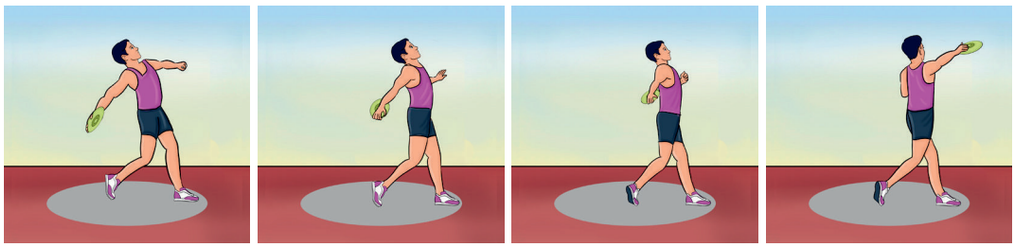
Teaching the Technique

In discuss throw event the standing throw is the most commonly used method by students. In this method the athelete observes and improves the stance while throwing the discus and also shifts his body weight from one leg to the other.

Right-hand Throwers

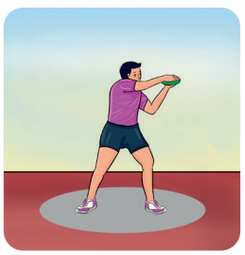
- **Step 1:** Left shoulder facing towards the throwing sector, stand with feet a little wider than the shoulder width.

- **Step 2:** Bend knees and waist slightly with arms extended fully.
- **Step 3:** Place the right foot at a right angle to the left foot, which is pointing towards the landing sector to release the discus.



Practising the Technique

Positioning - Without Discus



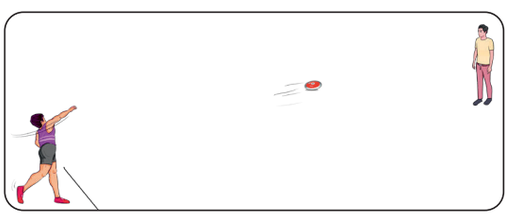
- **Step 1:** Students practise in a stance with the feet slightly wider than the shoulder width.
- **Step 2:** Then they practise extending the arms fully parallel to the ground at shoulder level.

Students practise placing their feet properly and extension of arms fully without discus. Once they learn, they practise with discus.

Weight - Balance

- Students shall practise to bend their knees and waist to transfer the weight to the left leg.
- While doing so, the arms, shoulders and hip should be aligned with the left knee.
- When the body is turned in the direction opposite to the throw, immediately transfer the body weight from the right leg to the left leg to maintain balance.
- Finally, they practise to combine both arm and leg movements to move freely to execute the throw.

Lead Up Activity



Throw Challenge

Students are grouped in pairs. Throwing line is marked on the ground. All the students compete with each other in this challenge. Frame a league competition fixture for the competition. Two students participate in the competition. Out of two students, one student stands behind the throwing line, facing his competitor in the throwing sector. To the signal, first student throws (from standing throw action) and the point of landing will be marked. From the point of landing of his competitor, the second student will make a throw. If second students' throw crosses the throwing line, he will be the winner otherwise first student will be the winner. All the students compete with each other. The student who wins the maximum challenges will be awarded a crown as the "Best Thrower".

Day 43

Discus Throw

Rotation Method

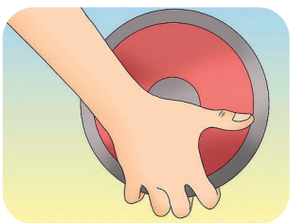
45 Minutes

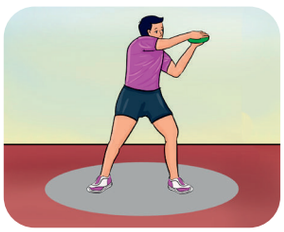
Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Throwing the disc in the rotation method increases the thrower's power and speed and also increases the distance.

Grip & Stance





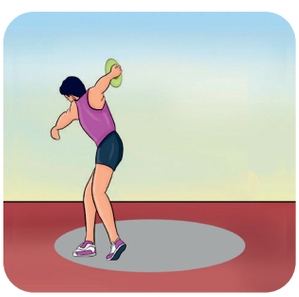
- Hold the discus on the top with fingers evenly spread, including the thumb, keeping the left hand under it for support.
- Player stands facing the opposite side of the landing sector with feet slightly wider than the shoulder width, waist and knees slightly bent.

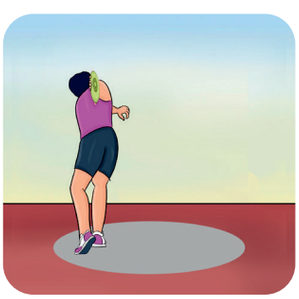
Wind up

- Swing the discus to make rhythm and keep the right hand far away from the body.
- Rotate the torso clockwise and keep the discus as far as possible.

Turn

- Use the left leg to turn the body towards the centre along with the right leg.
- Take hold of the right leg, swing the left leg to the front of the ring to land outside the right foot (weight transfer from right to left).
- Left arm points forward while throwing arm is outstretched to release discus with momentum.



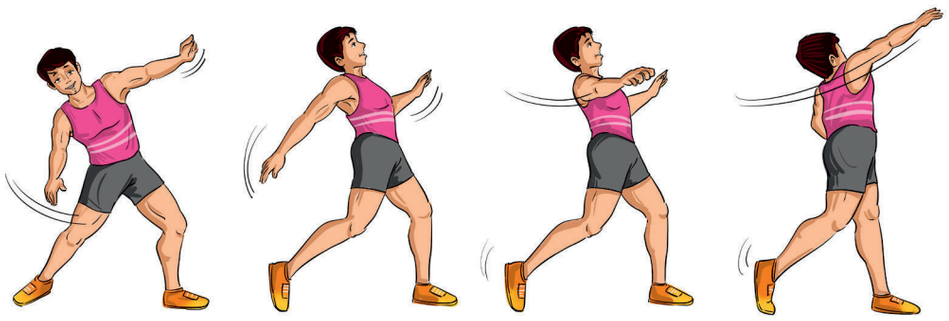


Practising the Technique

Balanced Position (Without disc)

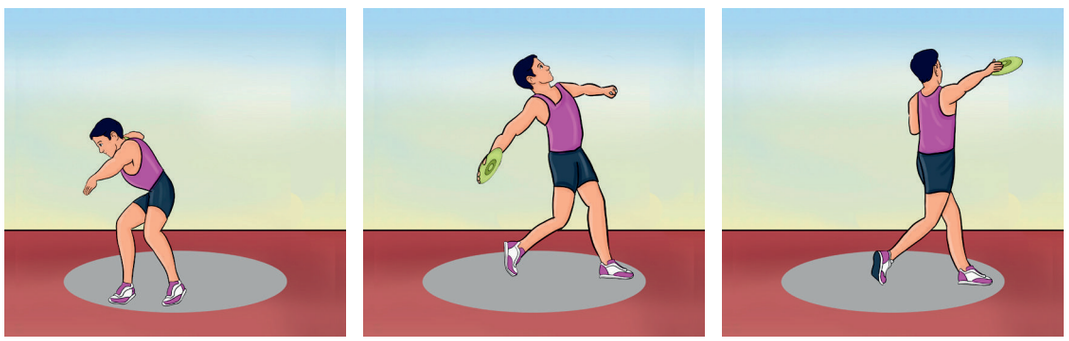
- Students should practise this without holding the discus.
- They stand at the back of the ring and practise to rotate the body at 90° and place the right foot.

- While doing so, they practise to maintain the correct posture in lowering the body.
- Again, they rotate with their right foot to place the left foot facing the front of the ring.
- They practise continuously until they place the left leg facing the front and close to the inside of the ring.



Half Turn

- Students practise to rotate halfway before release.
- This practise helps to build their rotational momentum and improves consistency in throws.
- Once the students master in half turn, they practise the full turn throws. While practising, they focus on balance, rhythm and proper release.



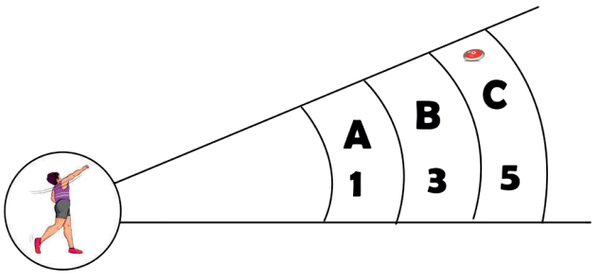
Lead Up Activity

Throwing Zone Method

Students are grouped into two teams, 'A' and 'B'. The discus ring and throwing sector are marked on the ground as shown in the figure. Zones are marked in the throwing sector and scores are allotted as follows.

Zone	Score
A	1
B	3
C	5

When team 'A' members are throwing, team 'B' act as discus pickers. Based on the disc landing within the sector, their scores will be calculated. Once team 'A' finishes their turn, then team 'B' will take their turn. Team scores are calculated by adding all the team members' scores together. The team with the highest score is the winner.



Day 44

Chess

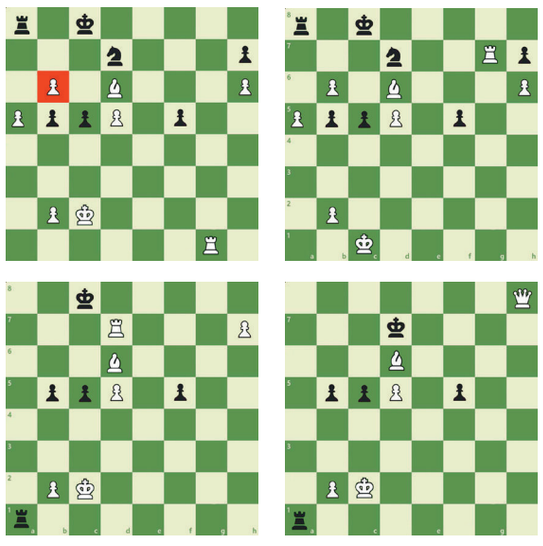
Aggressive Rook Placements

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced strategy of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Teaching the Strategy



- Remember that, the rook is the most valued piece on the board, in exception to the king and queen.
- Move the rook into an attack position.
- A well-placed rook can change the direction of the game and can help to win the game as well.

- By placing the rooks in an attack position, it can restrict the movements of the opponent.
- However, this should be done only when the rook gets a good aggressive stance. (Do not waste the pawns for some minor position)

Practising the Strategy

- Practising the aggressive rook placement strategy with partners.

Lead Up Activity

Chess Match

Organise the students into two equal teams. Two teams of students play a chess match with each other. The team who wins the maximum number of matches is the winner.

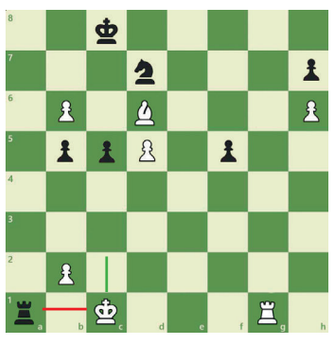
Day 45 — Chess

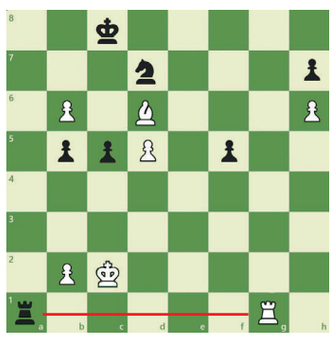
Rook Fork

45 Minutes

Teaching the Strategy

- The rook fork is using the rook to challenge two different pieces of the opponent at the same time.
- The rook fork should be used to target two unprotected pieces or the king and an unprotected piece.
- The rook fork is an effective tactic as the rook is exposed to the entire line.





- However, ensure that one of the targets in the rook fork is not the opponent's rook or queen, as this can be detrimental to the survival of the rook.
- Hence, employ this tactic carefully, as the rook is a piece of high value.

Practising the Strategy

- Practising the rook fork strategy with partners.

Lead Up Activity

Chess Match

Organise the students into two equal teams. Two teams of students play a chess match with each other. The team who wins the maximum number of matches is the winner.

Day 46

Health and Exercise Nutrition

Health Concept, Dimensions and Indicators

45 Minutes

LEARNING OBJECTIVES

- To know the concept of health and its aspects.
- To understand the different dimensions of health.
- To recognise the various indicators of health.

Teaching Learning Process: The teacher should handle the class through Lecture and Discussion Method.

Introduction

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" WHO (1948). The definition emphasises the holistic nature of health, encompassing not only physical health but also mental and social well-being".

Dimensions of Health

Health is a multidimensional concept that encompasses various aspects of well-being. The dimensions of health commonly recognised are:

- **Physical Health:** Ability to perform daily activities without physical stress and undue fatigue.
- **Mental Health:** Ability to cope with stress, maintain positive relationships, think critically and adapt to life's challenges.
- **Emotional Health:** Ability to recognise, understand and manage one's emotions effectively.
- **Social Health:** Cordial relationships and interactions with others. E.g. communication skills, empathy and cooperation.
- **Intellectual Health:** Ability to think critically to learn new concepts and engage in lifelong learning. E.g. intellectual curiosity, creativity, problem-solving skills and academic interests.
- **Spiritual Health:** Ability to search for meaning, purpose and connection to something greater than oneself. E.g. values, beliefs, ethics, fulfilment and alignment with one's core values.

- **Environmental Health:** Ability to focus on the impact of the physical, social and build an environment on human health. E.g. promoting clean air, water and food safety, pollution, climate change and access to green spaces. Teacher shall also use some pictures to highlight different dimensions of health.

Indicators to Assess Health

- **Nutritional Status :** Measures such as body mass index (BMI), height and weight measurements, dietary habits, micronutrient deficiencies and prevalence of malnutrition or obesity.
- **Physical Fitness:** Assessment of physical fitness levels through standardised tests - cardiorespiratory fitness, muscular strength and endurance, flexibility and agility.
- **Mental Health:** Indicators of mental health among school children include measures of emotional well-being, stress levels, anxiety, depression, self-esteem and resilience.
- **Oral Health:** Measures of oral health status, including prevalence of dental caries (cavities), periodontal health, oral hygiene practises and access to dental care services.
- **Vision and Hearing Health:** Screening for vision impairments and hearing impairments among school children to ensure early detection and intervention.
- **Immunisation :** Immunisation to preventable diseases among school-aged children to ensure protection against infectious diseases.
- **Social and Environmental Determinants :** Consideration of social determinants of health (e.g. family income, parental education, housing stability) and environmental factors (e.g. air quality, neighbourhood safety, access to recreational facilities) that may impact the health of school children.

Evaluation

- State the different dimensions of health.
- A quiz can be conducted on indicators of health by grouping the students in two or more.

Follow up

Students are asked to submit a report in pairs regarding their health as well as their partner's health in the following aspects: physical health, mental health, emotional health, social health, nutritional status, physical fitness, oral health, vision and auditory health.

Day 47

Health and Exercise Nutrition

Fluid Intake

45 Minutes

LEARNING OBJECTIVES

- To educate students about the importance of water and intake of water during physical activities.

Water and its Importance

Exercise nutrition plays a crucial role in supporting physical activity and sports and games performance. The knowledge of exercise nutrition allows sportspersons to perform well, ensure good recovery, ensure good recovery and to develop a personalised nutrition plan for the specific needs of the individual and sport. The requirement of major and minor nutrients, including water, is to be carefully planned and implemented in the sportsperson's diet. Therefore, "Water is a vital nutrient". Water is ranked next to oxygen as essential for life. Drink water before the feeling of a dry mouth becomes thirsty.

Water consumption requirement depends on the nature of activity involved by the sportsperson. Persons with a sedentary lifestyle may need less water than one who is involved in sports activities. The teacher shall explain in detail the difference in water consumption requirements between a normal individual and sportspersons.

Water is important for bodily function and even more important to hydrate and restore water before, during and after exercise to ensure sporting performance. The table clearly shows the water requirements between a normal individual and a sportsperson.

Normal Individual	Sportsperson(boys and girls)
Daily requirement as per NIN (National Institute of Nutrition)	Have higher requirements due to increased sweating and fluid loss during physical activity.
Boys - 8 glasses (2.5 litres) Girls - 6 glasses (2 litres)	Boys - 10 glasses (3 litres) Girls - 8 glasses (2.5 litres)
	After exercise it is important to replenish the water loss through proper hydration to avoid dehydration in the body.

Understanding hydration and dehydration is crucial for students, especially athletes. The teacher shall explain about different hydrating methods, symptoms of dehydration and preventive methods.

Hydration is the process of replacing water in the body due to physical activity. Drinking enough liquids throughout the day is essential when exercising or engaging in sports. Therefore, it is essential for a sportsperson to stay hydrated before, during and after the exercise. Sportsperson should prioritise proper hydration strategies to optimise their sports career and minimise the risk of dehydration-related complications. Practising at high intensity for longer hours, a homemade drink/sports drink may be helpful. It contains carbohydrates and electrolytes that can increase energy and help to absorb water. Drink plenty of fluids, such as water, diluted fruit juice and homemade drinks.

Daily Fluid Needs

Proper Hydration

- Regulates body temperature
- Keeps joints lubricated
- Helps to prevent infections
- Delivers nutrients to the cells

Dehydration

Dehydration in sports occurs when sportspersons lose more fluids than they consume, leading to a decrease in body water content. It significantly impacts sports performance. When an individual

becomes dehydrated, the body loses fluids and electrolytes, which are crucial for optimal physical function. Dehydration negatively affects athletic performance by impairing thermoregulation, reducing cardiovascular function, decreasing muscular endurance, increasing the risk of injury, impairing cognitive function and delayed recovery.

Symptoms of Dehydration in Sports

- Increased thirst, dry mouth, fatigue, dizziness, headache, decreased urine output, dark-coloured urine and muscle cramps.

Symptoms of Severe Dehydration in Sports

- Heat exhaustion or heatstroke, which are medical emergencies requiring immediate attention.

To Prevent Dehydration

- Drink fluids regularly.
- Drink water or sports drinks or homemade drinks containing electrolytes before, during and after physical activity.
- Monitoring urine colour can help to gauge the hydration status.
- Light-coloured urine indicates proper hydration and dark urine indicates dehydration.
- Dehydration in sports is a serious concern that can impact performance, health and safety.

Evaluation

- How much should one drink to stay hydrated during exercise?
- Discuss:
  a) The ways to prioritise water intake during the training.
  b) The impact of water loss on the body.

Follow up

- Ask some students to present a project on the details regarding the water consumption requirements of family members and neighbours.
- Ask the remaining students to do the same project with peer groups and sportspersons.

Day 48

Health and Exercise Nutrition

Homemade Sports Drinks

45 Minutes

LEARNING OBJECTIVES

- To educate students about proper rehydration methods.
- To find out the importance of homemade sports drinks.
- To prepare various homemade sports drinks.

Introduction of Sports Drinks

Sports drinks are beverages specifically designed to help athletes and active individuals rehydrate, replenish electrolytes and refuel during or after intense physical activity.

Importance of Homemade Sports Drinks

Teacher shall have the discussion in the following aspects.

- Discuss the role of homemade sports drinks in improving performance.
- Why are commercial sports drinks available in the market harmful?

Homemade drinks have a proven record that it can improve physical performance and increase the length of time for participation. Commercially available sports drinks are not recommended as they contains mainly artificial sweeteners which are really harmful. Homemade drinks can play a significant role in enhancing sports performance for several reasons:

1. **Hydration:** Proper hydration is important for optimal sports performance. Homemade drinks like whole grain/millet/fruit/vegetable-infused water/porridge contain electrolyte solutions which can help replace the lost fluids and electrolytes during exercise, ensuring athletes stay hydrated and maintain performance levels.
2. **Nutrient Intake:** Homemade drinks can be tailored to provide the necessary nutrients for sustained energy release during sports activities. For example, smoothies made with fruits, vegetables, yogurt can offer a balanced mix of carbohydrates, proteins and vitamins, aiding in muscle recovery and sustained energy release.
3. **Customisation:** Homemade drinks allow athletes to customise their beverage according to their specific nutritional needs and sport specific.
4. **Cost-effectiveness:** Making homemade drinks can be more cost-effective than purchasing commercial sports drinks, especially for athletes who require large quantities to support their training regimen.
5. **Digestibility:** Homemade drinks made with natural ingredients are often easier to digest compared to processed sports drinks.

Therefore homemade drinks optimise the sports performance and they help to stay hydrated during training and competition.

The Preparation of Homemade Drinks

Teacher shall explain the preparation of lemon water to the students

The Preparation of Lemon Water

Ingredients: Fresh lemons and Water.

Optional: Honey or a natural sweetener for added sweetness and energy boost.

Preparation

- Squeeze one or two fresh lemons into a water bottle.
- Add water to dilute the lemon juice.
- Add a small amount of honey or a natural sweetener to taste.
- Stir it well to mix the ingredients thoroughly.
- Serve chill with ice for a refreshing drink.

Benefits

- Best electrolyte replenishment and vitamin C boost.

Evaluation

- How to make homemade drinks?
- Discuss with the students the methods for nutrient intake.

Follow up

- Organise the students into groups to prepare the project entitled. "The Preparation of Homemade Drinks."

Day 49

Career Opportunities in Sports

Higher Studies in Physical Education

45 Minutes

LEARNING OBJECTIVES

- The students comprehend different career prospects in schools and colleges.

Teaching Learning Process: Lectures and discussion method.

Career Opportunities in Educational Institutions

Physical Education Teachers are typically employed in schools to instruct students from kindergarten to high school. Their goal is to encourage physical activity and overall well-being of students through various sports and activities.

1. Physical Education Teacher and Physical Director in Schools

After completing D.P.Ed., B.P.Ed. or M.P.Ed., individuals can become Physical Education Teachers in schools through the Teachers Recruitment Board. After completing M.P.Ed., one could be appointed as a Physical Director in a school by the Teachers Recruitment Board.

2. Director of Physical Education in Colleges

The primary requirement is a Master's Degree in Physical Education with SLET/NET or Ph.D. in Physical Education. Positions include Assistant Professor, Associate Professor or a Professor of Physical Education at colleges and universities.

3. Lecturer in Physical Education (SCERT/DIET)

The minimum qualification is a Master's Degree (Tamil, English, History, Geography, Maths, Physics, Chemistry, Botany, Commerce, Economics and Zoology) with M.P.Ed.

4. Assistant Professor, Associate Professor and Professor in Physical Education Colleges and Universities

Qualifications

The minimum qualification is a Master's Degree in Physical Education with SLET/NET, Ph.D. in Physical Education. In addition to qualifications, specific period of experience and a U.G.C recommended academic score are required for the Associate Professor and Professor Position.

5. Job Opportunities

- CIPE, DIPE, Physical Director -Grade I, Physical Director -Grade II and PET
- Director of Physical Education, Deputy Director of Physical Education and Assistant Director of Physical Education
- Professor, Associate Professor and Assistant Professor
- Lecturer
- Gym Instructor
- Fitness Trainer
- Physical Training Instructor
- Hostel Superintendent Cum Physical Training Instructor

Evaluation

- Do you know the salary potential and job outlook of careers in sports?
- Are you aware of the various roles and positions available, such as coaching, sports management, marketing and sports medicine?

Follow up

- Prepare a questionnaire to interview various physical education professionals.

Day 50

Career Opportunities in Sports

Sports Related Job Opportunities

45 Minutes

LEARNING OBJECTIVES

- The students understand different career oppurtunities related to sports and health.

Teaching Learning Process: Lecture and discussion method.

Career Opportunities in Health Industry

There are many career opportunities in the sports and health industry that merge in the field of sports and health. Here are potential paths available in this field.

Sports Medicine Physician: Sports Medicine Physician diagnoses and treats injuries related to sports and physical activities. He involves working with athletes at all levels, from recreational to professional and helps them to recover from injuries and optimise their performance.

Job Opportunities

Physiotherapist: Physiotherapists work with individuals to rehabilitate injuries, improve mobility and manage pain. In the sports context, physiotherapists often work with athletes to help them recover from injuries and develop strength and flexibility to prevent further injury.

Sports Nutritionist/Dietitian: Sports nutritionists work with athletes to develop nutrition plans that optimise athletes' performance and support athletes' training goals. This could involve creating meal plans, providing nutritional counselling and educating sportsmen on proper nutrition and requirements for their sport.

Exercise Physiologist: Exercise physiologists study the body's response to physical activity and develop exercise programmes to improve performance and overall health. In the sports industry, exercise physiologists work with athletes to design training programmes that enhance performance and reduce the risk of injury.

Sports Psychologist: Sports psychologists work with athletes to improve mental skills such as focus, confidence and resilience. They may provide counselling, mental skills training and performance enhancement techniques to help athletes perform their best.

Strength and Conditioning Coach: Strength and conditioning coaches develop and execute training programmes to enhance athletes' strength, speed, agility and endurance. They collaborate with individual athletes or teams to maximise performance and minimise likelihood of injuries.

Sports Scientist: Sports scientists conduct studies to comprehend the physiological, biomechanical, psychological and other elements of sports performance. They are employed in academia, research institutions or sports organisations to improve the knowledge of human performance in sports.

These are just a few examples of many career opportunities that exist in physical education. Depending on interests and background, one can do many jobs in this growing field.

Evaluation

- Discuss the various aspects of career opportunities in the sports industry with students.

Follow up

- Visit a community health centre or clinic that serves underserved populations to learn about primary care services.

Annexure

Unit-1

Scientific Basis of Physical Education

The scientific basis of physical education focuses on the scientific approach related to physical activities and related endeavours. There are many disciplines and principles involved in the scientific process of physical education. Disciplines such as biology, physiology, biomechanics, psychology, kinanthropometry, technology, nutrition, medicine, kinesiology etc contribute to the scientific process of physical education. Applying scientific knowledge in physical education is beneficial for the overall development of school students.

Biological Principles

Biological principles form the foundation of physical education, encompassing the understanding of human anatomy, physiology, heredity, environment, nutrition and growth and development. Here are some keynotes on the biological principles of physical education:

Human Anatomy

a) Study of the structure and function of the human body.

b) Understanding of anatomy helps in recognising movement patterns, joint actions, and muscle functions during physical activity.

Human Physiology

a) Study of the functions and processes of the human body.

b) Includes concepts such as metabolism, energy rejuvenation, oxygen uptake, waste removal etc.

c) Knowledge of physiology helps in understanding how the body responds and adapts to exercise, including changes in heart rate, breathing rate and muscle fatigue.

Heredity, Environment and Nutrition

The optimal and holistic development of children relies on heredity, the environment and nutrition.

Heredity

a) Heredity is the process of gene transfer from ancestors to offspring.

b) Individual (body types) genetic factors influence athletic potential, muscle fibre composition, injury susceptibility and metabolic traits.

c) Heredity is referred to as nature and the environment is termed as nurture.

Environment

a) The environment includes physical activity opportunities for the students, family and social influence, cultural norms and values, educational policies of the state and institutions.

b) The environment plays a vital role in the optimal growth and development of children during the growth stage.

Nutrition

a) Understanding the role of nutrition in fuelling physical activity and supporting recovery.

b) Knowledge of macronutrients (carbohydrates, proteins, fats) and micronutrients (vitamins and minerals) are essential for optimal health and performance.

c) Applying principles of nutrition to promote energy balance, hydration and nutrient timing to enhance physical performance and recovery.

Classification of Students

The students can be classified according to their age, fitness level, skill level, learning style and special needs. However, the preliminary stage of classification is based on their age, such as chronological age, anatomical age, physiological age and mental age.

Chronological Age: Age in years, months and days (Calendar years and months).

Anatomical Age: Indicated by the ossification of bones and also by the stage of dentition.

Physiological Age: Determined by the signs of puberty (Pubic hair for boys and menstruation for girls).

Mental age: Determined using intelligence tests.

Stages of Growth

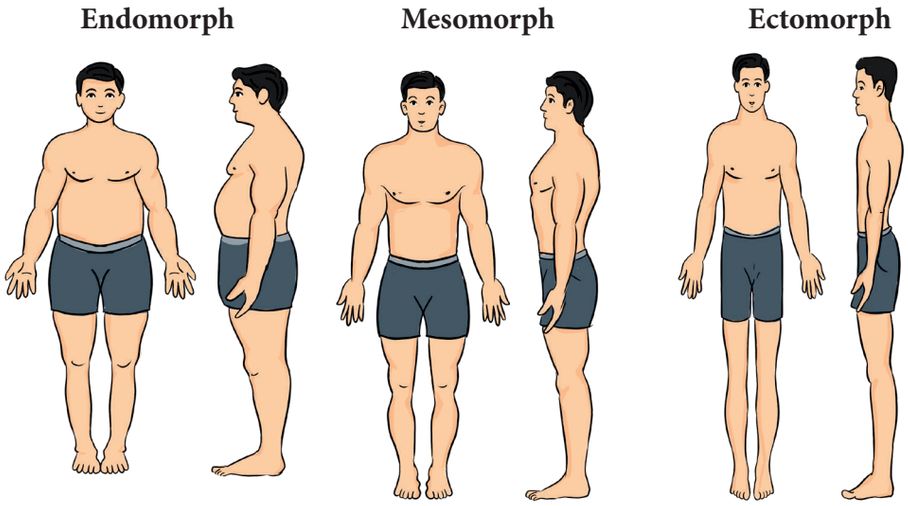
The stages of growth are classified into five stages. They are Infancy (0-2 years), Early Childhood (3-5 years), Middle Childhood (6-11 years), Adolescence (12-18 years) and Adulthood (above 18).

Adolescence is marked by rapid physical changes associated with puberty, including growth spurts, hormonal changes and sexual maturation. Cognitive development continues with increased critical thinking skills, self-awareness and identity formation. Socially, adolescents navigate peer relationships, explore romantic interests and begin to establish independence from family while seeking acceptance within peer groups.

Physical education plays a vital and inevitable role during adolescence, since it promotes physical fitness and wellness, development of motor skills and coordination, enhancement of cognitive functioning, fostering of social skills and team work, building self-esteem and confidence, promotion of a positive body image and well-being and finally attainment of lifelong health habits.

Somatotype of Classification

The classification of body type is the first step in the sports talent identification and nurturing process. Somatotype is a classification system developed by William Herbert Sheldon in the 1940s, which categorises individuals based on their body shape and composition. Sheldon proposed three primary somatotypes or body types: **endomorph, mesomorph** and **ectomorph.** These somatotypes represent different combinations of body fat, muscle mass and bone structure and they are often used in sports science and athletic training to understand athletes' physical characteristics and performance potential.



Endomorphs tend to have a higher percentage of body fat, with a rounded or soft physique. They typically have a wider waist and hip and may store fat more readily.

Potential Sports Implications: Endomorphs may excel in sports that benefit from size and strength, such as shotput, discus throw, hammer throw, wrestling, weight lifting, body building etc.

Mesomorphs are characterised by a muscular and athletic build with a moderate amount of body fat. They typically have broad shoulders, a narrow waist and well-defined muscles.

Potential Sports Implications: Mesomorphs are often considered well-suited for a wide range of sports and activities due to their combination of strength, power and agility. They may excel in sports that require explosive movements such as sprinting, football, hockey, basketball, gymnastics and martial arts.

Ectomorphs are typically lean and slender, with a lower percentage of body fat and narrow bone structure. They tend to have a fast metabolism and have to take effort to gain weight or muscle mass.

Potential Sports Implications: Ectomorphs may excel in endurance sports or activities that prioritise speed, agility and aerobic capacity, such as long-distance running, cycling, swimming and hiking. Their lighter frame may provide advantages in sports that require sustained effort over extended periods.

Gender Difference

Female and male differ in many aspects and the following differences become more significant.

a) **Height and Weight:** At puberty, though the girls grow faster, boys overtake them in height and weight at the later stage.

b) **Skeleton:** The bones of male are heavier and stronger than female.

c) **Fat:** Female have more fat percentage in their body weight than male.

d) **Muscle:** Men excel Women in the quantity and strength of the muscles.

e) **Hormone:** Male have dominance in testosterone and female have dominant estrogen.

Peak Height Velocity

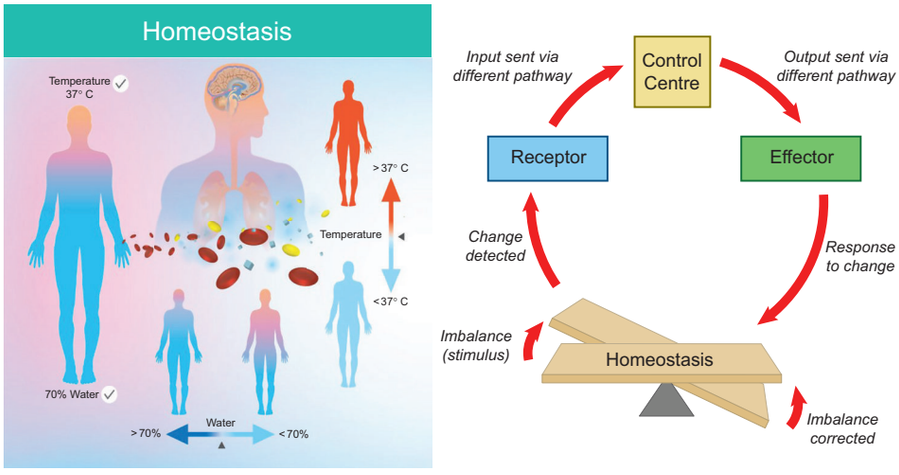
Peak Height Velocity (PHV) refers to the period during adolescence when an individual experiences the most rapid growth in height. It is a critical milestone in physical development and typically occurs around the onset of puberty. PHV usually occurs between the ages of 12 and 14 for girls and between 14 and 16 for boys. Girls typically experience PHV earlier than boys. PHV has implications for sports participation, as changes in height, body composition and physical abilities can influence athletic performance and specialisation. For example, athletes may experience improvements in speed, power and agility following PHV, potentially affecting their performance in sports such as sprinting, jumping and team sports. Adolescents are particularly vulnerable to injuries during PHV due to rapid changes in bone length, muscle strength and coordination. Coaches and sports professionals should be aware of this increased injury risk and implement injury prevention strategies, such as proper warm-up, strength training and technique development.

Physiological Principles

Physiological principles play a crucial role in the field of physical education, providing the foundation for understanding how the human body responds and adapts to exercise. Here are some key physiological principles of physical education along with brief notes.

Homeostasis

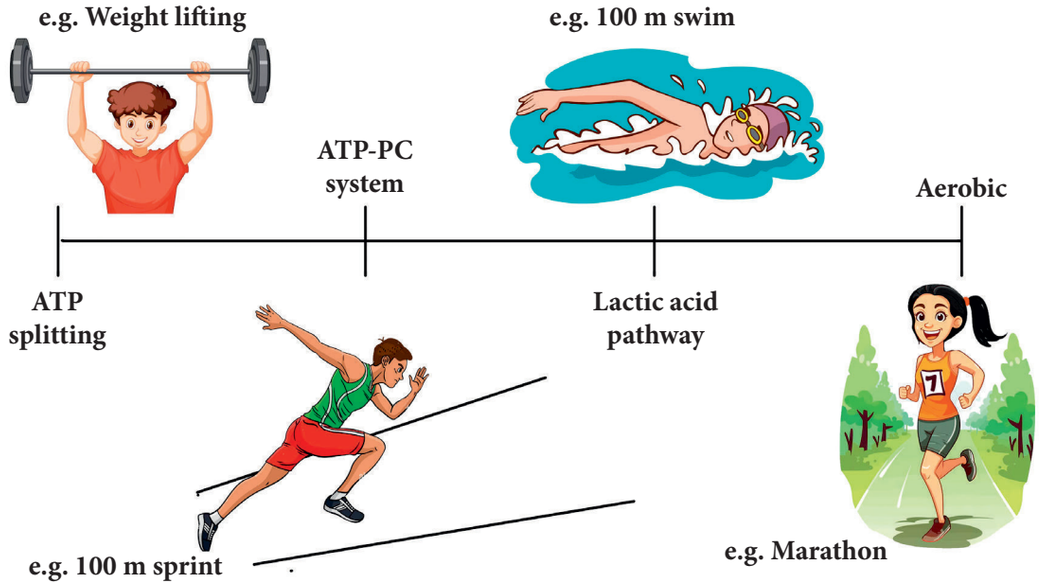
Homeostasis involves the regulation of numerous physiological variables, including body temperature, blood pressure, blood glucose levels, pH (potential of hydration) balance and fluid balance.



Energy Systems

The human body relies on different energy systems during physical activity, including the phosphagen system, glycolytic system and the aerobic system. Understanding how these systems function and interact helps in designing appropriate exercise prescriptions for different activities and fitness goals.

Note: Energy systems dictate the type and intensity of physical activity an individual can sustain. For example, high-intensity activities like sprinting primarily utilise the phosphagen and glycolytic systems, while endurance activities like long-distance running rely more on the aerobic system.



Cardiorespiratory Fitness

Cardiorespiratory fitness refers to the ability of the cardiovascular and respiratory systems to supply oxygen to working muscles during sustained physical activity. It is typically assessed using measures such as VO^2 max and heart rate response to exercise.

Note: Improving cardiorespiratory fitness enhances endurance, reduces the risk of cardiovascular diseases and improves overall health and well-being.

Temperature Regulation

During exercise, the body regulates its temperature through processes such as sweating, vasodilation and increased respiratory rate. Understanding these mechanisms helps in preventing heat-related illnesses and optimising performance in different environmental conditions.

Note: Proper hydration, appropriate clothing and acclimatisation are important strategies for managing body temperature during exercise.

By applying these physiological principles, physical educators can design evidence-based exercise programmes, provide appropriate guidance for safe and effective training and promote lifelong health, fitness and well-being among students.

Biomechanical Principles

Biomechanics plays a crucial role in understanding human movement and optimising performance in physical education.

Definition : Biomechanics is the study of the mechanical aspects of living organisms, particularly the analysis of movement and the forces acting on the body during physical activity.

Kinematics

Kinematics focuses on the description of motion without considering the forces involved. In physical education, kinematic analysis helps in understanding movement patterns, technical efficiency

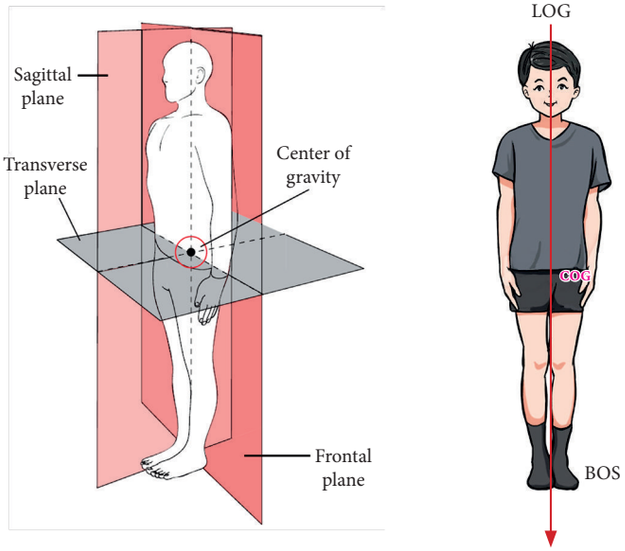
and skill acquisition. Reference points, joint angles and segmental velocities are the key parametres studied in kinematics.

Kinetics

Kinetics deals with the forces that cause motion. Biomechanical analysis of kinetics involves studying factors such as muscle forces, joint torques and external forces acting on the body during physical activities. Understanding kinetics is essential for optimising performance, preventing injuries and designing effective training programmes.

Centre of Gravity, Balance and Stability

In physical education, the concept of the Centre of Gravity (COG) is crucial for understanding biomechanics, balance, stability and movement efficiency.



Biomechanics of Movement

The Centre of Gravity is the point where the entire weight of an object or body is concentrated or balanced. In humans, it's typically located around the pelvis. Understanding COG helps in analysing movement patterns and biomechanics during various physical activities such as walking, running, jumping and throwing. Coaches and educators use the knowledge of COG to teach proper body positioning, alignment and movement mechanics to optimise performance and reduce the risk of injury. For example, in sprinting, maintaining COG, low and slightly forward leaning enhances acceleration and stability.

Balance and Stability

Balance refers to the ability to maintain COG over the basis of support. Stability is the resistance to change in COG or equilibrium. Coaches and educators emphasise techniques to improve balance and stability by training individuals to control their COG. Exercises such as standing on one leg, performing squats or using balance boards help to develop proprioception and neuromuscular control to maintain COG within the base.

Sports Skills and Techniques

In sports, athletes often manipulate their COG to optimise performance. For example, in basketball, a player may lower their COG to enhance stability while defending or increase their COG to generate power during a jump shot. Understanding COG allows coaches and athletes to analyse and refine techniques to maximise efficiency and effectiveness in sports skills, such as tackling in football, serving in tennis and diving in swimming.

Equipment Design

Equipment design in physical education and sports takes into account COG to optimise performance and safety. For example, the design of bicycles, skis and skateboards considers the position of the rider's COG to enhance stability and manoeuvrability. Safety equipment such as helmets and body armour are designed to protect the body's vital areas, including COG, in case of falls or collisions.

Injury Prevention

Knowledge of COG is important for injury prevention in physical activities and sports. Proper body mechanics and alignment that keep COG within the base of support to reduce the risk of falls, twists and other biomechanical errors that can lead to injury. The overall understanding of the centre of gravity in physical education is essential for optimising the quality of movement, enhancing performance, promoting safety and reducing the risk of injury in various physical activities and sports. Coaches, educators and athletes can apply this knowledge to improve technique, develop skills and achieve better outcomes in physical education and sports participation.

Newton's Laws of Motion

Newton's laws of motion are fundamental principles in physics that have significant implications for physical education, particularly in understanding movement, biomechanics and sports performance. The applications of Newton's laws in physical education are given below.

The First Law of Motion (Law of Inertia)

The first law states that an object will remain at rest or in uniform motion in a straight line unless acted upon by an external force. In physical education, this law explains why it's easier to maintain a stationary position or a constant speed while running on a flat surface. It also highlights the importance of overcoming inertia to initiate movement or change direction in sports activities. Coaches and educators can use this principle to teach proper starting techniques in sprinting or to emphasise the importance of maintaining momentum in activities like jumping or throwing.

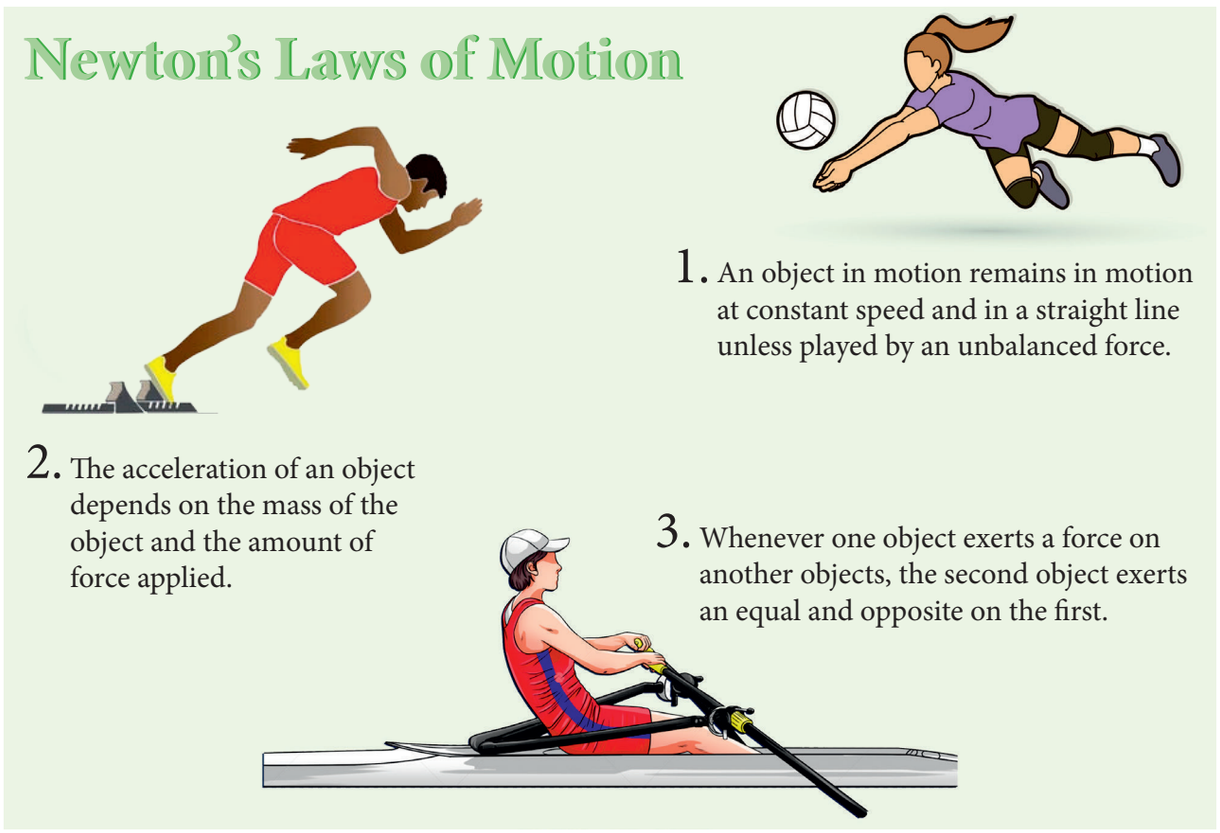
The Second Law of Motion (Law of Acceleration)

The second law states that the acceleration of an object is directly proportional to the force applied to it and inversely proportional to its mass. It is expressed by the formula $F = m \times a$, where F is the force applied, m is the mass of the object and is the resulting acceleration. In physical education, this law helps explain how forces influence the acceleration and deceleration of athletes during sports movements. For example, greater force application is required to accelerate a heavier object or athlete,

such as a shot put discuss or hammer throw. Coaches can use this principle to teach athletes how to generate maximum force during activities like sprinting, jumping and throwing by focusing on proper technique and strength development.

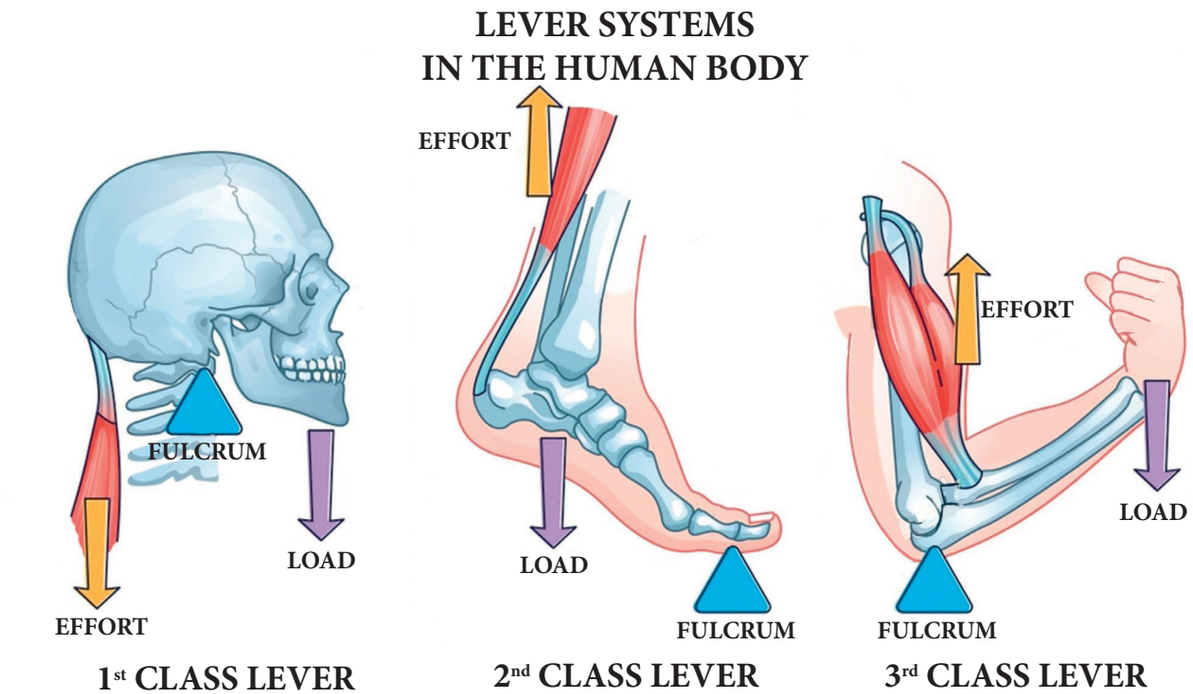
The Third Law of Motion (Action-Reaction)

The third law states that for every action, there is an equal and opposite reaction. In other words, when one object exerts a force on another object, the second object exerts an equal and opposite force back on the first object. In physical education, this law helps to explain interactions between athletes and the ground, equipment or other athletes during sports movements. For example, during sprinting, the force exerted by the athlete's foot on the ground (action) results in an equal and opposite force pushing the athlete forward (reaction). Coaches can use this principle to teach athletes how to optimise force production and minimise energy losses during sports movements such as running, jumping and striking. In overall, Newton's laws of motion provide a scientific foundation for understanding movement mechanics, biomechanics and sports performance in physical education. By applying these principles, educators and coaches can enhance athletes' understanding of movement concepts, improve performance outcomes and reduce the risk of injury during physical activities and sports.



Levers

In physical education, understanding the principle of levers is crucial as they play a significant role in human movement, biomechanics and sports performance. Levers are simple machines consisting of a rigid bar or beam (the lever), a fulcrum (a fixed point around which the lever rotates) and an effort force applied to move a resistance or load. There are three types of levers: first-class, second-class and third-class levers. Here are examples of each type of lever in physical education.



First-Class Lever

In a first-class lever, the fulcrum is located between the effort force and the resistance. When the effort force is applied, it can either increase the force or change the direction of the force. For example, Seesaw or teeter-totter.

In a seesaw, the fulcrum is in the middle, with two individuals sitting at opposite ends. When one person pushes down (applies the effort force) on their end, the other end rises (resistance), allowing the person on that end to go up.

Physical Education Application: A first-class lever can be observed in activities such as neck extensions during weightlifting, where the head acts as the resistance, the neck muscles apply the effort force and the spine serves as the fulcrum.

Second-Class Lever

In a second-class lever, the resistance is between the fulcrum and the effort force. This type of lever allows for the application of a large force to move a resistance with less effort. For example, Wheelbarrow

In a wheelbarrow, the load (resistance) is placed between the wheel (fulcrum) and the handles where the person applies force (effort force). This arrangement allows a person to lift a heavy load with less effort.

Physical Education Application: An example of a second-class lever in physical education is calf raise exercise. The ball of the foot serves as the fulcrum, the body weight acts as the resistance and the calf muscles apply the effort force to lift the body upward.

Third-Class Lever

In a third-class lever, the effort force is applied between the fulcrum and the resistance. This type of lever allows for rapid movement and speed but requires more effort compared to the other types of levers. Example: Bicep curl

During a bicep curl, the elbow joint acts as the fulcrum, the weight in the hand serves as the resistance and the bicep muscle applies the effort force to lift the weight.

Physical Education Application: A common example of a third-class lever in physical education is the forearm during a forearm curl exercise. The elbow joint serves as the fulcrum, the hand holding the weight serves as the resistance and the bicep muscle applies the effort force to lift the weight. Understanding how levers function in the human body helps athletes and coaches optimise movement mechanics, enhance performance and prevent injuries in various physical activities and sports.

Fluid Mechanics

Fluid mechanics plays a significant role in various aspects of physical education, particularly in understanding human movement in fluids such as air and water. Here are several ways in which fluid mechanics applies in physical education.

Swimming Technique

Understanding fluid mechanics is crucial for swimmers to optimise their technique and efficiency in the water. Concepts such as drag, buoyancy and propulsion influence stroke mechanics, body position and breath control.

Coaches use principles of fluid mechanics to teach swimmers how to minimise drag, increase propulsion and maintain streamline positions to improve the speed and endurance in the water.

Aquatic Exercise and Rehabilitation

Aquatic exercise programs often leverage the properties of water, such as buoyancy and resistance, for rehabilitation and fitness training. Physiotherapists and exercise physiologists apply principles of fluid mechanics to design aquatic exercise routines that provide low impact resistance training, improve joint mobility and promote cardiovascular fitness in individuals with injuries or chronic conditions.

Diving and Water Polo

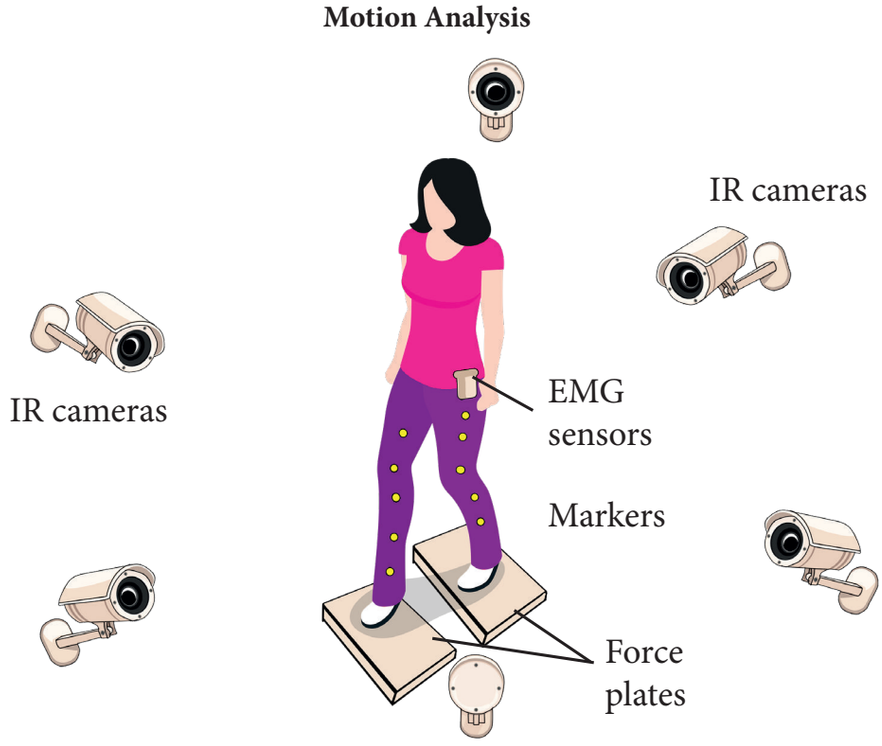
Fluid mechanics play a role in diving and water polo, where athletes must navigate through water efficiently while minimising resistance. Divers use principles of fluid mechanics to control their body position, streamline their movements and execute precise dives to minimise splash and maximise entry into the water. Water polo players apply knowledge of fluid mechanics to navigate through the water, change direction quickly and generate propulsion during gameplay.

Aerodynamics in Sports

Coaches and athletes use aerodynamic principles to optimise equipment design such as the shape of footballs or javelins to reduce drag and improve flight characteristics. Athletes may also utilise aerodynamic positioning and techniques, such as drafting in cycling or maximising speed in sprinting to minimise air resistance and enhance performance.

Motion Analysis

Biomechanics allows for the analysis of human movement patterns using quantitative measurements. Techniques such as motion capture, video analysis and force plates are employed to assess various aspects of movement including angle of joints, segmental velocities and ground reaction forces.



Psychological Principles

Personality Traits

Individuals vary in their personality traits. Personality traits are enduring patterns of thoughts, feelings and behaviour. Personality traits such as extraversion, conscientiousness, openness to experience, agreeableness and neuroticism can influence how students engage in physical education. For example, an extroverted student may enjoy team sports and group activities, while an introverted student may prefer individual sports or activities that allow for solitary practise.

Extrovert
- ✓ Likes social interaction
- ✓ Centre of attention
- ✓ Big group of friends

Ambivert
- ✓ Listener and talker
- ✓ Good sense of trust
- ✓ Need social and alone time

Introvert
- ✓ Good listener
- ✓ Working solo
- ✓ A few close friends

Motivation and Goal Setting

Individuals engage in physical activity when they are motivated to achieve specific goals, whether intrinsic (personal enjoyment, sense of accomplishment) or extrinsic (external rewards, social recognition). Goal-setting theory (Locke & Latham, 1990) emphasises the importance of setting clear, specific and challenging goals to enhance motivation and performance.

Self-Efficacy

Self-efficacy refers to an individual's belief in their ability to successfully perform a task or achieve a desired outcome. Bandura's Social Cognitive Theory (Bandura, 1986) highlights the role of self-efficacy in influencing behaviour, motivation and persistence in physical activity.

Attribution Theory

Attribution theory explores how individuals interpret and explain their own behaviour and others' behaviour in achievement situations. It helps to understand how attribution to success or failure (e.g. ability, effort, luck) influence motivation, persistence and future performance.

Intrinsic and Extrinsic Motivation

Intrinsic motivation arises from internal factors such as enjoyment, interest or personal satisfaction derived from engaging in physical activity.

Extrinsic motivation involves external rewards or incentives such as praise, grades or tangible rewards.

Deci and Ryan's Self-Determination Theory (Deci & Ryan, 1985) emphasises the importance of supporting intrinsic motivation for sustained engagement in physical activity.

Cognitive and Behavioural Strategies

Cognitive-behavioural strategies including imagery, self-talk, goal-setting and relaxation techniques are used to enhance performance, manage anxiety and promote positive attitudes towards physical activity. These strategies help individuals develop mental skills and coping mechanisms to overcome challenges, setbacks and performance anxieties.

Social Facilitation and Group Dynamics

Social facilitation theory examines how the presence of others influences individual performance and behaviour in physical activity settings. Group dynamics, which includes cohesion,

leadership and social support play a crucial role in promoting adherence, enjoyment and motivation in group-based physical activities. These psychological principles provide insights into the factors influencing individuals' engagement, motivation and behaviour in physical education and inform the development of effective strategies to promote long-term participation and enjoyment in physical activity.

The contents of units II and III are covered in 1 to 45 days lesson.

Unit-IV

Health and Exercise Nutrition

Hydration

Hydration is the process of replacing water in the body due to physical activity. It is crucial to drink enough liquids all day long exercising or playing a sport. Therefore, it is essential for sportspersons to stay properly hydrated before, during and after exercise. Sportsperson should prioritise proper hydration strategies to optimise their sports career and minimise the risk of dehydration-related complications. Practising at high intensity for longer hours, a homemade drink/sports drink may be helpful. It contains carbohydrates and electrolytes that can increase energy and help to absorb water. Drink plenty of fluids such as water, dilute fruit juice, homemade drinks.

Body Water Loss

Daily water requirement for the body.

How much fluid one should drink during the play depends on how long, how hard, which sport, body mass and climatic condition. Calculating body water loss before and after sports competition provides an idea on hydration status of the body, helps to increase performance, supports health and safety. This knowledge is necessary for every sportsperson.

Check Urine : Note the volume of urine and its colour. It should be a light yellow, like lemonade and not clear.

Monitor Weight Loss: Weigh before and after play. Weight loss during activity occurs generally due to water loss. If one loses more than 2% of body weight, one might not be drinking enough fluid. That can lead to dehydration and negatively affect play.

- Drink 350 to 500 ml of water 2 to 3 hours before the start of exercise.
- Drink 200 ml of water 20 to 30 minutes before the start of exercise or during warm-up.
- Drink 150 to 200 ml of water every 10 to 20 minutes during exercise.
- Drink 235 ml of water not more than 30 minutes after exercise

Activity: Ask the students to check the urine colour and weight loss in grams after every training and rehydrate water accordingly. This activity enhances students' knowledge of water intake during training and competitions.

Homemade Sports Drink

Fermented Rice Water

Fermented cooked rice water gives instant energy and balances electrolytes in the body to prevent dehydration, fatigue and weakness.

Preparation

- **Ingredients:** Whole fermented rice, water and a clean container.
- **Washing the rice:** Rinse the rice thoroughly to remove any impurities or excess starch.
- **Soaking:** Place the washed rice in a container. Add water to the rice and cover it. Let it soak for at least 24 hours at room temperature. Natural fermentation will occur, turning the water slightly sour.
- **Straining:** After 24 hours, strain the rice, separating the water from the grains. Add 1/4 of fenugreek, cumin, asofoetida powder and curd to it.
- Drink 150 to 200 ml prior to post practice and competition.

Fruit/Vegetable Smoothies

Ingredients

- 2 medium-sized carrots, 1 medium-sized beetroot, 1 inch piece of ginger (optional), 1-2 teaspoons of lemon juice (Optional: Water for blending)

Preparation

- Wash the carrots and beetroot thoroughly.
- Peel the carrots and beetroot.
- Chop the carrots and beetroot into small pieces for easier blending.
- If including ginger, peel it and chop it into small pieces.
- Put the carrot pieces, beetroot pieces and ginger into a blender.
- Add water to the blender to cover the ingredients.
- Blend until smooth. If the consistency is too thick, add adequate water.

Unit - V

Career Opportunities in Sports

There are many job opportunities, open career options with broader choices in Physical Education and Sports Career in India. To make a career in physical education, one should start by setting modest goals that are attainable. The sports administrative heads in schools and colleges receive attractive salaries as well as any other professionals, because they bring honour, respect and revenue to their institutions by winning highly rated sports titles.

Sports Coaching

Coaches are sportspersons or players with knowledge of fundamentals, techniques and rules of competitive sports or games. They are responsible for all the preparation and performance of teams. They are also employed in government sports centres, sporting clubs, holiday resorts, etc., for special sports. A career in sports has been mainly focused on teaching and coaching in schools, colleges and universities.

Physical education professionals and sportspersons who have specialised knowledge in coaching and desire to serve their students effectively can enhance their knowledge as well as revenue. Programmes offered by Nethaji Subhas National Institute of Sports are:

- Master of Sports in Coaching – Two years duration
- Diploma in Sports Coaching – One year duration.
- Certificate course in Sports Coaching – Six weeks duration.

Sports Event Management Organisation

Sports event management and organisation are considered as the backbone of physical education and sports. The main objective of management and organisation in sports and physical education is to organise and manage physical activities and sports competitions. Event managers specialise in organising and coordinating sporting events such as tournaments, races, championships and exhibitions. They handle logistics, venue selection, scheduling, staffing and other aspects of event planning and execution. The major international tournaments are Organised by them.

- The job of sports event manager involves planning, organising and coordinating various aspects of an event.
- The job scope of a sports event manager may vary depending on the scale of the event.
- A sports event manager is responsible for ensuring that all necessary equipment and arrangements are available and in place for the event.
- A successful sports event requires someone who is careful and possesses leadership qualities.
- Being a sports event manager provides an opportunity to work closely with players and pursue a passion for sports.

Business Industry

A person who wants a career in the sports industry must have knowledge of physical education and sports. Now sports is a huge industry with multicrore turn over.

Sports Clothing and Equipment Designer

If a person has zeal and interest in fashion designing, then she/he can work as a sports clothing and equipment designer.

Sports Marketing

The sale and purchase of goods related to sports is called sports marking. The purpose of sports marketing is to buy and sell related sports goods from India and abroad. Sports marketing is a beautiful system. If a person has knowledge of sports then she/he can make a career in this field and it will become a good source of attractive income.

Government and Public Sector

In the government and public sector, there are various career opportunities available for individuals interested in sports. These opportunities typically involve roles in sports administration, education, recreation and health promotion. Here are some examples:

Sports Administration: Government departments and agencies responsible for sports and recreation often hire professionals to oversee the planning, development and implementation of sports programmes and policies. Roles may include sports administrators, directors of sports programmes and sports coordinators.

Recreation Management: Municipalities, parks and recreation departments offer positions focused on organising and managing recreational sports leagues, tournaments and events for community members of all ages.

Sports Facility Management: Public sports facilities such as stadiums, arenas and community sports centres require managers, event coordinators and maintenance staff to ensure smooth operations.

Public Health Promotion: Government health departments and public health organisations may offer opportunities for professionals to promote physical activity and healthy lifestyles through sports and recreation initiatives.

Sports Medicine and Therapy: Public hospitals, clinics and healthcare facilities may employ sports medicine physicians, physiotherapists and other healthcare professionals to provide treatment and rehabilitation services to athletes and individuals with sports-related injuries.

Policy and Advocacy: Professionals in the public sector may work on developing and advocating for policies related to sports, including initiatives to promote inclusivity, accessibility and fair play in sports participation.

These are just a few examples of the diverse range of career opportunities available in the government and public sector for individuals passionate about sports and recreation.

CLASS XI - Grid							
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Day 8**
Kabaddi Toe Touch	Kabaddi Kicking	Kabaddi Knee Catch	Kabaddi Waist Catch	12 Stage Asana and Savasana	Beach Volleyball Passing	Beach Volleyball Attacking and Blocking	200m Run Start and Acceleration Phase
Day 9	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 16**
200m Run Curve Run and Finish	Tadasana and Focused Attention	Basketball Dribbling	Basketball Catch and Pass	Basketball Perimeter Shooting	Basketball Four Corners Pivoting	Padahasthana and Breathe Count	Boxing Parrying
Day 17	**Day 18**	**Day 19**	**Day 20**	**Day 21**	**Day 22**	**Day 23**	**Day 24**
Boxing The left Hook	1500m Starting and Arm Action	1500m Stride and Finishing	Trikonasana and Alternate Nostril Breathing	Lawn Tennis Forehand Volley	Lawn Tennis Backhand Volley	Lawn Tennis Forehand Lob	Lawn Tennis Backhand Lob
Day 25	**Day 26**	**Day 27**	**Day 28**	**Day 29**	**Day 30**	**Day 31**	**Day 32**
Vajrasana and Sheetali	Taekwondo Rising Block	Taekwondo Reverse Round Kick	400m Hurdles Approach, Running between Hurdles and Take off	400m Hurdles Clearance Phase- Lead Leg, Trail Leg and Landing	Yogamudra and Kapalabhati	Handball Catching while Running	Handball Jump Pass
Day 33	**Day 34**	**Day 35**	**Day 36**	**Day 37**	**Day 38**	**Day 39**	**Day 40**
Handball Jump Shot	Handball Wing Shot	Salabasana and Humming Bee Breathing	Squash Forehand Stroke and Backhand Drive	Squash Volley, Lob and Drop Shot	High Jump Straddle Jump or Belly Roll Technique	High Jump Fosbury Flop Technique	Pole Vault Grip and Carry Position, Approach, Pole Plant and Take off
Day 41	**Day 42**	**Day 43**	**Day 44**	**Day 45**	**Day 46**	**Day 47**	**Day 48**
Pole Vault Penetration, Rock-Back, Stretch and Turn, Bar Clearance and Landing	Discuss Throw Standing Throw	Discuss Throw Rotation Method	Chess Aggressive Rook Placements	Chess Rook Fork	Health Concept, Dimensions and Indicators	Fluid Intake	Homemade Sports Drinks
Day 49	**Day 50**						
Higher Studies in Physical Education	Sports Related Job Opportunities						

NOTES

CLASS – 12

INDEX

Day 1

Throwball

Spin Serve

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

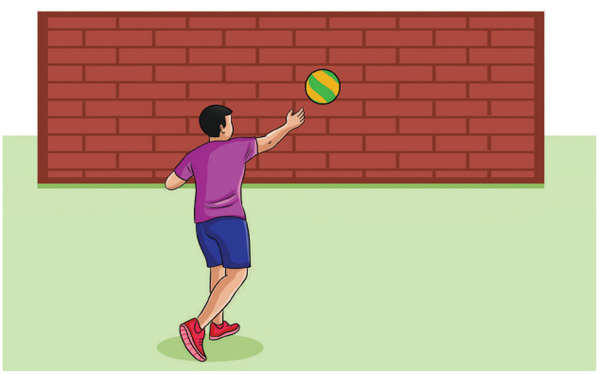
Teaching the Skill

- Keep the ball behind the head and bend the arm at the elbow.
- Bring the arm forward, spin the ball quickly with wrist action.
- After releasing the ball, continue the motion of the arm in the direction of the net. This helps to maintain accuracy and increases the power to the serve.

Practising the Skill

Wall Practice

Practice spin serve against the wall. Start with short distances and gradually increase the distance and become more accustomed.



Lead Up Activity

Practice Match

Organise the students into two groups to play a match. Allow spin serve only. The team which scored the first fifteen points is the winner.

Day 2

Throwball
Jump Serve

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

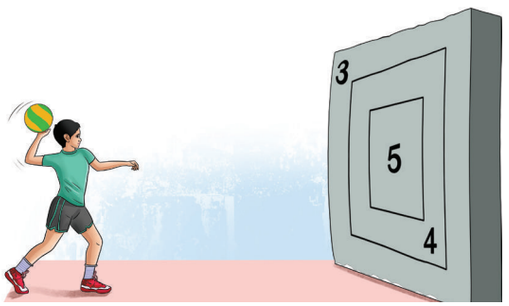
- Stand apart shoulder width, the legs bent at knees and body-weight evenly distributed.
- Hold the ball with palms with fingers spread above waist height in front of the body.
- Jump and swing the throwing arm back.
- Swing the throwing arm forward and send the ball forcibly.
- As follow-through, swing the hand forward to the top of the net and move on to the court.

Practising the Skill

Partner Practice

- Perform a jump serve with a wall or a partner.

Lead Up Activity



Aim the Target (Jump Service)

Students are organised into two teams. The teacher draws different sized boxes on the wall and mentions the points in the boxes, as shown in the picture. Mark a sprinting area 9 metres away from the wall. After the teacher's signal, the first student in the team has to perform a jump service towards the boxes. Points will be awarded as indicated on the wall. Each student has 3 chances and total points are added to the teams. The team that scores the maximum points is the winner.

Day 3

Throwball
Jump Shot

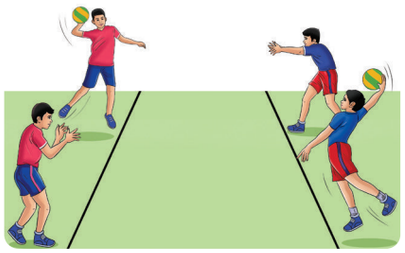
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Jump and throw the ball forcefully, full arm extended, with quick wrist action.
- Return to the floor using both legs.

Practising the Skill

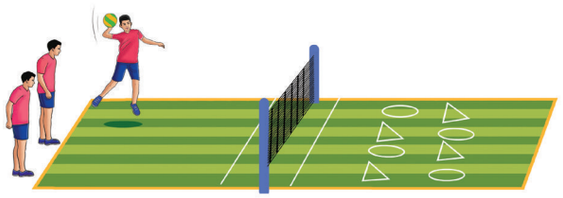


Partner Practice

- Students stand in pairs facing each other at a distance of 9m.
- They shall be provided with the ball.
- Practising the jump shot, focusing on the arm swing and follow-through without jumping.
- Start with the jumps of low height and progressively increase the height.

Lead Up Activity

Jump Shot Accuracy Game



Organise the students into two groups. Place targets on the opposite side of the court, such as hoops, cones or marked zones. Students take turns executing jump shots and aim to hit the targets. Each student has two chances and finally, each student's score adds to the team score. The team that scores the maximum is the winner.

Day 4 — Throwball

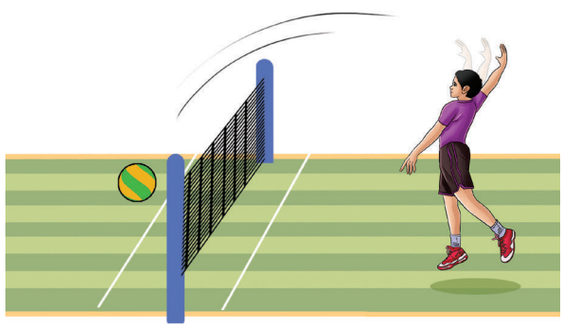
Drop — 45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- After receiving the ball, give a fake to throw long into behind the opponents court and drop the ball near the net accurately.

Practising the Skill



Partner Practice

- Practice drop skills with the help of a partner.

Lead Up Activity

Practice Match

Organise the students into smaller teams of 2 or 3. Student shall play drops while playing a match. Practice matches should be conducted on the court with reduced measures. The team that reaches ten points first is the winner.

Day 5

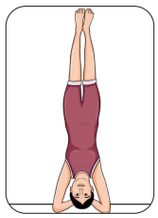
Sirasasana and Breathing Techniques

45 Minutes

Posture: Headstand pose

Position: Inverted

Procedure:



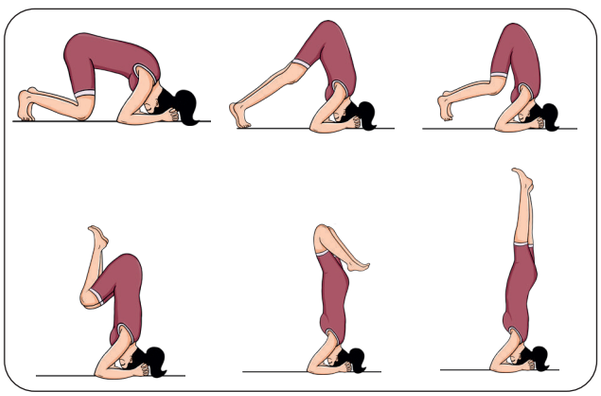
Posture: Headstand pose. It is an advanced asana which involves balancing on the head.

Preparatory exercises: As shoulders, arms and upper abdomen experience pressure during this asana. The following asanas should be done to strengthen those parts. Tadasana, Gomukhasana, Bharadvajasana.

Step 1

- Start with Vajrasana or kneeling pose.
- Bend forward and place hands on the floor with fingers interwined.
- Hands and elbows rest on the floor to form a triangle.

Step 2



Half head stand pose

- Place the top of the head in between the interlocked fingers.
- Move forward and lift the buttocks up so that the thighs are perpendicular to the ground (straightening of legs).

Step 3

- Move knees slightly inward towards abdomen and apply pressure on the hands to slightly lift legs and trunk a few inches above the ground. (hold breathe while lifting body)
- Lift the trunk further till it is perpendicular to the ground. Body weight is balanced by the hands and to some extent by the head. Thighs and legs may not be vertical at this stage.
- Slowly lift and move the legs from front of the body to back. The legs hang freely. (normal breathing at this stage)

Step 4

- Lift the legs up and keep them aligned to the body to make the whole body vertical to the floor.
- Hold this posture as long as possible and breathe normally.

To release, repeat the action of each stage in reverse order.

Key points

- Practice under the guidance of a teacher.
- A blanket or cushion can be used for comfortable head support.
- Balance postures can be done near the wall or with support.

Benefits

- Bring back stagnant blood in the lower limbs to the heart for purification.
- Improves blood circulation to the head region, namely face, eyes and brain.
- Strengthens pituitary glands which influences the functions of endocrine glands.
- Helps to relieve headaches.
- Removes toxins from the body and helps to increase the vitality of the body.

Breathing techniques:

Focused Attention: Find a comfortable position with minimal distractions. Close the eyes and bring attention to the sensation of respiration (inhale and exhale). It helps to develop focused attention among students.

Savasana

Pose : Death Pose

Position: Supine Lying Pose

Procedure

- Lie down on the back with hands and feet apart. Palms should face upwards and feet drop sideways freely.
- Become aware of different parts of the body. Starting from toes to head. Experience the spread of relaxation in all parts of the body progressively.
- Inhale and exhale slowly and deeply. Release the breath during exhalation.

Benefits

1. Freshens the mind and relaxes the whole body.
2. Reduces mental and physical stress and strain.

Day 6

Tennikoit

Receiving

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Koit receiving is an important skill for successful play of tennikoit. It is the action of catching the incoming koit with one hand. It needs swift reaction time to receive the koit well.

- Position yourself by anticipating the opponent's throw and koit's trajectory.

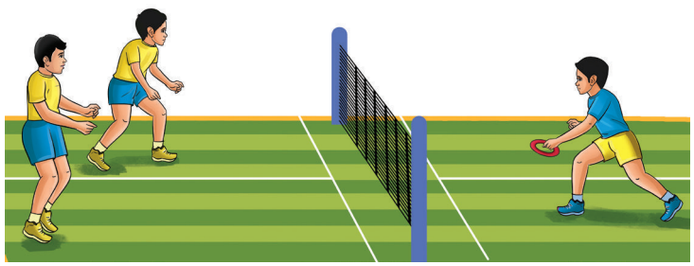
- Keep palm open to receive with dominant hand.
- Bring back palms slightly at the moment of receiving to reduce the impact and speed of koit. This action helps to avoid rebounding of the koit from the palm.

Receiving grip

Place the thumb on one side and the other four fingers on the other side of the koit.

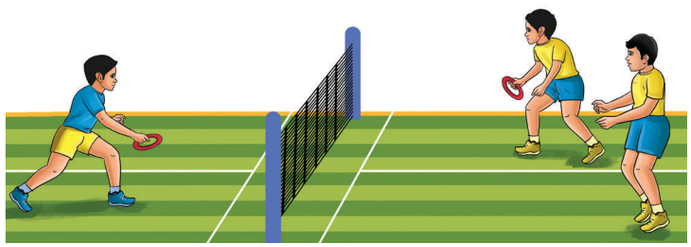
Practising the Skill

One Koit versus One Player



Procedure: Two students stand in the opposite court with a koit against a receiver. The servers (two throwers) throw the koit onto the opponent's court to the student facing against them. The student will be given practice of receiving koit from the front court, back court and in line. Then one of the student throwers exchanges position with the receiver and continues to practice. Like that, all the three students practice receiving.

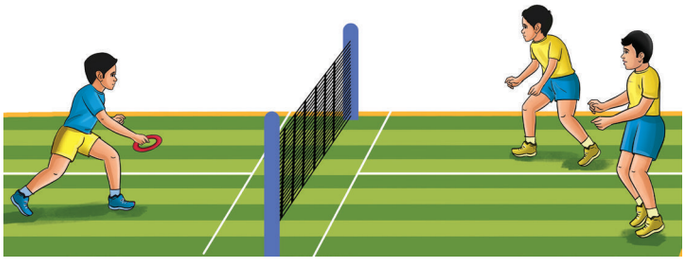
Two Koits versus One Player



Procedure: Two students stand in opposite court with a koit each in their hand against a receiver. One thrower throws a koit on the opposite court to the player to receive and return. As soon as the koit is returned, the second thrower throws the koit. Like this, both throwers throw one after another to the player standing against them to give receiving practice. This activity helps to improve the reaction time among players while receiving koit, as two koits are used to throw one after another with least recovery.

Lead Up Activity

Rally Win



Students are organised into two teams of five members in each team and named as team A and B. Both team members will get the chance to receive and return the ball one by one. Team-B members (any two) act as throwers when team A is receiving. After the signal is given, team-A members start receiving and returning the koit thrown by the two throwers who stand against them. The number of times team A members, receive and returned successfully shall be treated as their score. Once team-A members receiving turn is over, team-B will start receiving while team-A act as throwers. Individual scores are added to find the team score. The team that scores the maximum will be the winner.

Day 7

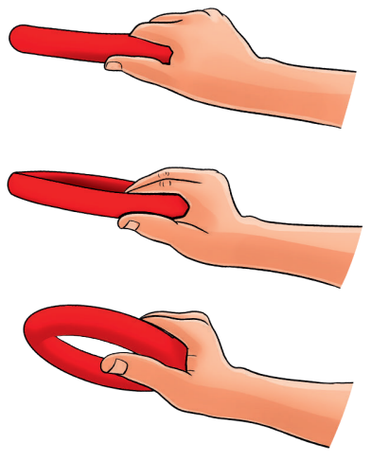
Tennikoit

Returning

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



It is equally an important skill, like receiving koit. Koit should be thrown into the opponent's court in such a way that the receiver should feel difficult to intercept. It shall be returned as soon as it is received.

- Release koit with wrist action, in an upward direction approximately 6 inches high from the point of release.
- The student is not allowed to jump or step while releasing.
- Koit touching at any part of the body is not permitted while receiving and returning.

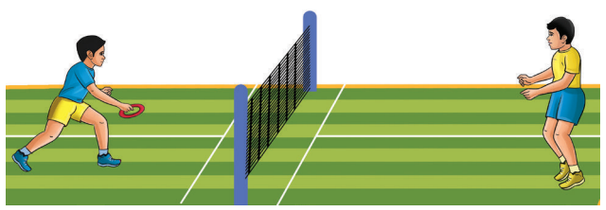
Practising the Skill

Two students face each other in tennikoit court and they practice the receiving and returning skill. While doing this, both practice returning the koit away from the receiver as follows.

Receiver position	Place of return
In front court	Aiming to throw at the back part of court
On the back court	Aiming to throw at the front court
Right hand court	In line with the left hand court
Left hand court	In line with the right hand court

Students practice returning the koit in such a way that they should feel difficult to collect or receive it.

Lead Up Activity



Winning the Title

Students are organised into pairs and named as team A, B, C and D. Matches between each team should be conducted on the league system. The match point is set as a score of 10. The team that reaches 10 points first, will be the winner. In the league system, each team has to play a match with the other participating teams. As in real match, all the rules for receiving and returning will be followed. Committing faults by a team like wobbling, carrying, jumping, body touch will earn points for the opposing team.

Match won - 2 points

Match lost – 0 points

The team that scores the maximum points will be the winner.

Day 8

400m Run

Start and Acceleration Phase

45 Minutes

LEARNING OBJECTIVES

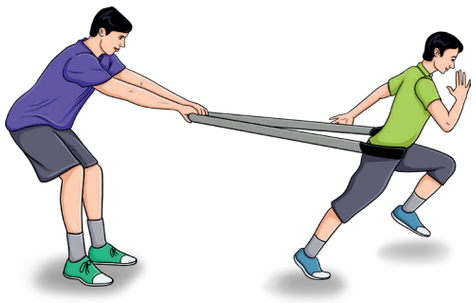
- To learn the advanced skills of the event.
- To interpret the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

- Position the starting blocks according to the preference and ensure that they are aligned with the track.
- Find a comfortable stance that allows for explosive forward movement.
- Place the dominant foot in the front block and the non-dominant foot in the rear block.
- Explode out of the blocks with maximum power on the starter's gun or signal.
- Drive the arms forcefully backward while pushing off explosively with the legs.
- Maintain a low body position to maximise acceleration and forward momentum.
- Focus on driving the knee up and pumping the arms vigorously.
- Gradually transition from the drive phase to an upright sprinting position.
- Stride length should increase to gain speed, but avoid over striding to prevent loss of efficiency.
- Aim to maintain a fast but controlled pace during the acceleration phase to conserve energy for later.

Practising the Technique



- Have a partner hold the waist or a resistance to harness start from the blocks.
- The partner provides slight resistance to simulate the feeling of driving against a strong headwind.
- This drill helps develop explosive power and strengthens the drive phase of the start.

Lead Up Activity

Standing Start - 150m

Start from a standing position and sprint 150 metres at near-maximum effort. Focus on explosive power from the start and maintain speed throughout the entire distance.

Benefits

This drill helps to build speed, endurance and simulates the demands of the 400 m race.

Day 9 — 400m Run
Maintaining Speed and Finish

45 Minutes

Warm-Up: Give suitable warm-up exercises.

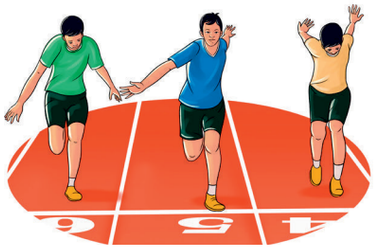
Teaching the Technique

- Around the 150 m mark, the focus is on settling into the race rhythm while maintaining speed.
- Relax the upper body and focus on smooth, powerful strides.
- Maintain proper form with a tall posture, relaxed shoulders and a slight forward lean.
- Continue driving the arms and legs with intensity, but avoid tensing up or straining.
- Manage the energy expenditure by running the curves efficiently and conservatively.
- Approach the 200 m mark with a burst of speed to maintain momentum and stay competitive.
- To approach the final 100 m, dig deep and find the last burst of speed.
- Focus on finishing strong, driving the arms and legs with maximum effort.
- Lean forward in the final strides, extending their torso towards the finish line for maximum momentum.

Practising the Technique

- Organise the 400 m race distance into two equal halves (200 m each).
- Instruct students to run the first half at a controlled pace, conserving energy.
- After reaching the halfway point, gradually increase the speed for the second half and aim to finish.
- This drill teaches students pacing strategies and to manage their energy for a correct finish.

Lead Up Activity



Finish Line Sprints

Mark a finish line on the track using cones or tape. Have partners line up in lanes at a short distance away from the finish

line. On the signal, both partners sprint towards the finish line, competing to cross first. Encourage students to maintain proper form and technique while giving maximum effort to reach the finish line first.

Day 10

Gomukhasana and Breathing Techniques

45 Minutes

Preparatory Exercise

Students assemble in a ventilated place, leaving enough space in-between them. They shall perform neck stretching, shoulder rolls, wrist stretch, forward bending and spinal twists. Finally, they do a shoulder opener exercise – Eagle Arm Pose.

Special Activity

Starting position: Long sitting with feet together and palms placed on the floor.

Procedure

- Bend the left knee to place the heel under the right buttock and bring the right leg over the left thigh to place heel on the floor. Assemble the knees closely one over the other.
- Raise the right arm above the head and bend the elbow to bring the palms to reach the upper back. Simultaneously, stretch the left arm out to the side to fold it behind the back to hold the fingers of the hands.
- Keep the spine and the head straight and also push the head back against the inside of the arms. Do breathe normally and stay in that position for a few seconds.
- Do the entire procedure by reversing the positions of arms and legs.

Benefits

- Strengthens the muscles of the upper back, upper arms, shoulders, chest, hip and thighs.

Breathing Techniques - Alternate Breathing

- Sit erect and close the eyes.
- Close the right nostril with the right thumb and inhale fully and slowly through the left nostril and close it with the left ring finger. Then release the right thumb from the right nostril and exhale through it.
- Repeat this technique 3 to 5 times and increase the speed and frequency gradually.

Savasana: After completing Alternate Breathing, practice Savasana.

Day 11

Hockey
Tackling

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Tackling is the action of intercepting the opponent, retaining possession of the ball or delaying progression of movement with the ball or getting possession of the ball from the opponent. It requires skills of speed, agility, timing and anticipation.

- The opponent is in progression of the ball, check the progression of movement with the ball.
- Then wait till they commit mistakes such as being out of control of the ball or tiredness and maintain low body posture to put the stick to dispose of the ball.

Push Tackle

- Stand away from the opponent at a good distance.
- Step with left foot forward to push the ball suddenly with a stick.

Block Tackle

When the opponent is stationary with the ball and wants to progress tackle by placing the stick flat on the ground.

Practising the Skill

Activity 1

One Versus Another: Students are organised into pairs. Out of one pair, one should act as an attacker and the other as defender. When an attacker possesses the ball, the defender tries to tackle by following proper procedures. Then they interchange their places and practice tackling.

Activity 2

Two Versus Two: Students are organised into two teams. They assemble in the marked area with cones placed as goals at the back line as shown in the figure. On hearing the signal, the pair having the ball tries to progress and put the goal on the opposite side. The pair that do not have the ball tries to tackle the ball from them. Once the defending pair (or) team, possess the ball, they become attackers and vice versa. Like this, they practice tackling.

Lead Up Activity

Hockey Fives

Students are organised into two teams (A and B) of 5 members each. The playing area is marked as 20 x 10 metres and cones are placed on the back line as goals as shown in the figure. On hearing the signal, a match is played between teams A and B for 10 minutes. The team that concedes less number of goals should be declared as the winner as that team is considered good at tackling skills.

Day 12 — Hockey
Scooping
45 Minutes

Warm-Up: Give suitable warm-up exercises.

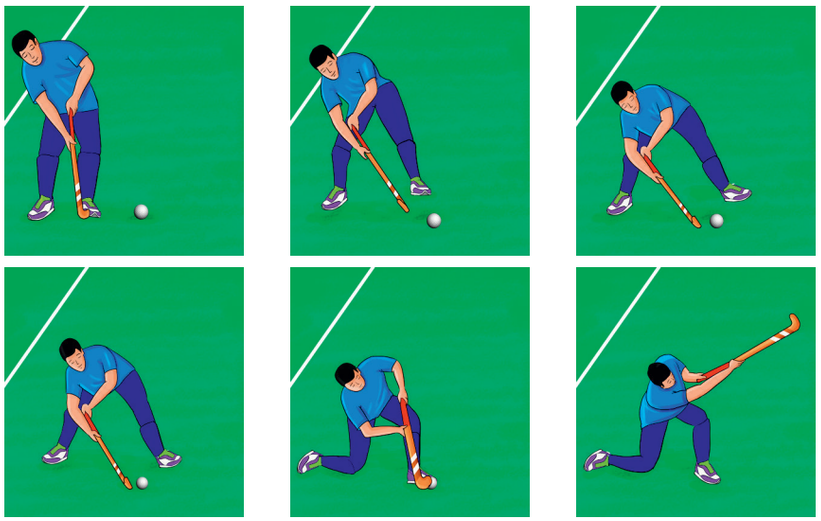
Teaching the Skill

Scooping is nothing but raising the ball off the ground to travel faster in the air. It is the action of lifting movement by placing the head of the stick under the ball.

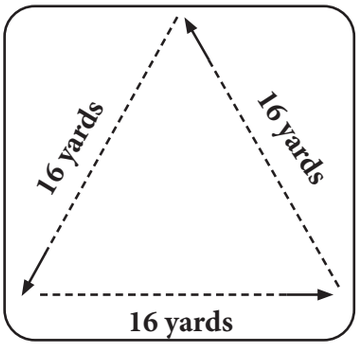
Grip

Left hand at the top of the stick and right hand down the stick.

- Position approximately one metre (stick length) away from the ball.
- **Step 1:** Keep the left shoulder of the body perpendicular to target and place the left foot one step forward closer to the ball.
- **Step 2:** Place the blade of the stick slightly behind the ball and apply pressure on the blade by pushing down the stick to give the ball enough force to raise it off the ground.



Practising the Skill



Partner Drill: Students in groups of two, face each other at a distance of 15 to 20 metres. They practice the scooping skill by following ideal body movements and uses the stick to raise off the ball from ground.

Triangle Drill: Three students form a triangle shape, each side measuring 16 yards as shown in the figure. Then they practice scooping skills with each other. Two balls shall be used during the practice. This drill can be practiced both in clockwise and anti-clockwise direction.

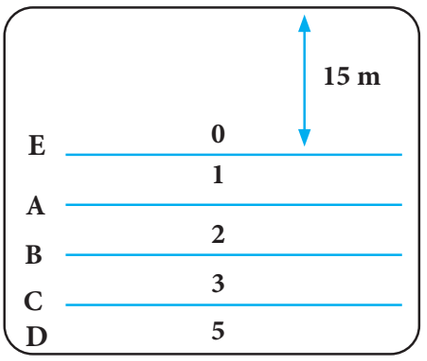
Lead Up Activity

Zonal Method

Equipments such as Hockey sticks, balls, cones and chalk powder needed for this drill. Students are organised into teams of ten students each and named as team A and B. Scooping zones are marked in the ground 15 metres from the playstation. Three scooping zones, namely A, B and C are marked with a 5 metre gap as shown in the figure.

Students from both teams take two scoops each towards the zones. They play one by one from the play station. When team-A turn is over, team-B starts to scoop. Points for scoops shall be awarded based on zone wise as follows.

	Zone	Score
Landing area	A	1
Landing area	B	2
Landing area	C	3
Beyond	D	5
Not reaching	E	0



The team scores should be calculated by adding the team members' scores. The team that scores the maximum shall be declared the winner.

Day 13

Hockey
Deception

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



The player dribbles the ball past the opponent by deceiving. It involves giving the appearance of moving in a direction with the body with quick and subtle movements with the stick changing the direction of the ball while dribbling. This causes difficulty for defenders to anticipate their movement.

This skill needs spacial judgement of opponents, controlled dribble, hand-eye coordination and presence of mind. The shoot-out method is used to break the tie when the match closes in a draw. Deception skills are very useful in shoot-outs while dribbling towards the goalkeeper to score a goal.

Practising the Skill

Partner-Practice

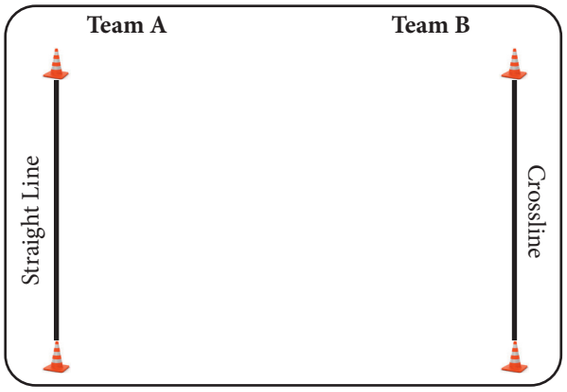
Out of two students, one acts as a dribbler and the other acts as a tackler. Dribbler dribbles the ball using fake body movements and stick movements to deceive the tackler. After a few chances of practice they interchange their partners and continue to practice.

Lead Up Activity

Victory Point

Construction:

Draw a 10 m crossline on the selected area of ground and place 2 cones at the edges. Students are organised into two teams and named as team-A and B. Each member of team-A will choose one from team-B as their pair to compete in the deception skill. Everyone in the team is given two chances to dribble the ball against a partner in their pair. In a



given pair, the team-A member acts as the dribbler while the team-B member acts as the tackler as shown in the figure.

Procedure

To the signal, the chosen pair face each other on the ground to compete with each other in deception skill. In this, a team-B member places himself 5 m in front of the crossline to face the dribbler from team-A. Then, they exchange their positions when their chance is over. Dribbler will dribble past, the tackler by deceiving him to move the ball across the crossline. Like this, all the selected pairs compete in this competition.

Points to the deception skill are distributed as follows.

The ball moves across the line within 8 seconds – 5

The ball moves across the line within 15 seconds – 3

Dispossession of ball – 0

The team score is calculated by adding their team members' scores.

Day 14 — Hockey
Positioning and Leading

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Positioning

Positioning is nothing but where the players are on the field. It is a critical one which significantly impacts a player's effectiveness on the field. The position of player varies depending upon the position in which they are playing. As a team is fielded with 11 players and to cover the entire field, they position themselves as goalkeepers, defenders, midfielders and forwards. Players usually move along these lines while playing.

Positioning for Goalkeepers

Positioning is key for a hockey goalkeeper, requring a combination of physical and mental skills to anticipate and react to plays. A goalkeeper must always be in the right position to make a save, which involves being aware of the play, knowing when to move laterally or come out of the crease and being able to read and react to the play quickly.

Positioning for Midfielders and Forwards

Players need to be aware of spacing between teammate and opponents in order to be in a good position to receive the ball as shown in the figure.

Positioning for Defenders

Players need to keep an eye on opponent movements (forwards) in their positions to close the gap between them to tackle the ball when the ball is supplied to them as shown in the figure.

Leading: By positioning, a player creates an opportunity for his teammate to make a pass for an opening.

Practising the Skill

Two versus one

Among the three students one student will act as defender and the other two will act as offensive team players.

- One student (defender) has to tackle the ball from two students (offensive team) who are taking the ball.
- One not having the ball in the offensive team has to move and position himself to receive the ball when the defender goes to tackle the player having the ball.
- They have to practice this for 3 to 5 minutes.
- Then, one from the offensive team inter-change defenders to continue the practice.
- Like this, all the three should practice positioning.

Variation: One Versus One

- This skill should be practised using cones.
- Cones should be placed on the ground randomly as shown in the figure.
- Offensive player (having the ball) should pass through cones while defenders stay close to block his path.
- In this, the player learns to position himself to dribble past another player.

Lead Up Activity

Overload circle: Select a circular playing area using cones as shown in the figure. Organise the students into two teams A and B, with one team consisting of four members and the other team with three members. Team A has the advantage of one man.

Procedure

To the signal, team-A having the ball, should position themselves inside the circle to get a pass while team-B members go to tackle. The teacher records the time of survival with the ball from start to dispossession of the ball by team-B. Then, team-B plays with 4 students and team-A tackles with 3 students. The teacher also records the time of survival of team-B with the ball. The team that keeps possession of the ball for a long time will be declared the winner.

Day 15 Paschimottanasana and Breathing Techniques

45 Minutes

Preparatory Exercise

1) To stimulate hamstring muscles (thigh back muscles), students should do leg swings both forward and backward, keeping the leg straight.
2) Sit in a long sitting position – flex feet towards shin to engage quadriceps muscle (thigh muscle).
3) Inhale and raise the arms upward, exhale and bend forward to keep the spine long.

Starting Position: Long Sitting Position

- Inhale and raise the arms upward above the head, with palm facing outward.
- Exhale and bend forward from the waist to keep the head between the upper arms. Simultaneously, try to hold the big toes without bending the knees.
- Rest the elbows on the floor and touch the knee with forehead and exhale completely. Hold this position for about one minute with gentle breath.

- Knees should not be lifted above the ground throughout this asana. As flexibility varies with individual, forcing to bend should be avoided.

Benefits

- Stretches the spine to its maximum length, which makes it supple and flexible.
- The joints of arms, elbows, shoulders, legs, knees, ankles and hip become more elastic.
- Reduce fatty deposits in the abdomen, hip, backside and thighs.
- Rectifies minor postural defects and deformities in the curvature of the spine and helps to attain full stature.

Breathing Technique – Sheethkari

It is otherwise called hissing breath and the technique of cooling breath.

Procedure

- Sit in a comfortable position (cross–legged) with eyes closed.
- Roll the tongue upward to touch the upper palate with its lower part.
- Join teeth together, leaving small opening in between
- Inhale slowly through the mouth, making a hissing sound and close the lips to exhale through nose.
- Repeat this process for 8 to 10 rounds.

Benefits

- Keep the body temperature normal by reducing heat.
- Rectifies issues in mouth, throat and tongue.
- Reduce mental stress and calm the mind.

Savasana: After completing Sheethkari, practice Savasana.

Day 16

Judo

Throwing Technique (Back Sacrifice)

45 Minutes

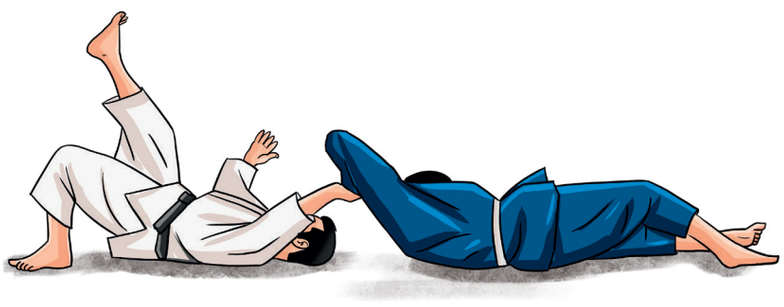
LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To interpret the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Use this skill when one is off-balance or the opponent has a strong grip.
- Secure a strong grip on the opponent's uniform and disrupt the opponent's balance.
- Get close to the opponent, align the hip and fall backward or to the side, sacrificing one's own balance.
- Use the arms and legs to guide the throw, leveraging the opponent's momentum.
- Maintain control after the throw to prevent counter-attacks.



Practising the Skill

- Work on grip fighting and entry techniques for side-sacrifice techniques.
- Practice breaking the opponent's grip and establishing a strong grip on the opponent's uniform.
- Once you have a secure grip, practice entering into the sacrifice motion smoothly and efficiently.
- Focus on maintaining proper posture and alignment to initiate the throw.

Lead Up Activity

Dynamic Movement Drill

Practitioner and the opponent move around the mat and do practice. Practice creating opportunities for Side-Sacrifice techniques by off-balancing the opponent with footwork, pulling and pushing. When the opportunity arises, execute the sacrifice motion and attempt to throw the opponent with a Side-Sacrifice technique. This drill helps to develop timing and recognition of throwing opportunities in a dynamic context.

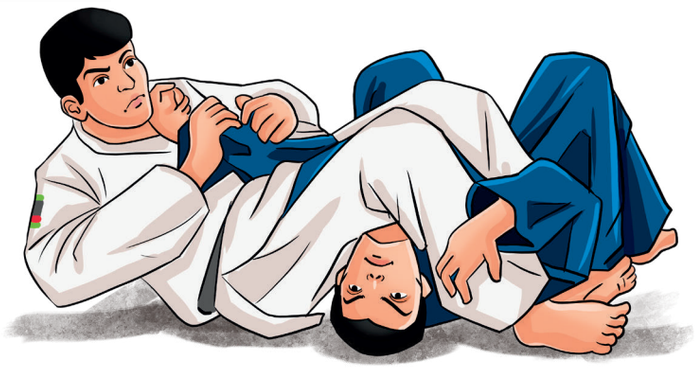
Day 17 — Judo
Grappling techniques

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Establish a strong grip on the opponent's uniform or limbs to control their movement.
- Identify the joint to manipulate, such as the elbow, wrist or shoulder.
- Use leverage and body positioning to apply controlled pressure to the joint.



- Keep a firm grip and control over the opponent's body throughout the technique to prevent them from escaping or countering the joint lock.
- Pay attention to the opponent's reactions for signs of discomfort or the referee intervenes, release the pressure immediately to avoid causing unnecessary injury.
- Practice safely to avoid injury to the opponent.

Practising the Skill

- Partners take turns applying joint locks while the other resists with gradually increasing intensity.
- This drill helps practitioners develop sensitivity to their opponent's movements and improves their ability to maintain control during live situations.

Lead Up Activity

Partner Drill

Students are paired with a partner of similar size and skill level. Ensure pairs are wearing appropriate Judo uniform for safety. Partners take turns assuming the roles of attacker and defender. The attacker initiates the joint-locking technique, starting with slow and controlled movements. They should focus on proper technique, leverage and pressure application. The defender reacts to the attacker's movement by defending against the joint lock. They can choose to either surrender or attempt to escape the lock using appropriate defence techniques.

Day 18

3000m Run
Standing Start

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To interpret the rules and regulations of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Standing Start

- The front foot is placed up to the starting line, with the other foot about shoulder width behind.
- Weight is placed on the front foot.

- Arms are in position to synchronise immediately with the legs.
- Drive is off the front foot.

Practising the Technique

Standing Start

- Stand about 2m behind the start line.
- "On your marks", place one foot on the start line and the other foot about shoulder width behind.
- Slightly lean forward - weight on front foot.
- Arms synchronised with legs.
- At the 'gun', drive is off the front foot.

Resistance Runs

- Use the resistance of a partner or an implement.
- Do not increase the resistance.
- Ensure full extension of the support leg and short ground contact.

Lead Up Activity

Endurance Relay Challenge

Organise students into teams of 4 to 5 members each and name them after a, b, c and d. Set a marked course equivalent to approximately 400 metres (one lap around a standard track). Each team lines up at the starting line and the relay baton is given to the first runner in each team. To the signal 'go', the first runner from each team starts running the course at a moderate pace. After completing one lap, the first runner passes the baton to the next runner, who then continues running. The relay continues until each team member has completed one lap. Encourage teams to strategise on pacing and efficient relay transitions. Use stopwatches or timing devices to record each team's total time. The team that finishes the relay in the minimum time will be the winner.

Day 19

3000m Run
Stride and Finishing

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Stride

- The stride is natural and the race is slower than the sprint.

Running

- This is the actual running of the race.

Finishing

- This is the marking out of the race, thereby signifying the end of the race.

Practising the Skill

Pursuit Runs

- Use a stick or a rope (1.5 m).
- Hold the stick and jog slowly one after the other.
- Front runner releases the stick (or rope) and runs fast. The second runner should run after him to match his speed.

Stage - 1 Stage - 2 Stage - 3

Flying '30' – 10 to 30 Metres Sprint

- Mark out an acceleration zone of 30 m and a 'speed' zone of 10 m-30 m.
- Accelerate maximally from a standing start position to be at maximal speed before the 'speed' zone.

- Run through the 'speed' zone at maximal speed. Allow for full recovery, at least 2 minutes.

Lead Up Activity

3000 Meters Relay Challenge

Organise students into teams of 4 members each and name them as A and B. Mark the starting line and finishing line on the 400m track. Each team lined up at the starting line. The first runner from each team starts running the course at a moderate pace. After completing two laps, the first runner tags the next runner, who then continues running. The relay continues until each team member has completed their designated number of laps to cover the full 3000 metres. Use stopwatches or timing devices to record each team's total time. The team which finishes the relay race in the minimum possible time will be the winner.

Day 20 — Poorna Dhanurasana and Breathing Techniques

45 Minutes

Preparatory Exercise

Prone lying position - Press palms near shoulder against floor to raise upper body off the floor (Bhujangasana), then back to position. Keeping hands close to the body which is placed on the floor, raise legs off the floor with knees straight (locust pose – Salabasana) then back to position.

Procedure

Starting position –Prone lying position and place palms on the floor above the head.

- Bend the knees and hold the feet with their respective hands.
- Inhale deeply and raise head, chest and thighs as high as possible. Pull the feet as close to the head as they can, while keeping their elbows pointing upward.

- Body looks like a fully stretched bow in this position. Hold the breath and maintain the same position as long as possible.
- Exhale slowly and release both legs to the starting position.

Benefits

- It improves flexibility of the back, shoulders and hip.
- It strengthens the heart.
- It improves digestion capacity and blood circulation.

Bellow Breathing Technique

- Sit comfortably (cross-legged)
- **Relax and Breathe Deeply:** Take a few deep breaths in and out through the nose and expand the belly while breathing in.
- **Bellows Breath Technique:** Inhale and exhale rapidly with a hissing sound through the nostrils like a breathing sound (gasping) after a sprint (fast breathing). Continue this for 10 breaths.
- **Relax Breath:** After a 10th breath, inhale deeply followed by a slow and long exhale.

Savasana: After completing bellow breathing, practice Savasana.

Day 21 — Ball Badminton

High Service

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To interpret the rules and regulation of the game
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

- Stand comfortably with the left foot in front of the right foot.
- Keep both racquet and ball in front of the body where the racquet head faces the correct service court.
- Toss the ball a little higher and hit it with a racquet with a forceful swing where the contact point should be below the waist.

- The left and the right foot should be in contact with the ground while releasing the ball to avoid a foot fault.
- For follow through action swing the racquet up in a forward direction above the head.
- Watch the ball and be ready to play the next ball.

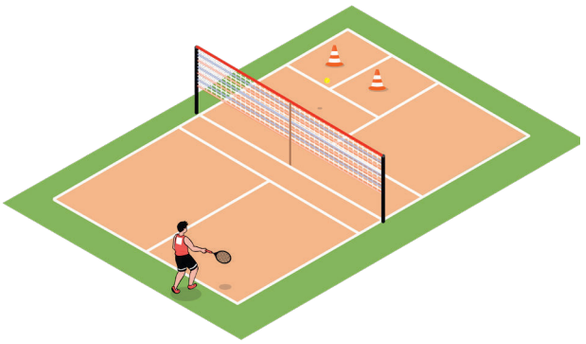
Practising the Skill

- Practice to focus on serving the ball with high consistency over the net.
- Start by serving to a partner from a short distance, gradually increase the distance to improve.
- Aim to practice a high level of accuracy and consistency in the serves throughout the drill.

Lead Up Activity

Accuracy Target Practice

Set targets on the opposite side of the court using cones or markers. Practice serving the ball high towards the target, aiming for accuracy and consistency. Vary the placement and angle of the serves to target different areas of the court.



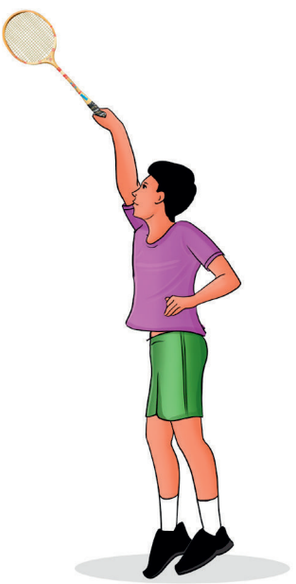
Day 22 — Ball Badminton

Drop Shot

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill



- Hold the racquet with a relaxed grip and adopt a ready stance with the knees slightly bent and the weight evenly distributed on both feet.
- As drop shots require precise control and touch, practice tapping the ball lightly with the racquet to create a soft and short trajectory.
- Practice dropping the ball just over the net and close to the opponent's side of the court. Keep the back swing short to minimise the distance of the shot to the opponent.
- Utilise wrist action to fit the shot and add spin if needed to control the direction and placement of the drop.

Practising the Skill

- Stand on opposite sides of the court facing each other.
- Start a rally by hitting drop shots at each other in alternating turns.
- Practice to focus on maintaining a consistent rhythm and exchanging drop shots with the partner.

Lead Up Activity

Drop Shot Placement Game

Organise the court into zones using markers or lines. Practice hitting drop shots to specific zones of the court, alternating between deep drops, mid-court drops and tight net drops. Challenge each other to hit drop shots accurately to designated zones, earning points for successful placements.

Day 23 — Ball Badminton

Spin Shot

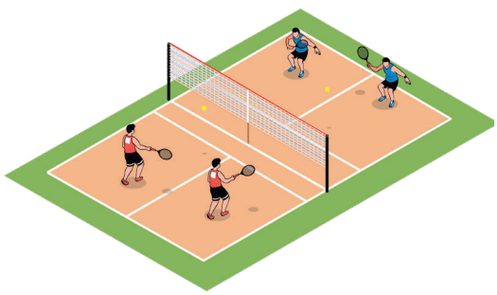
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Adopt a balanced stance and start with a firm grip on the racquet, typically using a forehand grip for spin shots.
- Adjust the angle of the racquet face to control the direction and spin of the shot.
- For topspin shots, tilt the racquet slightly forward. For backspin shots, tilt the racquet slightly backward.
- Use wrist action to snap the racquet through the contact point with the ball, imparting spin on the shot.
- Aim to make contact with the ball slightly below its equator for topspin shots and slightly above its equator for backspin shots.
- Follow through with the swing, extending the arm fully and finishing the motion in the desired direction.

Practising the Skill



- Stand on opposite sides of the court facing each other.
- Start a rally by hitting spin shots at each other, alternating between top spin, back spin and side spin shots.
- Practice to focus on maintaining a consistent rhythm and exchanging spins with the partner.

Lead Up Activity

Spin Variation Drill

Set targets or designated areas on the court. Practice hitting spin shots (topspin, backspin, side spin) at these targets, focusing on controlling the rate and direction of spin. Experiment with different racquet angles and wrist movements to generate varying spin effects.

Day 24

Ball Badminton

Smash

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

For Right Handers

- Hold the racquet with a firm grip, usually with a forehand grip for power shots.
- Stand with the feet shoulder-width apart, knees slightly bent and the opposite foot slightly forward to maintain balance.
- Swing the racquet back behind the body, with the elbow high and wrist cocked to generate power.
- Swing the racquet forward in a smooth motion, transferring the weight from the back foot to the front foot to make contact with the ball.
- Aim to hit the ball at its highest point, slightly in front of the body and above the right shoulder.
- Follow through with the swing, extending the right arm fully and bringing the non-racquet arm across the body for balance.

Practising the Skill

- Two students stand on the opposite sides of the court, one acting as a feeder and the other practising to smash.
- Practice smashing the ball and quickly recovering to the ready position.
- This drill improves both offensive and defensive skills by simulating real-game scenarios.

Lead Up Activity

Target Practice

Set targets on the opposite side of the court using cones or markers. Practice smashing the ball towards these targets, focusing on accuracy and consistency. Vary the height and placement of the targets to simulate different game situations.

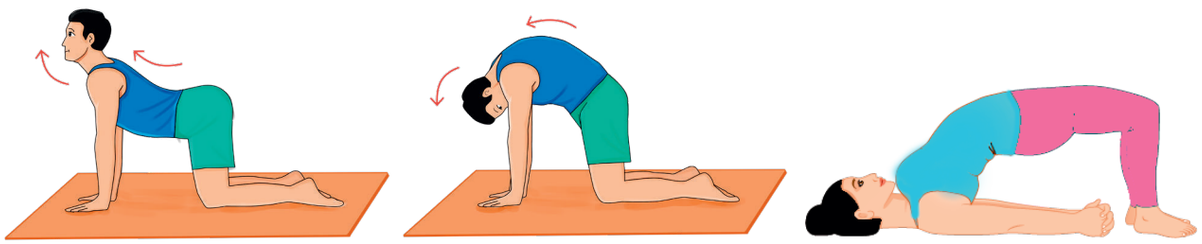
Day 25

Sarvangasana and Breathing Techniques

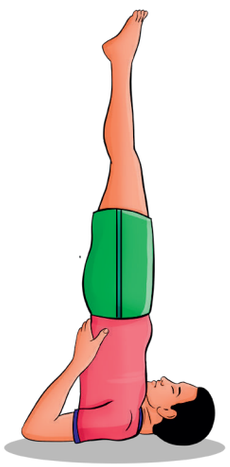
45 Minutes

Preparatory Exercises

- Students shall do neck stretches and shoulder rolls.
- **Cow-Cat stretch** - Hands and knees in a tabletop position, inhale and arch back (cow) and exhale and round spine (cat). Do this sequence a few times.
- **Bridge pose**- Supine position, bend knees and keep feet on the floor at hip width. Then press through the feet to lift the hip off the floor. Finally, balance the body weight with shoulder underneath and fingers interlocked below.



Procedure



Starting position: Supine lying position with arms at side and palms facing downward

- Slowly raise legs off the ground at 45° without bending the knees.
- Raise the legs further to 90° from the floor and keep both hands extended on the ground in line with the body.
- While raising hip and spine, keep palms on hip in support of buttocks.
- Hold this position in straight line from shoulder to foot. Stay in the position with normal breathing for 20 seconds.
- Slowly return to starting position and relax.

Benefits

- It helps proper functioning of the thyroid gland.
- Regulates the blood circulation to the head.
- It helps proper functioning of sensory organs such as eye, ear and nose.

Breathing Technique – Alternate Breathing

- Close the eyes, place the right thumb on the right nostril, inhale fully and slowly through the left nostril and close the left nostril with the ring finger.
- Release the right thumb from right nostril and exhale through it. Then inhale through the right nostril and close it with the right thumb. Then release the left nostril and exhale fully.
- Repeat this technique 3 to 5 times and increase the speed and frequency gradually.

Savasana: After completing Alternate Breathing, practice Savasana.

Day 26

Road Cycling

Braking

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To interpret the rules and regulation of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Stopping the cycle safely is also an important skill like fast riding. Breaks such as the front brake are there on the right side and the rear brake is there on the left side of the handlebar. To get a safe and smooth stop to the cycle, evenly use both breaks.

Practising the Skill

Zigzag Cycling

- The player stands behind the starting line.
- On hearing the teacher's whistle, players with a cycle should avoid the cones and starts cycling in a zigzag pattern and return.
- All the students do the same one after the other.

Lead Up Activity

Zigzag Game

Mark zigzag lines across the riding surface using lime stone powder or cone. Make the angles too sharp to start with, as the riders may struggle to go around the corners. Explain that the riders must make their way down in a 'zigzag', a pattern between the two lines. The need to steer between the lines, without going over or touching either line. Each student is awarded 10 points and anyone who loses the balance and puts their feet on the floor will lose one point from their score. Similarly, one point will be lost if the leg is placed on the floor even once. The student who has scored the maximum points is the winner.

Day 27

Road Cycling

Balance

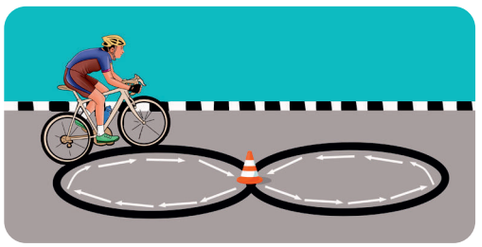
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Balance is another form of skill that a rider has to possess for an efficient road cycling race. The rider keeps the hands at the handlebar in a way to lower the centre of gravity, which helps him to lean the cycle a little easier in the turn and to get better balance.

Practising the Skill



Students are organised into groups. Each group occupies a particular place on the riding surface and practices balancing while turning.

Figure Eight Cycling

- Use cones or line powder to form a large shape of number 8.
- Practice slow cycling on that shape for 2 to 3 minutes clockwise and then reverse the direction.
- Gradually increase the speed and time.

Lead Up Activity

Figure Eight Game

Organise the students into two teams. Use cones to mark a straight line a few metres away from figure 8. The competition is that everyone in the team rides in the figure of eight pattern. Each shall be provided 5 points. They lose all the 5 points if they put down their foot during the race. All the students should complete the figure of eight pattern. The team that scores the maximum points will be the winner.

Day 28

110m Hurdles

Lead leg Action

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced techniques of event.
- To interpret the rules and regulations of event.
- To develop the sportsman spirit.

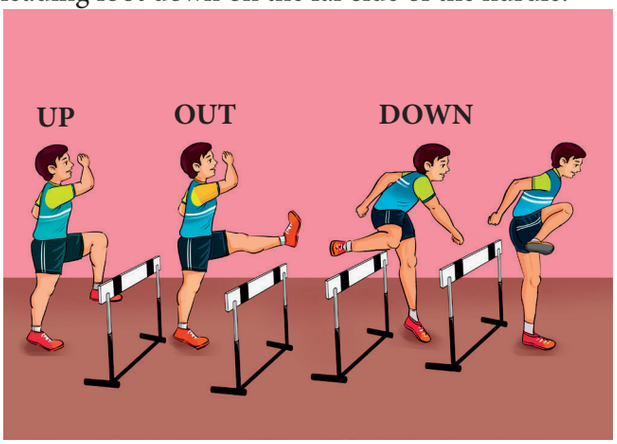
Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

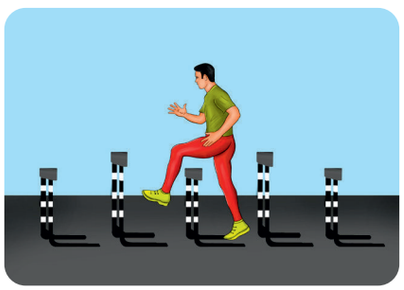
Up: Flex the hip to lift the knee straight up towards the hurdle and keep the foot aligned under the knee.

Out: Extend the lead leg over the hurdle and keep the toes pulled back towards the shin-bone.

Down: Quickly plant the leading foot down on the far side of the hurdle.



Practising the Technique



1) **Lead leg drill:** Arrange a series of hurdles at a low height in the track. Students do practise focusing on driving the lead leg up and over the hurdle. As they progress, they shall increase the height of the hurdle.

2) **Hurdle walk over:** Arrange a series of hurdles at a low height. While students do walk over them, pay attention to proper lead leg action and trail leg action. This drill helps to develop correct foot placement and stride pattern.

Lead Up Activity

Target Practice: 3-4 hurdles should be placed along the ground. Place a marker on the ground away from hurdles at the expected height. Students should run along the side of the hurdle and do lead leg action. They shall be instructed to follow the **Up, Out** and **Down** sequence as follows.

Up - Lift the lead knee straight up to target.

Out - Extend over the hurdle foot towards target and toes up towards shin bone.

Down - Planting lead leg close to hurdle after clearing.

Two students assistants are deputed to evaluate their actions. Subjective ranking shall be done. The student who gets the better ranking should be rewarded. The students who get lower ranks shall be given additional practice. Effective lead leg action helps to promote sprinting motion.

Day 29

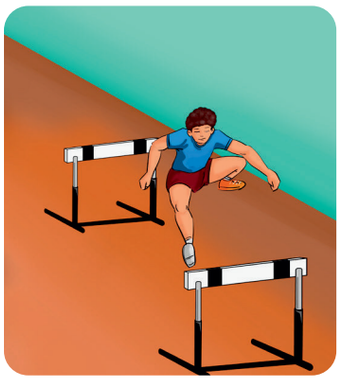
110m Hurdles

Running between Hurdles

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique



Running between hurdles by athletes plays a vital role in achieving good timing in this event. In the sprint hurdle event, hurdlers should be sprinters. Quick running between hurdles is essential to fetch good timing. To achieve this, an athlete has to modify his sprinting technique to make it fit in between hurdles. Fast leg pace and shorter stride lengths are needed. Athletes have to lift their lower knee than in normal sprinting with stress on speed.

- Select taller students to choose hurdle events as they lift less while crossing the hurdles due to their higher centre of gravity.
- Selection of takeoff leg - Left or Right.
- Fix strides in-between hurdles, such as odd numbers 5 or 7 to have the same takeoff leg on each hurdle.
- Strides in-between hurdles will be longer except for the approach to takeoff.

Practising the Technique

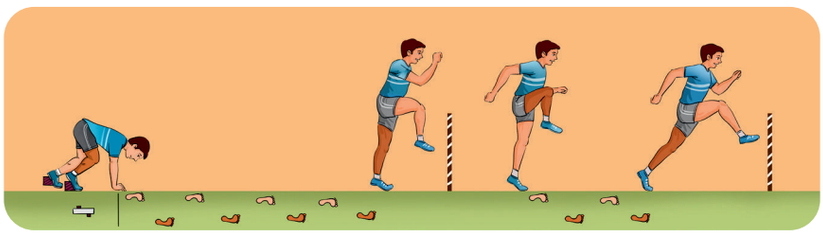
Procedure

1) **Run to the box:** Place 5 to 6 cardboard boxes in a gap of six feet except the first one with a gap of 8 steps from the starting line. On hearing the signal, students run to the first box to clear it and continue running to clear the second one. Like this, they will run to finish up to five boxes.

This drill shall develops a proper rhythm between hurdles and jumping technique over boxes. Once they master this, they will progress to jump hurdles with lesser heights.

2) **Imaginary barrier drill**

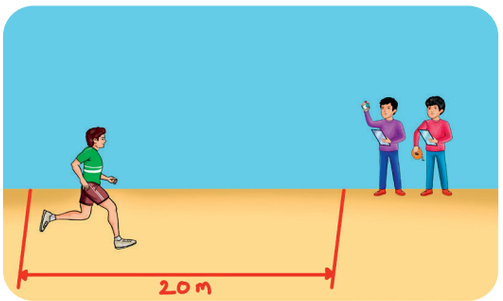
Students should run eight steps to jump over the imaginary hurdle. Student assistants mark the takeoff point and place hurdles 1.5m away from that point. The same student should run from the starting line to jump over the first hurdle and continue running to jump over the second imaginary hurdle.



The partners mark the takeoff point of the second imaginary hurdle and place the second hurdle 1.5m from takeoff. Now the same student should start from the starting line to run and jump over the first and second hurdle and continue to run and jump over the third imaginary hurdle. This practice increases the speed of running in between the hurdles.

Lead Up Activity

Ten Stride Test



In a play area, 20m straight is marked with cones as shown in the figure. Two assistants act as a timer and a distance marker. In this, students run from a standing position from the starting line to the finishing line (20m). Their stride length and time should be noted as follows.

Student Assistant: (Timer) Press start baton from first stroke after starting and press stop baton at the tenth stroke (stride).

Student Assistant: (Distance marker) Start measuring where the tenth stride lands and record the distance to the starting line.

Every student should be given 3 chances to run. Their performance should be calculated by the average of timing and distance from 3 sprints. The student who performs the minimum timing and greater distance shall be declared as the winner.

Day 30 — Poorna Salabasana and Breathing Techniques

45 Minutes

Preparatory Exercises

1) **Cat and Cow pose:** Hands and knees in a table position, inhale and arch back (cow) and exhale and round spine (cat). Do this sequence a few times.

2) **Upward – Facing Dog:** Prone position and place palms near shoulder.

   Press hands against floor to lift chest.

3) **Downward – Facing Dog:** Lift hip upward to an inverted letter 'V' shape.

Starting position: Prone Lying Position

- Keep arms and shoulders close to the body and below the thighs in firm contact with the floor.
- Lift the leg with jerk to vertical position by flexing spine and balance with shoulder, chin and arms.
- Lift to bend the middle of the spine to keep abdomen and chest off the ground.

- Balance the body to bend knees to toes with head and breathe gently.
- Lower the body to relax.

Benefits

- Strengthens the lower back and pelvic girdle.

Bellow Breathing Technique

- Sit comfortably (cross-legged)
- **Relax and Breathe Deeply:** Take a few deep breaths in and out through the nose and expand the belly while breathing in.
- **Bellows Breath Technique:** Inhale and exhale rapidly with a hissing sound through the nostrils like breathing sound (gasping) after sprints. (fast breathing). Continue this for 10 breaths.
- **Relax Breath:** After the tenth breath, inhale deeply followed by slow and long exhale.

Benefits

- Supply energy to the body.
- Excretes toxins from the body.
- Increase the oxygen level in the blood.

Savasana: After completing bellow breathing, practice Savasana.

Day 31

Table Tennis

Forehand Push

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Ready Position

- Crouched, with the feet and body facing the direction and aim to play the ball close to the table.

Back swing

- Keep the racquet at the required angle for forehand push and turn the shoulder slightly.
- Transfer the weight slightly to the forehand to push the ball.
- If the ball comes closer to the table, move the dominant foot forward.

Striking the Ball

- Move the racquet backward and bring forward to hit the ball.
- Contact the ball slightly before the peak of the bounce.

Follow Through and Recovery

- Finish the shot towards the target and recover back to the ready position.

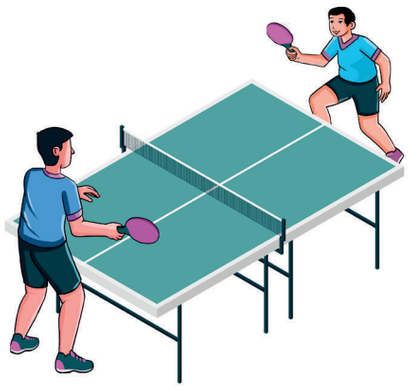
Striking the Ball

Follow Through and Recovery

Practising the Skill

Partner Practice

- Practising the forehand push with the help of a partner.
- One should practice forehand pushing while his partner feeds the ball. They change the position and role after some time and continue to practice.



Lead Up Activity

Block Rally - Forehand push

Students get in pairs and stand on opposite sides of the table. One of the pairs take turns to throw the ball to their partner, who blocks using a forehand push to return to them. They play ten shots on forehand push and then switch roles. Every forehand push will get one point. The student who scores the maximum point is the winner.

Day 32

Table Tennis

Backhand Push

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Ready Position

- Crouched with the feet and body facing the direction and aim to play the ball close to the table.

Backswing

- Keep the racquet at the required angle for backhand push and bring the racquet towards the stomach.

Ready Position

Backswing

Striking the Ball

- Contact the ball when it bounces from the board by adjusting the position of the elbow.
- Contact just before the peak of the bounce.
- Keep the feet on the floor and make the body stable.

Follow Through and Recovery

- Finish the shot and keep the wrist straight as a follow-through action.
- Recover back to the ready position.

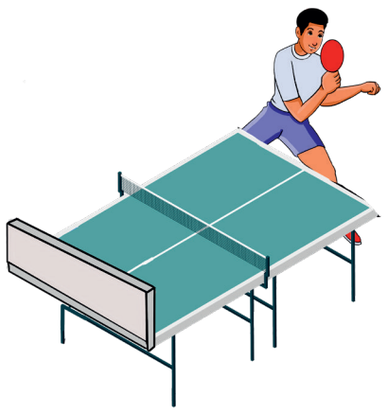
Striking the Ball

Follow Through and Recovery

Practising the Skill

Partner and Return Board - Backhand push

Students get in pairs and stand on opposite sides of the table. One of the pairs take turns to throw balls to their partner, who blocks using a backhand push to return the ball to them. They play ten shots on backhand push and then switch roles. Every backhand push will get one point. The student who scores the maximum point is the winner. (Return board may also be used to practice.)



Lead Up Activity

Backhand Push Rally

Organise the students into pairs They should play matches in between them using backhand push only. Like this, all the pairs play matches against each other. If any student misses the backhand push, then the opponent will be the winner. Winners get a chance to play against other winners. The student who wins the maximum number of matches will be the winner.

Day 33

Table Tennis

Forehand Chop

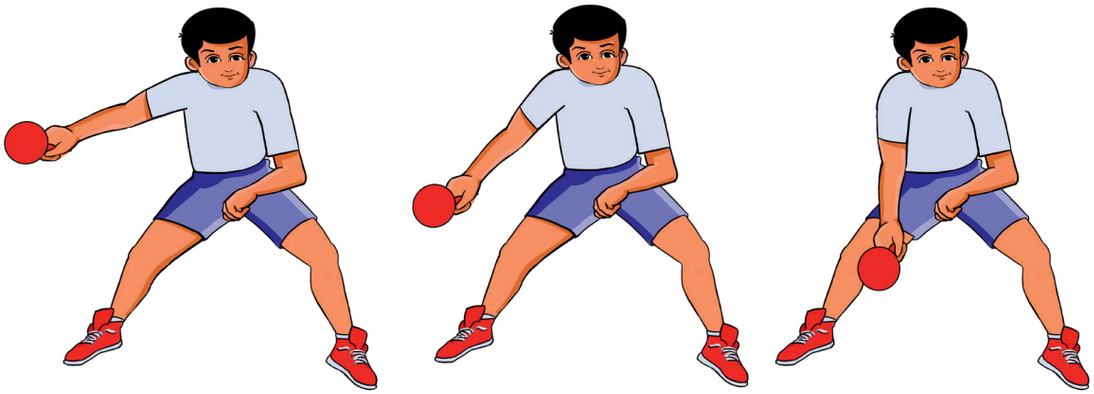
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

- Perform chop, depending upon the speed of the incoming ball, at the same time put the weight on the back foot, turn the waist and bring the arm back and raise the racquet up.

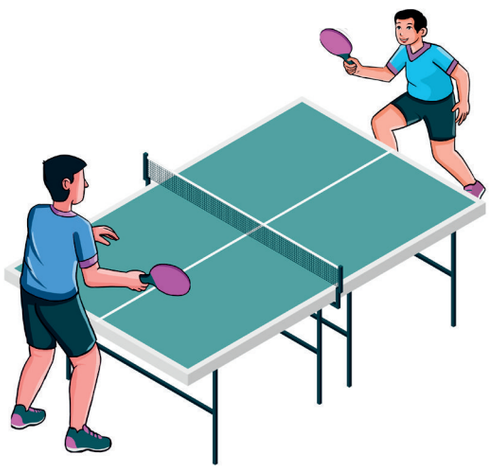
- When the ball has been dropped at the table level perform chop.
- Chopping arm should be straightened at the strike as a follow-through action.



Practising the Skill

Partner practices

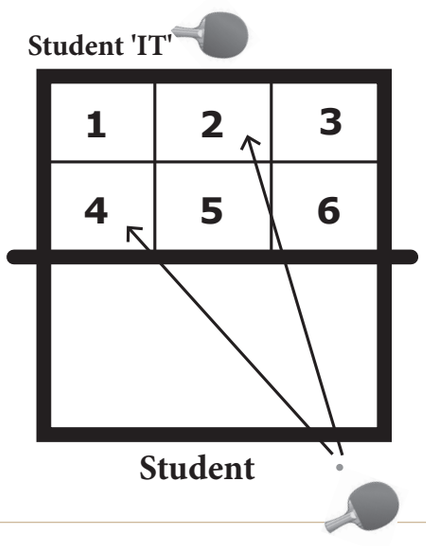
- Practice forehand chopping against backspin, side spin and topspin shots with a training partner.



Lead Up Activity

Ball Target Placement

Target should be marked on one side of the table as shown in figure. Student 'IT' stands behind the target court and feed the ball to student in the opposite court one by one and calls out the target number. Each student has 5 chances and their scores will be calculated depending upon the strike. The student who scores the maximum points is the winner.



Day 34

Table Tennis

Backhand Chop

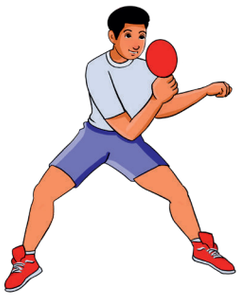
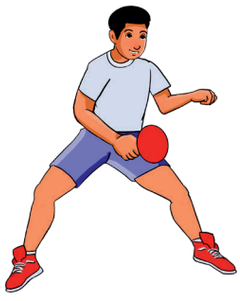
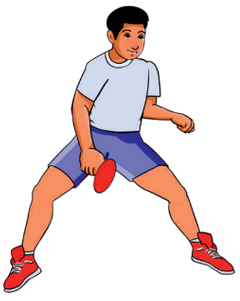
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

Backhand Chop

- Similar to the forehand chop, bring the racquet up and the wrist back while turning the waist.
- Transfer the weight to the back foot and move the wrist quickly and perform a backhand chop.

Practising the Skill

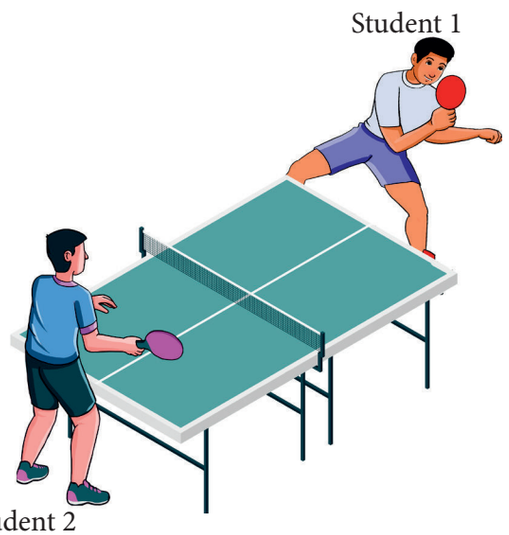
Target Practice

- Set up targets on the table and aim to play backhand chop to send the ball to the target.
- This will help to improve the accuracy and placement during matches.

Lead Up Activity

Chop Rally Challenge

Students are organised into pairs. They play singles match among them using backhand chops. One student starts the rally by serving the ball to the pair on the opposite side with a serve. The other student must return the ball with a backhand chop, aiming to keep it low and controlled. Both continue to rally back and forth using only backhand chops. If a student fails to make a proper backhand chop (e.g. the ball misses the table), they lose a point. The student who scores 11 points is the winner.



Day 35

Halasana and Breathing Techniques

45 Minutes

Preparatory Exercises

Students shall do right and left spinal twists in a seated or supine position. They shall also do hamstring stretches, forward bend and backward stretch.

Posture: Plough

Starting Position: Supine lying position

Procedure

- Lie down in a supine position with arms sidewards and palms facing the ground.
- Inhale and lift the legs off the floor until they reach perpendicular to the floor. Keep the legs straight together. Support the hip and back with the hands while lifting.
- Exhale and slowly lower the legs overhead and try to touch the floor behind the head with the toes.
- Take the hand off the hip to place it behind the back. Hold the pose in a normal breath for a few minutes and release it slowly back to the starting position and relax.

Benefits

- Muscles around the spine get stretched and improve spine functions.
- Removes fat from the waist and its good for liver, pancreas and kidneys. Resolves constipation issues and liver disorders.
- Improve blood circulation around the neck and regulating the functions of thyroid.

Breathing Technique – Sheethkari

It is otherwise called a Hissing Breath and a technique of cooling breath.

- Sit in a comfortable position (cross-legged) with eyes closed.
- Roll the tongue upward to touch the upper palate with its lower part.
- Join teeth together, leaving a small opening in between.
- Inhale slowly through the mouth which makes a hissing sound and close the lips to exhale through nose.
- Repeat this process for 8 to 10 rounds.

Benefits

- Keep the body temperature normal by reducing heat.
- Resolve the issues in mouth, throat and tongue.
- Reduces mental stress and calms the mind.

Savasana: After completing Sheethkari, practice Savasana.

Day 36

Fencing

Position, Lunge and Attack

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced skills of the event.
- To interpret the rules and regulation of the event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

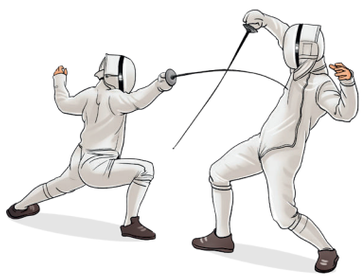
Guard Position

The fencer takes up a position by keeping one leg forward, knee flexed and another leg behind, bearing the body weight. The sword as well as the hand holding the sword should be fully stretched forward. The body should be crouched to avoid the hit by the opponent.

Lunge

From the guard position, push off from the rear leg and keep the front leg forward and lunge forward. Stretch the body and hand with the sword fully to touch the opponent. The rear leg should be fully stretched.

Attack



While attacking, the fencer should attack above the arm, below the arm, right and left and the leg of the sword side, should be kept forward and the body should be stretched forward to touch the opponent.

Practising the Skill

Footwork Drills

- **Shadow fencing:** Practising footwork and movements without a partner.
- **Line drills:** Practising advancing, retreating (moving backhand) and lunging along imaginary lines on the floor.
- **Agility ladder drills:** Improving speed, coordination and footwork agility.

Blade Work Drills

- **Target practice:** Focusing on accuracy by hitting specific targets on the wall or floor.
- **Parry and riposte drills:** Practising defensive actions followed by counterattacks.
- **Fleche drills:** Working on explosive attacks while maintaining balance.

Lead Up Activity

Foil Golf

Set up a course with designated starting and ending points and obstacles in between (chairs, cones, etc.). Fencers use their foils to "golf" a small ball (such as a ping pong ball) from the starting point to the ending point, navigating through the obstacles with precise touches. The fencer with the fewest touches to complete the course wins.

Day 37

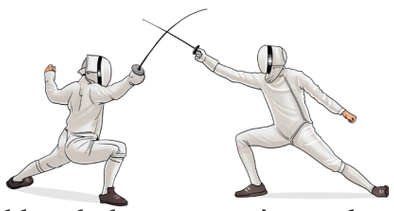
Fencing

Parrying and Riposte

45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Skill

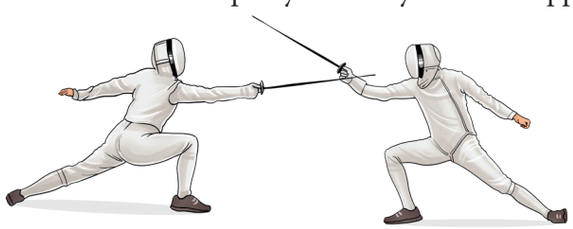


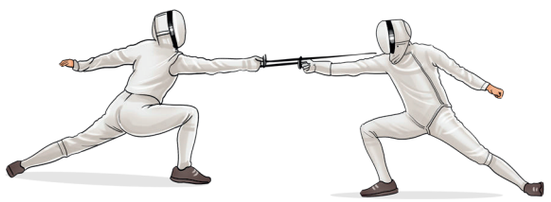
Parrying

When the opponent tries to touch the sword, the fencer should push the opponent's sword to the opposite side with wrist strength and be ready for an attack.

Riposte

The riposte is the thrust made on the attacker after his attack has been parried. The thrust may be in the same line as the parry or it may be in the opposite line.





Practising the Skill

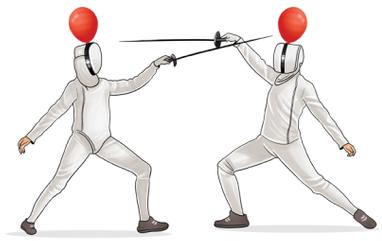
Reaction Time Drills

- **Reaction ball drills:** Reacting to the movement of a bouncing ball by lunging or stepping back.
- **Mirror fencing:** Facing a partner and mimicking their movements to improve reaction time and adaptability.

Strategy and Tactics Drills

Simulated bouts: Engaging in practice matches with specific tactical objectives, such as focusing on a particular attack or defence.

Lead Up Activity



Balloon Fencing

Inflate balloons and attach them to the fencers' masks using string or tape. Fencers then engage in bouts where the objective is to pop the opponent's balloon while protecting their own. This game helps to improve accuracy, control and timing in attacks.

Day 38

4 x 400m Relay

Exchange Zone Techniques

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced techniques of event.
- To interpret the rules and regulations of event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Preparation

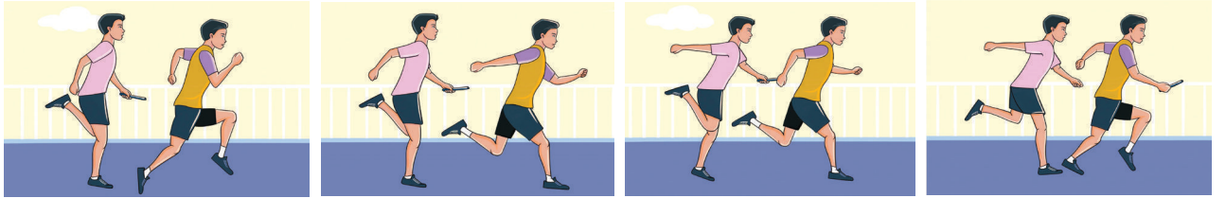
- The incoming runner approaches the outgoing runner.
- Outgoing runner is positioned on the balls of the feet, knees bent, leaning forward to run forward.
- The outgoing runner looks at the check mark and starts when the incoming runner reaches it.

Acceleration Zone

- Acceleration of the outgoing runner must be consistent.
- The incoming runner runs with a baton behind the outgoing runner till they approach the exchange zone.

Exchange Zone

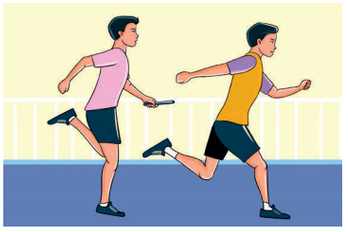
- The incoming runner focuses on the outgoing runner's hand.



- The incoming runner pushes the baton into the outgoing runner's hand.
- Outgoing runner grips the baton as soon as contact is felt.
- Both runners are in-between the exchange zone during the baton exchange.

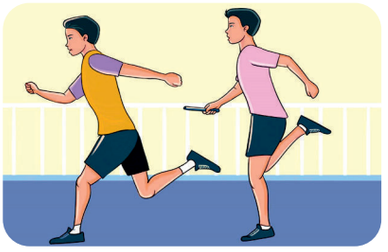
Practising the Technique

Team Formation: Form a team of four runners to participate in the relay.



Practice Baton Exchanges: Set up a designated exchange zone on the track where baton exchanges will take place. Practice baton exchanges extensively to ensure smooth transitions between runners. Focus on timing, accuracy and technique during baton exchanges. Runners should practice approach run, baton exchanges and acceleration after receiving the baton.

Lead Up Activity



Baton Pass Challenge

Create a relay baton pass station. Set up cones or markers to designate relay exchange zones. Athletes take turns sprinting towards the exchange zone and passing the baton to a teammate. Focus on timing, accuracy and smooth transitions during the hand off. Challenge teams to complete as many successful baton passes as possible within a set time limit. The team which completes the maximum number of successful exchanges in a fixed time will be the winner.

Day 39 — 4 x 400m Relay
Passing Techniques
45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Push Pass Technique

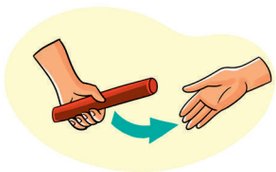
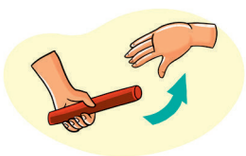
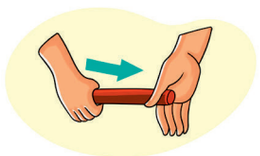
- The outgoing runner's arm is extended backward with the palm of the hand in a vertical position and the thumb pointing downwards.
- The incoming runner pushes the baton horizontally forward and places the top of the vertically held baton across the palm of the outgoing runner's hand. By that time, he has to hold the baton and increase acceleration.
- Distance between runners should be 1m or less.

Up sweep Technique

- Outgoing runner's hand is extended backward at hip level.
- The incoming runner moves the baton upwards between the outgoing runners' widely spread thumb and first finger. By that time, he has to hold the baton and increase acceleration.
- Distance between runners is 1m or less.
- A relatively safe technique when compared with other techniques.

Down Sweep Technique

- Outgoing runner's hand is extended backward at hip level.
- The incoming runner moves the baton downwards between the outgoing runners' palms facing up, thumb pointing to spine. By that time, he has to hold the baton and increase acceleration.
- Distance between runners is 1m or less.
- A relatively safe technique.

Practising the Technique

Exchange Zones: Mark the exchange zones on the track using cones or tape. The exchange zone is 20 metres long, 10 metres acceleration zones shall be marked before the designated exchange point.

Practice Baton Grip: Start by practising the correct baton grip with both hands. The outgoing runner should hold the baton with the palm facing upward, while the incoming runner approaches with the palm facing downward for a smooth handoff.

Approach Drills: Set up markers to simulate the approach to the exchange zone for both incoming and outgoing runners. Practice approaches from both directions to ensure proper positioning and timing.

Exchange Techniques: Practice various exchange techniques, such as the "push pass" or the "up sweep and down sweep", to determine which method works best for the team. Experiment with different handoff positions and angles to find the most efficient technique.

Lead Up Activity

The Downward Pass

Practice passing and receiving using the downward pass in groups. Form lines of 4 to 6 students with one baton per group. Start by walking, followed by jogging.

Passing and receiving

Mark out a 20 metre exchange zone and a 10 metre acceleration zone on a straight portion of track. The receiver stands in the acceleration zone. Place a check-mark (a cone) on the ground approximately 16 heel-toe steps back from exchange zone. The receiver begins running once the runner reaches the check-mark.

Day 40

Triple Jump
Approach and Hop Phase

45 Minutes

LEARNING OBJECTIVES

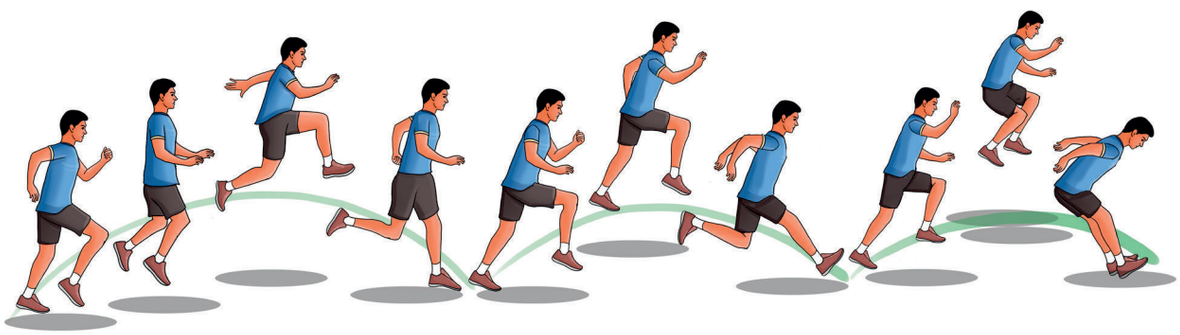
- To learn the advanced techniques of event.
- To interpret the rules and regulations of event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Approach Phase

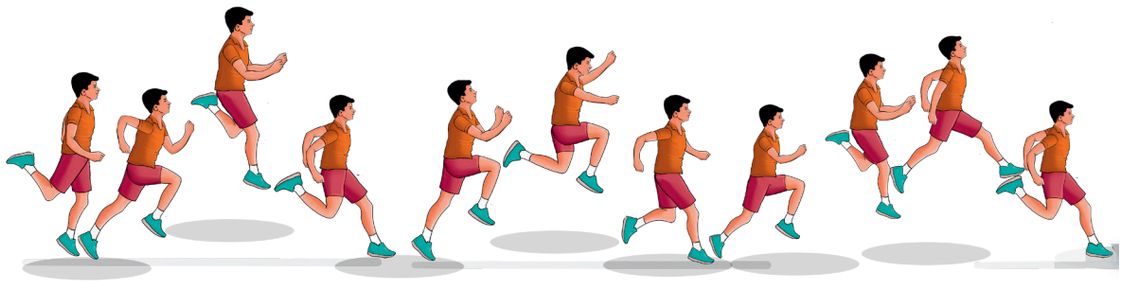
- Approach length varies between 10 strides for beginners and more than 20 strides for experienced, elite jumpers.
- Running technique is similar to sprinting.
- Stride frequency is increased at the end of the approach.
- Velocity is increased continuously throughout the approach.
- Foot plant is active and quick with a 'down and back' motion.



Hop Phase

- The thigh of the free leg is driven to the horizontal position.
- Take off direction is forward, not upward.
- Free leg is drawn back.

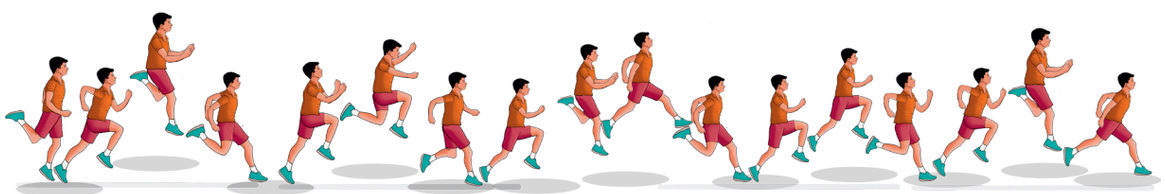
- Take off leg is drawn forwards-upwards then extended forwards to prepare for touchdown.
- Trunk is kept upright.



Practising the Technique

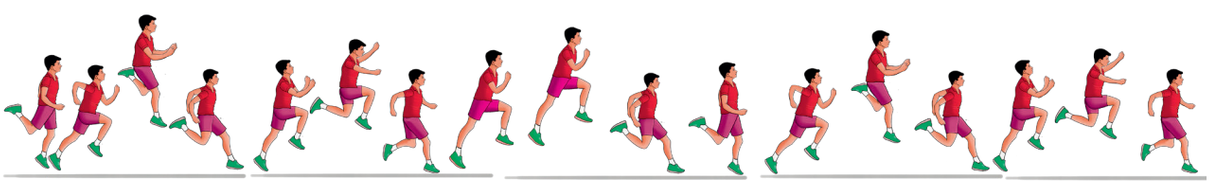
Rhythmic Jump

- Use a 3 to 5-step approach.
- Consecutive alternate bounds.
- Consecutive hops.
- Use various combinations of bounds and hops.



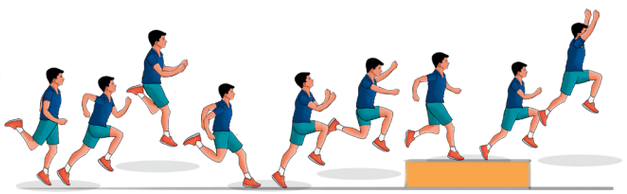
Multiple Triple Jump

- Use a 3 to 5-step approach.
- Use the triple jump rhythm.
- Keep the rhythm of the hop and step correctly.
- Practice the drill for a 20 to 30 metre distance.



Triple Jump with Step to Platform

- Use a 5 to 7-step approach.
- Mark a gap (2 to 3 m) for the hop and position a 15 to 25 cm platform.
- After the hop, step on to the platform.
- Jump into the pit.



Lead Up Activity

Single-Leg Hop Relay

Organise the students into two teams. Place two cones within 10 metres' distance (starting line and end line). After the signal, students must complete the relay by hopping on one leg only. The first student in both teams starts to hop from the starting point to the cone and then return to the starting point and give a pass to the next student. The rest of the students in both teams do the same. The team that finishes first is the winner.

Day 41 — Triple Jump

Step and Jump Phase

45 Minutes

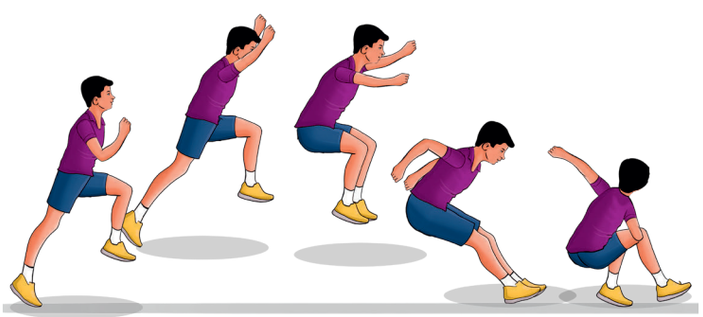
Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Step Phase

- Foot plant is active and quick with a 'down and back' motion.
- While the lead leg is almost completely extended, a double arm swing is used.
- The thigh of the free leg is horizontal or higher and keep the trunk position upright.
- The free leg is extended forwards and downwards.

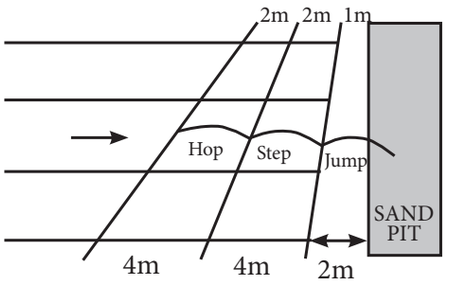
Jump Phase



- Foot plant is active and quick with a 'down and back' motion.
- Support leg is almost straight during takeoff and simultaneously use double arm action.
- Body position is upright.
- Hang or sail techniques are used in the air.
- Legs are almost fully extended at landing.

Practising the Technique

Triple Jump Grid



- Mark out an angled grid alongside of the pit as shown in the picture.
- Use a 5 to 7-step approach from the side of the pit.
- Hop and step into the grid.
- Move down the grid, increase distance as long as rhythm is maintained.

Triple Jump from a Medium Approach

- Use the runway for the approach.
- Use the 7 and 9-step approach.
- Keep the rhythm for the hop and step even.

Whole Sequence from a Full Approach

- Use the track to determine the length of the approach.
- Average length is 'pigeon stepped' (foot lengths) out and then measured on runway.
- Complete the triple jump technique and if necessary, adjustments can be made to the starting mark.

Lead Up Activity

Competition

Each student has three trails. Among the best of the three trails, the student who has jumped the maximum distance is the winner.

Day 42

Javelin Throw

Carry and Approach Techniques and Withdrawal

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced techniques of event.
- To interpret the rules and regulations of event.
- To develop the sportsman spirit.

Warm-Up: Give suitable warm-up exercises.

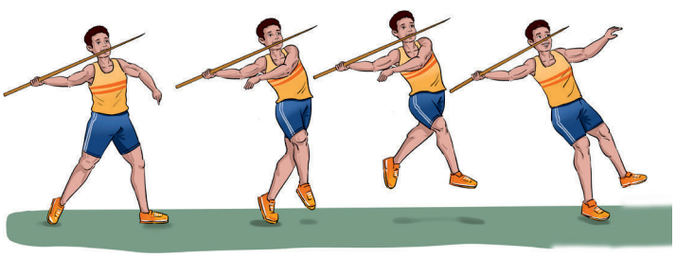
Teaching the Technique

Carry and approach

- Hold the javelin above the shoulder in a horizontal position and lift it above the head.
- Hand holding the javelin-should be in stable without shaking.
- The first two-thirds of the total approach distance is used for increasing the speed (acceleration) of the run-up.
- The run-up should be easy and relaxed.
- At the end, the athlete has to prepare for withdrawal of the javelin.

Withdrawal

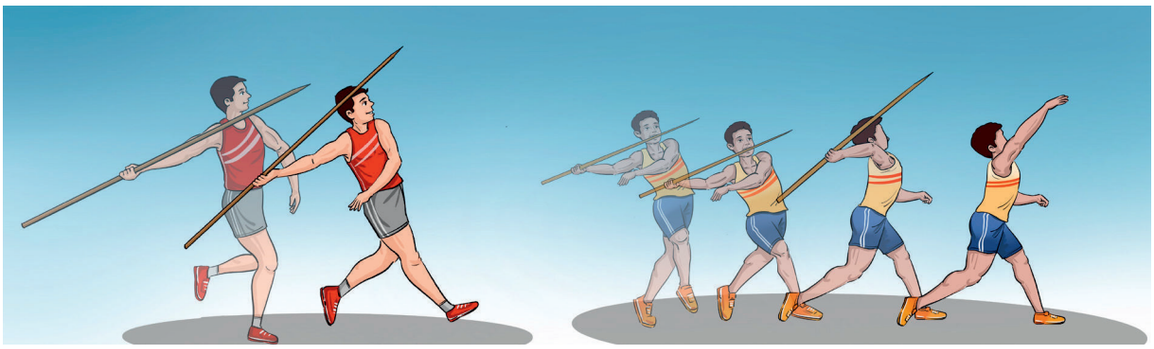
- Withdrawal starts at the second pace of the fifth stride pace and ends at the third stride.
- The throwing arm is drawn back in alignment with the shoulder access.
- The palm of the hand is turned upward.
- The hip is facing at the right angle to the throwing direction.



Practising the Technique

- Introduce the javelin, safety measures and grip.
- From a line, face the throwing area.
- Start approach run with feet level and javelin withdrawn.
- First step onto the right leg, then begin with 2 walking strides, later 2 running steps, into the 3 stride rhythm to make a throw.

- Continue into the throw.
- Practice javelin withdrawal (pullback) technique at walking and then running speed.



Lead Up Activity

Javelin run-up relay

Organise students into 2 groups of 6 each. Draw a starting line and turn at a designated distance and mark the halfway distance with cones. 3 members of each group lined up on the start line and the remaining 3 members lined up on the finish line facing their teammates. When the teacher yells 'go' students must run forward to the halfway line (marked by cones) and then from the halfway line to the finish line and then run sideways with their legs crossing over (like the run-up) for a javelin throw. Once at the finish line, they must tag their partner who will complete the same process on the way back to the start line. The group that finishes first is the winner.

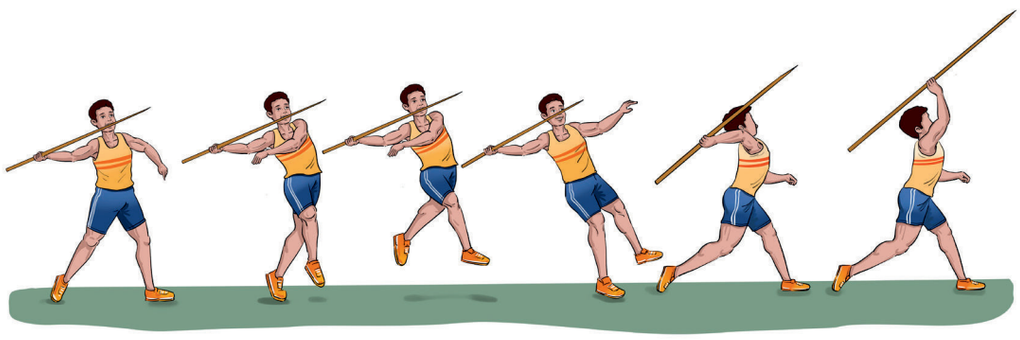
Day 43 — Javelin Throw

Impulse Stride, Release and Recovery Techniques — 45 Minutes

Warm-Up: Give suitable warm-up exercises.

Teaching the Technique

Impulse stride

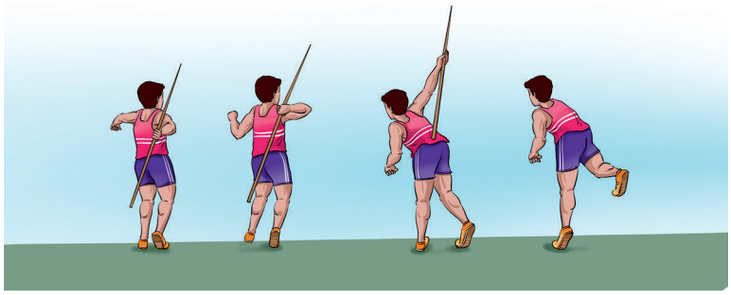


- This stride is carried out low and quickly and the body is leaned backward.

- Place the left leg heel infront on the ground to bring the body down.
- Both feet are placed on the ground after the fifth stride.
- The arm holding the javelin is fully extended at the back.

Release

- During the release there is forward and upward stretching of the right leg and driving the right hip forward.
- Turn the face towards the direction of the throw and the javelin must be parallel to the shoulders.



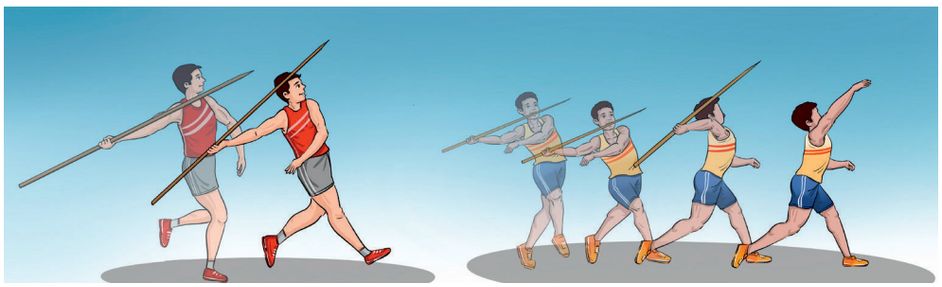
Recovery (reverse)

- After the release, the right leg is led forward
- In order to perform the reverse, flex the right leg and place the right foot on the ground and lean the upper body forward. The left leg is raised and brought back into the direction of run-up to balance the body.

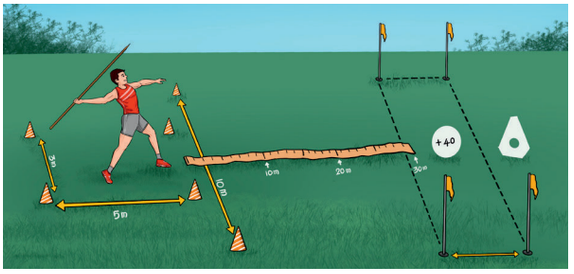
Practising the Technique

Right hand throwers

- Keep the left leg in front of the right leg about 60 to 90 cm, facing the direction of the throw.
- Withdraw the javelin, keeping the palm above shoulder level.
- Lift the left leg slightly to initiate the movement, keeping the weight on the bent right leg.
- Drive the right hip forward and throw.
- Complete sequence controlling and correcting the power position.
- Complete sequence with a light javelin.
- Complete sequence with different implements such as throwing balls or long stick like javelin.



Lead Up Activity



Javelin Throw Competition

Students are organised in two groups of equal number. All the team members get 3 chances to throw. The throw is carried out from a 5-m run-up area. The athlete throws the javelin as far as possible in line with markers. Lines are marked in the throwing sector at distances of 20 m, 25 m and 30 m. The performance for all the three trials will be directly recorded (like 1, 3, 5 points). Each team member's best result will be recorded and added as a team score. The team with the highest number of scores is the winner.

Day 44

Chess

Pawns and its Momentum

45 Minutes

LEARNING OBJECTIVES

- To learn the advanced strategies of the game.
- To interpret the rules and regulations of the game.
- To develop the sportsman spirit.

Teaching the Strategy

- Chess is full of strategy and often might need an extra move to gain the advantage.
- This extra move might not appear to be so beneficial but when it is involved at the end of a game, it could mean everything.
- An example of this would be when two king pieces come face to face.
- In such a case, whichever piece moves first loses its territory and can be forced into a corner.
- Keeping a pawn nearby in such cases will come close to play 'dead' moves with them.

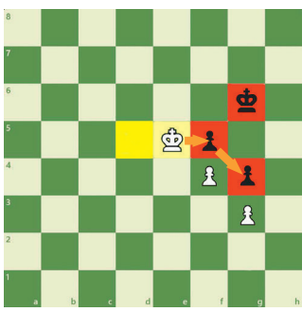


Fig-1

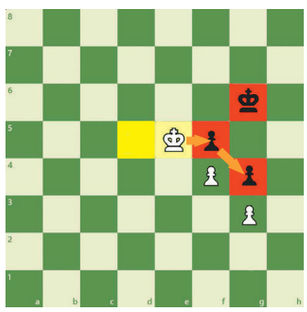


Fig-2

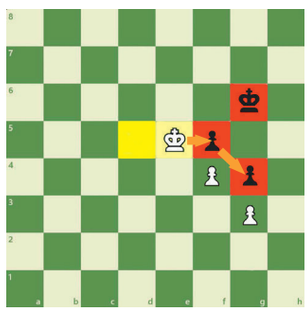


Fig-3

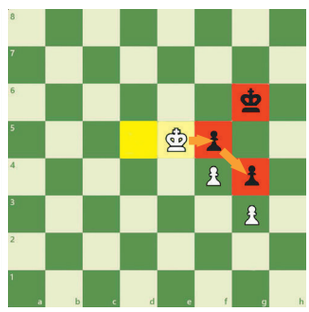


Fig-4

Practising the Strategy

- Practising the strategies with partners.

Lead Up Activity

Chess Match

Organise the students into pairs and compete (league) with each other. The score of the game will be awarded as follows.

- Win - 1
- Draw - 0.5
- Lose - 0

The student who scores the maximum points in the league will be the winner. Based on the points scored in all rounds, prizes will be given.

Day 45 — Chess
Queen Fork

45 Minutes

Teaching the Strategy

- A queen fork is nothing but threatening two different pieces of the opponent with the queen.
- The queen is the most valuable piece on the board after the king.
- Hence, it is important to utilise the Queen's fork with care, as it is not prudent to lose a valuable piece such as the Queen over a less valuable piece such as a bishop or knight (Fig-1).
- The ideal targets should either be two unprotected pieces or a king and an unprotected piece. Targeting a protected piece will bring about the death of the queen, which can be quite advantageous to the opponent (Fig-1).
- If the student cares, the queen fork is capable of bringing about a checkmate soon after the exchange (Fig-2,3,4).

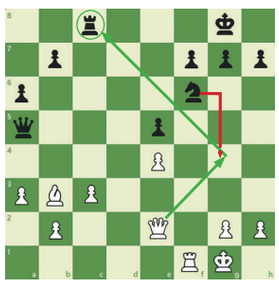


Fig-1

Fig-2

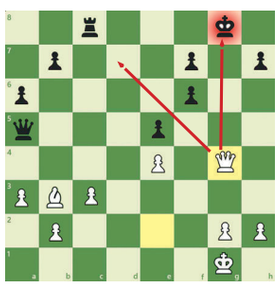


Fig-3

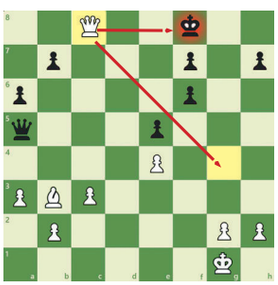


Fig-4

Practising the Strategy

- Practising the strategies with partners.

Lead Up Activity

Chess Match

Organise the students into pairs and compete with each other. The score of the game will be awarded in each round as follows:

Win - 1
Draw - 0.5
Lose - 0

The student who scores the maximum points in the league will be the winner. Based on the points scored in all rounds, prizes will be given.

Day 46 Health and Exercise Nutrition

Factors Influencing Health

45 Minutes

LEARNING OBJECTIVES

- To understand the factors influencing health. To understand the ways to enhance well-being.
- To understand the correlation between health and sports.

Teaching Learning process: Lecture and Discussion method.

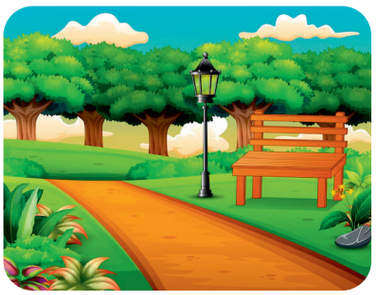
Factors Influencing Health

Health is influenced by a multitude of interconnected factors, ranging from individual lifestyle choices to broader social, economic and environmental determinants. Understanding these factors is crucial for promoting well-being and addressing health disparities across populations. Here are some key factors that influence health:

Lifestyle Choices: Individual behaviours such as diet, exercise, smoking, alcohol consumption and sleep patterns significantly impact on health. Adopting healthy habits like taking a balanced diet, exercising regular exercise and sufficient sleep can reduce the risk of chronic diseases. This promotes overall well-being.

Genetics and Biology: Genetic predispositions play an important role in determining an individual's susceptibility to certain diseases. Understanding one's genetic profile can aid in deciding the healthcare interventions and preventive measures to meet an individual's needs.

Social Determinants of Health: Socioeconomic status, education, employment, housing and access to healthcare services all have a significant impact on health. These socioeconomic variables lead to health inequities in marginalised and poor factors experiencing higher rates of mortality and illness.



Environmental Factors: Environmental factors like air and water quality, exposure to pollutants can have an impact on physical health, lack of access to contribute to the development of respiratory diseases, allergies and other health issues.

Psychological and Emotional Well-being: Mental health is essential for general health and quality of life. Stress, trauma, social support and access to mental healthcare services have an effect on mental health. These can contribute to the development of mental health disorders such as depression, anxiety and drug abuse.

Healthcare Access and Quality: To maintain health and health issues. It is crucial to have access to affordable and high quality healthcare services, including preventive care. Screenings and lack of insurance, transportation, or doctors in rural areas can limit individuals' ability to receive timely and appropriate care.

Community and Social Support Networks: Family, friends and community organisations, provide emotional, practical and financial support that promotes well-being. Social isolation and loneliness are associated with poorer health outcomes and an increased mortality risk.

Policy and Public Health Interventions: Government policies, legislation and public health initiatives play a crucial role in shaping the broader determinants of health. Broader determinants of health include education, income, food and nutrition programs, workplace safety regulations and environmental protection measures. Evidence-based policies and interventions can aid in creating healthier environments and reduce health disparities.

Addressing the complex of these factors requires a comprehensive, multi-sectoral approach that addresses not only individual behaviours but also broader social, economic and environmental determinants of health. Promoting health equity and addressing the root causes of health disparities allows us to work towards creating healthier communities and improving population health outcomes.

Sports and Health

Sports and health go hand in hand. Physical activity plays a vital role in promoting well-being and preventing chronic diseases. Regular exercise and participating in sports improves physical fitness, mental health, social connections and quality of life.

Regular physical activity is essential in maintaining a healthy weight, lowering the risk of obesity and preventing a wide range of chronic illnesses including cardiovascular disease, type 1 diabetes and some cancer.

Sports and exercise have positive effects on mental health and well-being. Regular physical activity has reduced symptoms of depression, anxiety and stress, while improving the mood and cognitive function. Exercise stimulates the release of endorphins. This in turn promotes feelings of happiness and relaxation. Endorphins improve the mood and make people resilient to stress.

Participation provides in sports fosters social connections and support networks. Opportunities for friendship, teamwork, camaraderie. Whether playing in a team, joining a fitness class or a hobby sport unites people. It creates a sense of community. These social connections can have a positive impact on mental health, self-esteem and overall life satisfaction.

Sports offer opportunities for personal growth, skill development and sports participation teaches valuable life skills like self-control, perseverance and resilience. These teachings have an impact beyond the playing field in academics, career and relationships.

To offer opportunities for organised sports programmes and unstructured physical activity investments have to be made in parks, green areas and urban planning.

In conclusion, the relationship between health and sports is multifaceted. Physical activity plays a central role in promoting overall well-being, preventing disease and enhancing the quality of life. We can encourage regular exercise, sports participation and prioritise physical activity. We can enable people to lead healthier, more active lives.

Evaluation

- The teacher might ask students about factors impacting general health.
- The teacher asks questions among students regarding disease prevention, diagnosis and treatment.

Follow up

- Genetic Factors and Health Influences - Students can share their experiences.
- Students can be grouped for a discussion or panel talk on the health impacts on lifestyle changes.
- Students might need to present a comprehensive report on their home environment and the necessary changes required to promote a healthy setting.

Day 47

Health and Exercise Nutrition

Diet for Exercise

45 Minutes

LEARNING OBJECTIVES

- To educate students about healthy eating habits for peak performance, recovery and overall health during exercise.

Teaching Learning process: Lecture and Discussion method.

Exercise Nutrition

Exercise nutrition refers to the specialised dietary practices aimed at optimising physical performance, enhancing recovery and supporting overall health. It involves strategic planning of intake, including carbohydrates, proteins, fats, vitamins, minerals and hydration, to meet the energy demands of exercise, promote muscle repair and growth. Exercise nutrition strategies may vary depending on factors such as the type, duration and intensity of physical activity.

Diet for Exercise

Diet is crucial for optimising performance, enhancing recovery and supporting overall health during exercise. Here are some key dietary considerations to keep in mind:

Carbohydrates for Energy: Carbohydrates are the primary fuel source for high-intensity and endurance activities. Consuming carbohydrates before exercise can help to top off glycogen stores in the muscles and liver. This provides energy for sustained performance. Complex carbohydrates like whole grains, fruits, vegetables and legumes provide a steady release of energy and complex carbohydrates help to maintain blood sugar levels.

Protein for Muscle Repair and Growth: Protein plays a crucial role in repairing and rebuilding muscle tissue damaged during exercise. It supports muscle growth and recovery. Consuming protein-rich foods or supplements before and after exercise can help to promote muscle repair. A combination of high-quality protein sources such as lean meats, poultry, fish, eggs, dairy products, legumes and protein shakes or bars enhances recovery fats.

Healthy Fats for Sustained Energy: Healthy fats are a concentrated source of energy that is essential for supporting cellular function, hormone production and nutrient absorption. Incorporate unsaturated fats like avocados, nuts, seeds, olive oil and fatty fish in pre-exercise meals and snacks to promote endurance.

Hydration for Performance: Staying hydrated is crucial for regulating body temperature and preventing dehydration during exercise. Drink water regularly to replace fluid losses and maintain hydration. Sports drinks or electrolyte beverages are consumed during prolonged or intense workouts to replenish electrolytes lost through sweat.

Timing and Portion Control: Pay attention to the timing and portion sizes to optimise digestion and fuel availability. Eat a balanced meal lasting 2 to 3 hours before exercise to provide sustained energy and prevent discomfort. If you're exercising closer to mealtime, opt for a smaller snack containing easily digestible carbohydrates and a small amount of protein, 30 to 60 minutes before exercise.

Post-Exercise Recovery Nutrition: After exercise a combination of carbohydrates and protein replenish glycogen stores, repairs muscle tissue and supports recovery. A meal or snack containing a 3:1 or 4:1 ratio of carbohydrates to protein within 30-60 minutes post-exercise to maximise recovery and muscle repair.

These dietary guidelines help to optimise performance, enhance recovery and support overall health and well-being. Experiment with different foods, timing strategies and hydration practices to find what works best for your physique and fitness goals.

Evaluation

- Assess students' understanding of nutritional content through oral and written questions.

Follow up

Develop a nutrition plan

Organise the students into groups and of them to develop a nutrition plan for various types of athletes in groups. (e.g. Endurance athlete, strength based athelet and team sport athelet)

Day 48

Health and Exercise Nutrition

Food Intake Methods

45 Minutes

LEARNING OBJECTIVES

- To understand how much to eat and drink.
- To comprehend eating and drinking before, during and after exercise.
- To enhance hydration levels.

Teaching Learning process: Lecture and Discussion method.

What, when and the quantity to eat and drink prior, during and after exercise

Fuelling the body properly before, during and after exercise is essential for optimising performance, supporting recovery and maintaining overall health and well-being. Here's a breakdown of what to eat and drink, as well as timing and portion considerations, for each stage of exercise. It is necessary to know about dietary knowledge to enhance sporting performance.

Before Exercise

What to Eat: Consume a balanced meal or snack that provides carbohydrates, protein and a small amount of healthy fats. This provides sustained energy and aids muscle growth and repair. Examples include a banana with nut butter, yogurt with granola and fruit, or a turkey and cheese sandwich on whole grain bread.

When to Eat: Eat a meal or snack containing carbohydrates and protein 1 to 3 hours before exercise. To prevent discomfort during the workout, give enough time for digestion to take place.

How Much to Eat: Choose portion sizes that are moderate and easily digestible. Avoid heavy, high-fat meals that can cause discomfort or sluggishness.

Hydration: Drink water or a sports drink to ensure the body is adequately hydrated before exercise. Drink at least 2 to 2 ½ cups of water 2 to 3 hours before the workout. Continue to sip fluids leading up to exercise.

During Exercise

What to Eat: For longer-duration activities lasting more than 60 to 90 minutes, consume easily digestible carbohydrates to maintain energy levels and prevent fatigue. Including sports drinks, bananas or raisins.

When to Eat: To provide a continuous source of energy, consume small amounts of carbohydrates during prolonged exercise. Consume 30 to 60 grams of carbohydrates per hour, depending on the intensity and duration of workout.

How Much to Eat: Consume small, frequent doses of carbohydrates to avoid stomach discomfort and maintain energy levels. Experiment with different foods to find what works best for you.

Hydration: Drink fluids regularly during exercise to prevent dehydration. To maintain electrolyte balance in a hot and humid environment drink 7 to 10 ounces of fluid every 10 to 20 minutes.

After Exercise

What to Eat: Consume a balanced meal or snack containing carbohydrates and protein within 30-60 minutes post-exercise. This will help the body to replenish glycogen stores, repair muscle tissue and support recovery. Examples include a protein smoothie with fruit, Greek yogurt with granola or a turkey and vegetable wrap.

When to Eat: Refuel with a post-workout meal or snack as soon as possible after exercise to optimise recovery and muscle repair.

How Much to Eat: Consume a meal or snack that provides a combination of carbohydrates and protein in a 3:1 or 4:1 ratio to replenish glycogen stores and promote muscle recovery. Adjust portion sizes based on the duration and intensity of your workout.

Hydration: Rehydrate by drinking water or a sports drink to replace fluid losses and restore electrolyte balance. Drink at least 2to2 ½ cups of fluid for every pound of fluid lost during exercise.

In summary, proper nutrition before, during and after exercise plays a critical role in optimising performance, supporting recovery and maintaining overall health. By fuelling your body with the right nutrients at the right times, one can enhance the exercise and maximise the benefits of physical activity. Experiment with different foods, timing strategies and hydration practices to find what suits for fitness goals.

Evaluation

- How much to eat during exercise?
- How to maintain the hydration level after exercise?

Follow up

Differentiate the hydration practices before during and after exercise required for individual sports and team games.

Day 49

Exercise Therapy for Lifestyle Diseases

Obesity and Type 1 Diabetes

45 Minutes

LEARNING OBJECTIVES

- To understand about lifestyle diseases.
- To sensitise risk factors of lifestyle diseases.
- To understand the effectiveness of physiotherapy for recovery from diseases.

Teaching Learning process: Lecture and Discussion mode.

The primary goals of exercise therapy

Improving Physical Function: Exercise therapy aims to enhance strength, flexibility, endurance, balance, coordination and mobility of the body. By targeting specific muscle groups and movement patterns, individuals can improve their ability to perform daily activities and reduce functional limitations.

Managing Medical Conditions: Exercise therapy is used to manage various medical conditions, including cardiovascular diseases, diabetes, obesity, hypertension, arthritis, osteoporosis, chronic pain and mental health disorders. Regular physical activity can help to control and reduce the risk of complications associated with certain medical conditions.

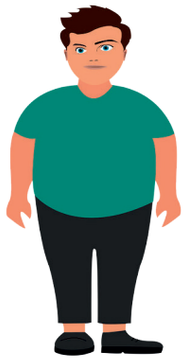
Promoting Health and Wellness: Exercise therapy plays a crucial role in promoting overall health and wellness. It supports weight management, reduces stress, enhances the mood, boosts energy levels, improves the quality of sleep. It reduces the risk of chronic diseases. Regular exercise is also associated with a lower mortality risk and increased longevity.

Preventing Disease: Exercise therapy is an essential component of disease prevention strategies. By following physical activity and healthy lifestyle behaviours, individuals can reduce their risk of developing various chronic diseases like heart disease, stroke, Type 1 Diabetes, cancers and obesity-related conditions.

Enhancing Quality of Life: Engaging in regular exercise can enhance the quality of life by improving physical function, mental well-being, social interaction and overall satisfaction in life. Exercise therapy can help people to live independently, stay active and lead a better quality of life as they age.

Facilitating Rehabilitation: Exercise therapy is a part of rehabilitation programmes for individuals recovering from injuries, surgery or medical procedures. It helps to restore mobility, strength and function, reduces stiffness and pain, promotes tissue healing and recovery.

Obesity



- Obesity means being overweight. When someone has obesity, it means they have an excess amount of body fat. This will lead to health problems. People can become obese for various reasons, such as eating an unbalanced diet and not being physically active. It's important to address obesity because it can increase the risk of serious chronic diseases like heart disease, diabetes and cancers.
- Exercise is a cornerstone of obesity management, as it helps to increase energy expenditure, promotes fat loss and improves metabolism.

Suggested Exercises

- Aerobic exercises such as walking, jogging, cycling and swimming are effective in burning calories. Aerobic exercises promote weight loss. These activities should be performed regularly, for at least 150 minutes of moderate-intensity aerobic exercises per week.
- Strength training exercises should be included to build a lean muscle mass. This enhances weight loss efforts.
- Incorporating flexibility and balance exercises can improve mobility and reduce the risk of injuries especially for individuals with obesity related joint issues.
- Exercise programmes should be gradually progressed to prevent overexertion and accommodate individual limitations.

Consistency and Progress Tracking

- Encourage students to participate in exercise for at least 30 to 60 minutes of moderate to vigorous activity regularly.
- Track progress over time through fitness assessments, measurements and self-reported data to calculate achievements. Adjust goals as needed.

Integration with Curriculum

- Exercise therapy concepts should be included in the school curriculum through health education classes or wellness programmes.

Encouragement of Lifetime Healthy Habits

- Students should follow regular physical activity and healthy lifestyle habits.
- Students should be guided to continue exercising alone or to join community fitness programmes.

Type 1 Diabetes

Exercise therapy is essential for managing blood sugar levels. It improves insulin secretion and reduces the risk of diseases associated with Type 1 Diabetes.

Consultation with Healthcare Provider

- Before starting any exercise programme, students with Type 1 Diabetes should consult with their doctor to ensure precautions and follow safety protocols.

Suggested Exercises

- Aerobic exercises such as brisk walking, cycling and swimming help to lower blood glucose levels and improve cardiovascular health. Aim for at least 150 minutes of moderate-intensity aerobic exercise per week distributed over several days.
- Interval training which alternates between high-intensity bursts and recovery periods can be effective for improving insulin secretion and sensitivity.
- Resistance training exercises should also be included to increase muscle mass, enhanced insulin action and improved glycaemic control.
- Bodyweight exercises (e.g. squats, lunges, push-ups)
- Resistance band exercises
- Light dumbbell or kettlebell exercises
- Perform 2 to 3 sets of 8 to 12 repetitions for each exercise with a rest period of 30 to 60 seconds between sets.
- Exercise sessions should be monitored closely, especially for individuals on insulin or certain medications that affect blood sugar levels. Proper hydration and blood glucose monitoring are essential during exercise.

Consistency and Progress Tracking

- Students should monitor their blood sugar levels before exercise, during exercise and after exercise, if they are on insulin or medications that affect blood glucose levels.
- Adjust exercise intensity, duration or timing based on individual stamina and blood sugar levels.

Integration with Curriculum

- Provide education on the benefits of exercise for managing Type 1 Diabetes including improved blood sugar control, weight management and overall health through health education classes or wellness programmes.
- Offer support and encouragement to help students to adhere to their exercise routine and overcome any challenges or barriers that they may encounter.

Encouragement of Lifelong Habits

- Students should incorporate regular physical activity into their daily routine and adopt healthy lifestyle choices such as a balanced diet, adequate sleep and stress management.

Evaluation

- Explain the specific objectives or desired outcomes of exercise therapy?
- What are the measurement tools or metrics that are utilised to assess obesity?
- Mention some suggested physical exercises to lower Type 1 Diabetes.

Follow up

- What are the ways to get rid of obesity?
- Identity, the family members who have Type 1 Diabetes.

Day 50

Exercise Therapy for Lifestyle Diseases

Cardiovascular Diseases and Hypertension

45 Minutes

LEARNING OBJECTIVES

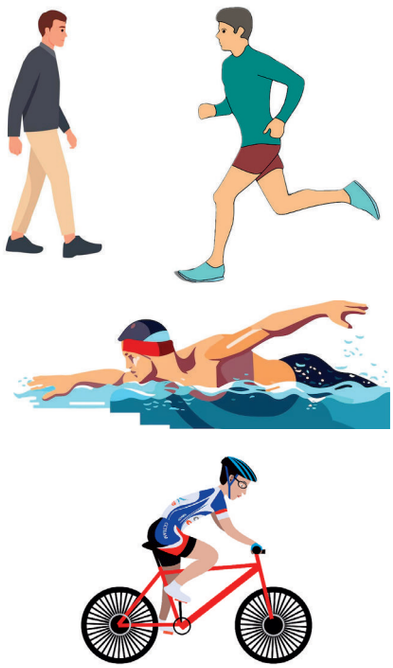
- To understand about physiotherapy treatment to treat lifestyle diseases.
- To know about physiotherapy procedures to treat cardiovascular diseases.
- To understand about physiotherapy procedures to treat hypertension.

Teaching Learning Process: Lecture and Discussion method.

Cardiovascular Diseases

Exercise is a cornerstone of preventing cardiovascular disease and in its management. It helps to improve heart health, lower blood pressure, reduce cholesterol levels and body weight.

Suggested Exercises



- Aerobic exercises such as walking, jogging, cycling and swimming are recommended to improve cardiovascular fitness. 150 minutes of moderate-intensity aerobic exercises per week reduces the risk of heart disease. It can be supplemented with vigorous-intensity activities appropriately.
- Interval training and high-intensity interval training (HIIT) can be beneficial for improving cardiovascular fitness and enhance heart function. It also lowers blood pressure.
- Resistance training exercises should also be included to strengthen muscles and support overall cardiovascular health.
- Exercise programmes should be individualised based on the individual's medical history, current health status (Regular monitoring of heart rate, blood pressure and symptoms during exercise is essential for safety.)

Daily Lifestyle Activities

- Incorporating more movement into the daily routine can benefit cardiovascular health.
- Taking the stairs instead of using the lift.

- Parking a few metres away from the destination and walking.
- Carrying out household chores like gardening and cleaning.

It is necessary to consult with a healthcare professional before starting any new exercise programme, especially if one has existing health concerns. They can provide personalised recommendations based on the individual's fitness level. Additionally, it's important to start slowly and gradually increase the intensity and duration of the activities to avoid injury.

Hypertension

Exercise therapy is essential for hypertension management. It helps in lowering blood pressure and improving vascular function. It reduces the incidents that may cause damage to the heart muscle.

Suggested Exercises

- Aerobic exercises such as walking, cycling, swimming and dancing are recommended for individuals with hypertension. Aim for at least 150 minutes of moderate-intensity aerobic exercise per week distributed over several days.
- Dynamic resistance exercises using body weight, resistance bands or free weights can help to lower blood pressure and improve muscle strength. Incorporate resistance training exercises at least two days per week.
- Flexibility and relaxation exercises such as asana, martial art and deep breathing techniques can help to reduce stress, promote relaxation and lower blood pressure.
- Exercise programmes should be tailored to the individual's fitness level, medical history and blood pressure levels. Start slowly and gradually increase the intensity and duration of exercise over time and monitor blood pressure levels.

Evaluation

- What are the causes of cardiovascular and hypertension diseases?
- Explain in detail preventive and treatment procedures for cardiovascular and hypertension diseases?

Follow up

Students are asked to prepare projects regarding preventive and treatment procedures for cardiovascular and hypertension diseases.

Annexure

Unit 1

Scientific Basis of Sports and Games

Meaning of Scientific Basis of Sports and Games

The scientific basis of sports and games refers to evidence based on research and studies in fields that support the physical and mental benefits of participating in these activities. Scientific evidence has shown that engaging in sports and games will improve cardiovascular health, cognitive function and overall well-being. This is due to the release of endorphins, increased social interactions and regular physical activity. Understanding the scientific basis of sports and games can help individuals to incorporate these activities into their daily routine. This leads to a healthier and happier lifestyle. By acknowledging the importance of this scientific foundation, sports and games can be used to promote physical and mental well-being.

The scientific basis of sports and games includes sports physiology, psychology, biomechanics, kinesiology, technology, kinanthropometrics etc.

Sports Physiology

Sports physiology is the study of the effect of exercise on the function and structure of the body. The normal body temperature at rest is 37° Celsius (98.6 Fahrenheit). The temperature of the body increases upto 4° Celsius during prolonged exercise. This may vary depending upon the intensity of the exercise and the environment.

Warm-Up and Cool-Down

Warm-up and cool-down are a crucial part of any sport. a warm-up will increase the quality of performance on the day by preparing the body for exercise and reducing the risk of injury. Cool-down will increase the quality of performance on subsequent days by limiting muscle soreness after exercise.

Effects of Warm-Up and Cool-Down

Activity	Physiological Benefits
Warm-Up	a) Raises the body temperature and heart rate. b) Increases blood flow (oxygen supply) to the muscles. c) Stretches the muscles and gets them ready for action. d) Increases the range of motion. e) Helps to avoid sprains and strains. f) Gives practice in skills and techniques to be used in the game.
Cool-Down	a) Helps to reduce the oxygen debt and clears lactic acid built up in the muscles. b) Allows heart rate and blood flow to decrease gradually to normal levels. c) Gentle stretching reduces muscle soreness and stiffness. d) Reduces risk of injury.

Values at Rest and Values during Exercise

S. No.	Component	Values at Rest	Values during Exercise
1.	Temperature	37° Celsius (98.6 Fahrenheit)	Increases upto 41° Celsius Fahrenheit. (105.8 F)
2.	Heart Rate	72 beats per minute	The heart rate can reach maximum 220 beats per minute.
3.	Blood Pressure	Systolic pressure 120 mm hg / Diastolic pressure 80 mm hg	Systolic increases between 160 mm hg and 220 mm hg and Diastolic increases upto 90 mm hg.
4.	Respiratory Rate	12 to 18 breaths per minute.	40 – 60 breaths per minute.
5.	Stroke Volume	70 ml for a candidate with 72 bpm resting heart rate.	130 ml to 200 ml.
6.	Cardiac Output	5000 ml (5L) per minute.	20L – 40L.

Cardiac Output

Cardiac Output (CO) is the amount of blood pumped by the heart per minute. It's calculated by multiplying Stroke Volume (SV), the volume of blood ejected by the heart with each beat by heart rate (HR), the number of heart beats per minute. The mathematical formula for cardiac output is: Cardiac Output (CO) = Stroke Volume (SV) × Heart Rate (HR).

Stroke Volume

Stroke Volume (SV) refers to the volume of blood ejected from the left ventricle of the heart with each heart beat.

Effects of Exercise on the Cardiorespiratory System

Increased Cardiac Output: During exercise the heart rate increases to pump more blood to the working muscles and the stroke volume increases as well. This results in a significant increase in the cardiac output, allowing more oxygen-rich blood to be delivered to the tissues.

Improved Stroke Volume: Exercise and training leads to an increase in stroke volume which is the amount of blood ejected from the heart with each beat. This is achieved through adaptations such as increased ventricular filling and enhanced myocardial contractility.

Enhanced Oxygen Delivery: Exercise improves the efficiency of oxygen delivery to the muscles through various mechanisms including increased cardiac output, enhanced blood flow to the muscles and improved oxygen extraction by the tissues.

Lower Resting Heart Rate: Regular exercise can lead to a lower resting heart rate, as the heart becomes more efficient at pumping blood. This is often seen as a sign of cardiovascular fitness and can reduce the risk of heart disease.

Increased Blood Volume: Exercise training stimulates the production of new blood vessels (angiogenesis) and increases blood volume. This allows for greater oxygen transport to the muscles and improved removal of metabolic waste products.

Improved Lung Function: Exercise enhances lung function by increasing lung capacity. It improves ventilation-perfusion matching and strengthens respiratory muscles. This results in improved oxygen uptake and carbon dioxide removal during exercise.

Reduced Blood Pressure: Regular exercise can help to lower blood pressure by improving blood vessel function. Exercise reduces arterial stiffness and promotes vasodilation. This is beneficial for overall cardiovascular health and lowers the risk of hypertension and related complications.

Improved Cardiovascular Efficiency: Training improves the efficiency of the cardiovascular system. This helps the body to meet the demands of physical activity with less strain on the heart and blood vessels. This leads to better endurance, performance and overall cardiovascular health.

Effects of Exercise on the Muscular System

Increased Muscle Strength: Resistance training exercises such as weightlifting increases muscle strength. It causes microscopic damage to muscle fibres. In response to this damage, the body repairs and rebuilds the muscle fibres. This rebuilding leads to muscle hypertrophy (growth) and increased strength over time.

Improved Muscle Endurance: Endurance exercises such as long-distance running and cycling, improve muscle endurance by enhancing the muscles' ability to sustain contractions over an extended period. This is achieved through increased capillarisation (more blood vessels around the muscles), improved oxygen delivery and greater efficiency of energy production within the muscles.

Muscle Hypertrophy: Resistance training, particularly when performed with progressive increase in load, stimulates muscle growth or hypertrophy. This occurs through the synthesis of new muscle proteins in response to the stress of lifting weights. Over time, this leads to an increase in muscle size and strength.

Enhanced Muscle Tone: Regular exercise helps improve muscle tone which refers to the firmness and shape of muscles at rest. Exercise stimulates muscle contractions, promoting increased muscle tone and a leaner appearance.

Increased Stretching and Flexibility: Stretching and flexibility training helps improve muscle flexibility and range of motion of joints. Stretching exercises stretch muscle fibres, improves muscle elasticity, reduces the risk of injury and improves overall mobility.

Improved Muscle Coordination and Balance: Exercise that require coordination and balance such as asana or pilates can enhance muscle coordination and proprioception (the body's sense of position and movement). This leads to better control over movements and reduced risk of falls and injuries.

Prevention of Muscle Atrophy: Muscle atrophy means loss of muscle mass and strength due to disease of a particular muscle. Regular exercise helps to prevent muscle atrophy. By keeping the muscles active and engaged, exercises help to maintain their size, strength and function of muscles.

Exercise plays a crucial role in maintaining and improving the health, strength and function of the muscular system. A well-rounded fitness program can maximise the benefits for the muscular system and overall physical health. By incorporating a variety of exercises, like resistance training, endurance activities and flexibility exercises.

Sports Psychology

Sports psychology is a field of psychology that focuses on the mental and emotional aspects of sports participation and performance. It is the study of how psychological factors influence athletes' behaviours, attitudes, emotions and performance outcomes. Sports psychologists work with athletes, coaches, teams and sports organisations to enhance performance, mental well-being and psychological resilience.

Importance of Sports Psychology in Sports

Performance Enhancement: Sports psychology techniques are used to improve athletes' performance by enhancing mental skills such as focus, goal-setting, imagery and self-confidence. It teaches athletes to manage anxiety, overcome psychological barriers and maintain optimal arousal levels. Sports psychologists help athletes perform at their best when athletes are under pressure.

Mental Preparation and Pre-Competition Routines: Sports psychologists help the athletes to optimise readiness and performance consistency by developing pre-competition routines and mental preparation strategies. These routines may include visualisation, relaxation techniques and positive self-talk. The routines enhance mental readiness and reduces pre-competition anxiety.

Goal Setting and Motivation: Sports psychologists assist athletes in setting specific, measurable, achievable, relevant and time-bound (SMART) goals. By establishing clear goals and action plans, athletes can sustain motivation, track progress and strive for continuous improvement in their performance.

Stress Management and Coping Skills: Sports psychology techniques are used to help athletes manage stress, pressure and adversity. By learning stress management techniques such as deep breathing, progressive muscle relaxation and mindfulness meditation, athletes maintain emotional balance and resilience in challenging situations.

Injury Rehabilitation and Recovery: Sports psychologists work with injured athletes to facilitate coping, adjustment and rehabilitation. By promoting positive attitudes toward recovery, sports psychologists help athletes return to competition resilient and stronger.

Team Dynamics and Communication: Sports psychologists assist teams and coaches in fostering positive team dynamics, cohesion and communication. By addressing interpersonal conflicts and by promoting a supportive team environment, sports psychologists can enhance team cohesion and by improving communication skills amongst teammates. They can also improve their performance in team sports.

Career Transition and Retirement Planning: Sports psychologists help athletes navigate career transitions, retirement and post-career adjustment by addressing psychological challenges such as identity loss. They provide counselling and life skills training. They also support athletes in successfully transitioning to new roles and endeavours beyond sports through career planning.

Overall, sports psychology plays a vital role in optimising athletes' mental ability, emotional well-being and performance in sports. By addressing psychological factors, it contributes to athletes' overall success, resilience and well-being in sports and life.

The techniques of psychology adapted into sports are described below.

Principle	Description	Example
Visualisation	Mental imagery technique are used to visualise successful performance and rehearse skills. It boosts confidence.	Golfers mentally rehearse their golf swing and visualises making a perfect shot before approaching the ball.
Positive Self-Talk	Using positive and encouraging self-talk to enhance self-confidence, focus and resilience during competition.	A tennis player repeats affirmations like "I am strong and focused" to boost confidence and to maintain composure during matches.
Arousal Regulation	Learning to control arousal levels to achieve an optimal state of readiness for performance.	A track athlete uses progressive muscle relaxation techniques before a race to prevent anxiety and improve focus.

These principles of sports psychology are widely used by athletes, coaches and sports psychologists to enhance mental ability, optimise performance and promote psychological well-being in sports.

Sports Biomechanics

Sports biomechanics is the study of the mechanics of human movement during sports activities. It applies principles of physics and engineering to analyse the forces, motion and interactions involved in athletic performance. Sports biomechanics plays a crucial role in understanding and optimising various aspects of sports and physical education.

Uses of Sports Biomechanics in Sports

Technique Analysis: Sports biomechanics helps coaches and athletes analyse and refine techniques of movement to optimise performance. By examining factors such as body position, angle of joints, force production and timing. It can identify inefficiencies or errors in technique. It suggests adjustments to enhance performance.

Injury Prevention: Biomechanical analysis is used to assess the movement patterns of biomechanical stressors that increase the risk of injury. By identifying biomechanical risk factors, coaches and sports scientists develop injury prevention strategies, such as corrective exercises, strength, conditioning programmes and modifying training techniques or equipment.

Equipment Design and Optimisation: Biomechanical principles are applied in the design and optimisation of sports equipment and apparel. By analysing factors such as material properties, aerodynamics and impact forces. Engineers develop equipment that provides performance, comfort and safety for athletes.

Performance Enhancement: Sports biomechanics provides insights into the mechanical factors influencing athletic performance, By understanding the biomechanics of movement, training programmes are designed to target specific biomechanical parametres that is needed to improve performance and achieve training goals. This helps with speed, power, agility and endurance more efficiently.

Skill Acquisition and Learning: Biomechanical analysis helps to understand the biomechanical principles underlying movement skills and techniques. Physical educators can facilitate skill acquisition and enhance motor learning by teaching students proper biomechanical techniques. This in turn promote safe and efficient movement patterns.

Talent Identification and Talent Development: Biomechanical assessments can aid in talent identification. Evaluating athletes' movement patterns, physical abilities and biomechanical characteristics. Identifying athletes with biomechanical advantages and specific physical traits can help talent identification and development. It allows coaches to nurture athletes' potential and maximise their performance using a training programme.

Biomechanical Research and Innovation: Biomechanical research contributes to develop new methodologies and technologies. Researchers study various aspects of human movement and biomechanical principles to optimise performance. Biomechanical training strategies push the boundaries of athletic performance.

Application of Principles of Sports Biomechanics are given below

Principle	Description	Example
Newton's Laws of Motion	Newton's laws describe the relationship between an object's motion and the forces acting upon it.	A physical education teacher explains how a sprinter accelerates out of the starting blocks using Newton's First Law (inertia) and Newton's Second Law (force equals mass times acceleration).
Projectile Motion	Projectile motion involves the motion of objects through the air under the influence of gravity.	Demonstrating the flight path of a basketball in a free throw and explaining how angle of release and velocity affect basketballs trajectory.
Conservation of Momentum	Conservation of momentum states that the total momentum of a system remains constant unless acted upon by an external force.	Analysing collisions in sports such as football tackles or volleyball spikes to understand how momentum is transferred between objects.

In overall, sports biomechanics plays a vital role in advancing our understanding of human movement in sports and physical education. By applying biomechanical principles and techniques,

coaches, athletes and educators can achieve better performance, safety and efficiency in sports participation and physical activity.

Sports Kinesiology

Kinesiology is the scientific study of human body movement. Kinesiology studies the skeletal system, muscular, nervous and cardiovascular system. The knowledge of kinesiology is vital for describing the movement pattern and techniques. Kinesiology helps in injury prevention in physical education and sports. The fundamental concepts of kinesiological analysis are explained.

Skeletal System

The human skeleton consists of 206 bones. The skeletal system is divided into axial and appendicular skeleton. Axial skeleton consists of 80 bones. Appendicular skeleton consists of 126 bones.

Functions of Skeletal System

a) To maintain shape.
b) To provide frame work for movements.
c) To protect internal organs like brain, heart and lungs.

Movements of Joints

Joints facilitate various movements in the human body, enabling flexibility. Here are some common types of movements associated with joints:

Flexion: Decreasing the angle between two bones or bending at a joint.
Example: Bending the elbow or knee.

Extension: Increasing the angle between two bones or straightening parts at a joint.
Example: Straightening the elbow or knee from a bent position.

Abduction: Moving a body part away from the midline of the body or away from the midline of a limb.
Example: Raising the arm sideways away from the body.

Adduction: Moving a body part toward the midline of the body or toward the midline of a limb.
Example: Bringing the arm back down from a raised position.

Rotation: Turning a bone around its own longitudinal axis within a joint.
Example: Rotating the head from side to side.

Circumduction: A type of a body movement that involves moving a limb in a circular pattern.
Example: Making circular movements with the arm, as in a windmill motion.

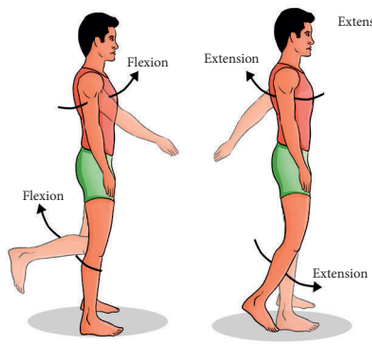
Pronation: Rotating the forearm so that the palm faces downward or backward.
Example: Turning the palm down while placing it flat on a surface.

Supination: Rotating the forearm so that the palm faces upward or forward.
Example: Turning the palm up from a downward position.

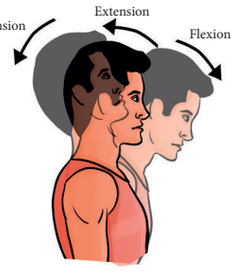
Dorsiflexion: Bending the foot upward at the ankle joint, bringing the top of the foot closer to the shin.
Example: Lifting the toes off the ground while standing.

Plantarflexion: Pointing the foot downward at the ankle joint, moving the toes away from the shin.
Example: Standing on toetips.

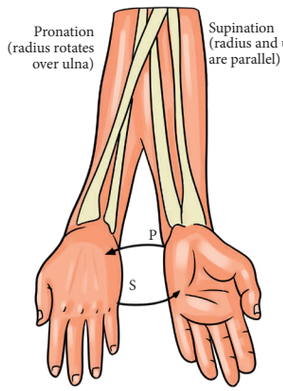
These movements occur through the coordinated action of muscles, tendons, ligaments and bones at the various joints throughout the body.



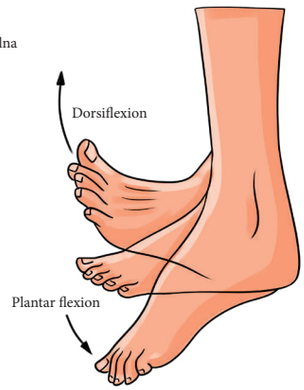
(a) and (b) Angular movements: flexion and extension at the shoulder and knees



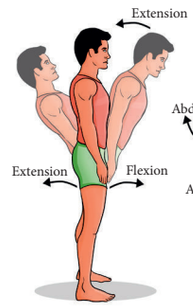
(c) Angular movements: flexion and extension of the neck



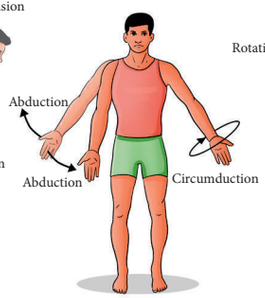
(a) Pronation (P) and supination (S)



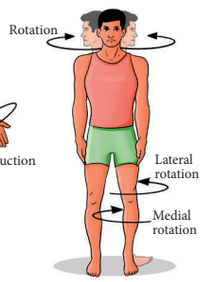
(b) Dorsiflexion and plantar flexion



(d) Angular movements: flexion and extension of the vertebral column



(e) Angular movements: abduction, adduction and circumduction of the upper limb at the shoulder



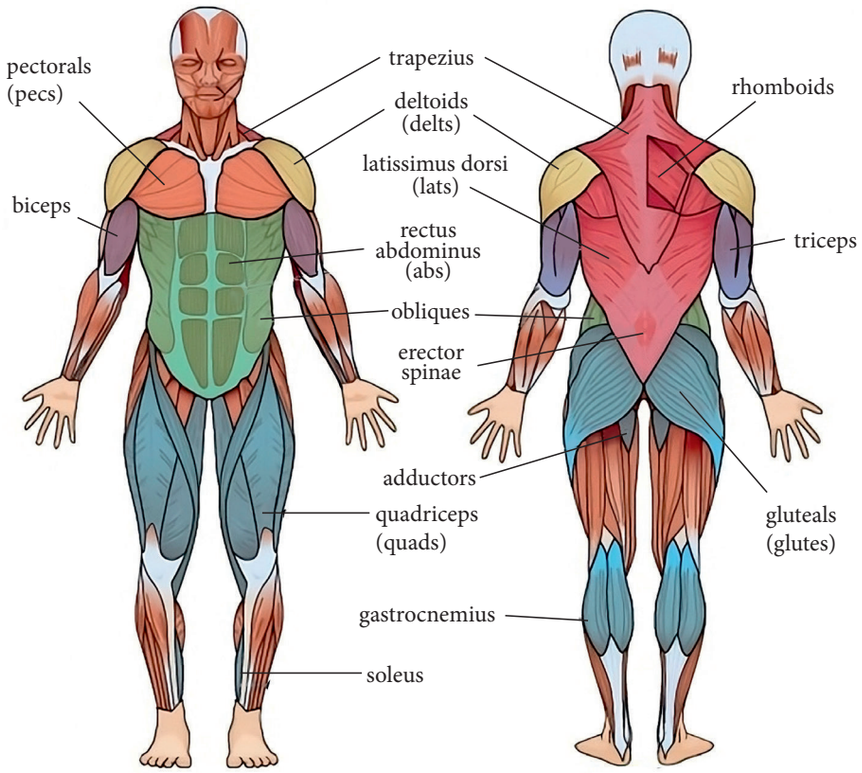
(f) Rotation of the head, neck and lower limb

Muscles and Action in Sports

Muscle	Muscles Action (s)	Sporting Action
Trapezius	Holds and rotates shoulders. Moves head to back and sideways.	A swimmer turns the head sideways to breathe.
Deltoids	Raise each arm forwards, backwards and sideways at the shoulder.	Overhead shot in badminton.
Pectorals	Moves the arm at the shoulder through adduction.	Forehand drive in tennis.
Biceps	Bends arm at the elbow.	Drawing back a bow in archery.
Triceps	Straightens arm at the elbow.	Releasing a javelin or ball.
Latissimus dorsi (often just called 'lats')	Pulls arm down at the shoulder and draws it behind back.	Swimming strokes.

Muscle	Muscles Action (s)	Sporting Action
Abdominals	Flexes the spine to bend forwards. Create a pull in the abdomen.	Rowing action.
Hip flexors	Supports movement of the leg and knee upwards.	Lifting the knees during a sprint.
Gluteal	Pulls leg back at the hip. Raise it sideways at the hip.	Moving the leading leg and trail leg when hurdling.
Quadriceps (often just called 'quads')	Straightens the leg at the knee. Keeps the leg straight to stand up.	Getting elevation in a high jump.
Hamstrings	Bends the leg at the knee.	Pulling the back of the knee before kicking the ball.
Gastrocnemius (the largest of the calf muscles)	Straighten the ankle joint to stand on toetips.	Layup skill in basketball.
Tibialis anterior	Helps with dorsiflexion, the action of pulling the foot toward the shinbone.	Walking, running, toe-kicking a ball.

Skeletal Muscles



So far, the functions of the skeletal system, movements of joints, muscles and their actions in sports are explained. Knowledge of kinesiology is useful to enhance the performance of body movements.

Sports Technology

Sports technology refers to the application of scientific principles, engineering expertise and innovative tools and equipment to enhance various aspects of sports and athletic performance. It encompasses a wide range of technologies designed to improve training methods, performance analysis, injury prevention and overall athlete well-being. The primary goal of sports technology is to optimise athletic performance, maximise training efficiency and push the boundaries of human achievement in sports.

Importance of Sports Technology

Performance Analysis: Sports technology provides coaches, athletes and analysts with tools to gather data related to performance metrics such as speed, agility, power and endurance. This data helps to identify strengths and weaknesses, track progress. It helps coaches to make informed decisions.

Training Enhancement: Various technologies such as wearable devices, virtual reality simulations and biomechanical analysis tools are used to enhance training routines. Athletes can use these tools to monitor their training intensity and optimise their physical conditioning. Virtual reality simulations could be used to simulate game scenarios to refine techniques.

Injury Prevention and Rehabilitation: Sports technology includes tools and equipment designed to monitor and assess injury risk factors. Common risk factors are biomechanical stress, fatigue levels and movement patterns. Technologies like cryotherapy chambers, compression garments and physical therapy devices aid in injury rehabilitation. These technologies accelerate the recovery process.

Equipment Innovation: Advances in engineering and design have led to the development of sports equipment and apparel. Innovations in lightweight materials and aerodynamic designs have improved the performance, comfort and safety of sports gear.

Sports Medicine: Sports medicine play a crucial role by providing diagnostic tools. Technologies such as MRI scanners, ultrasound imaging and wearable health monitors aid in diagnosing injuries, monitoring recovery progress and optimising athletes' health and well-being.

Fan Engagement and Broadcasting: Technology has transformed the way sports is consumed and experienced by fans. Advanced broadcasting technologies, interactive digital platforms and virtual reality experiences provide fans with immersive ways to follow and interact with their favourite sports and athletes.

Sports technology continues to drive innovation in sports performance, athlete safety and training. Athletes and sports organisation push the boundaries of human potential in sports by leveraging the power of technology

Application of Sports Technology in Various Sports and Games

Sport	Technology Used
Cricket	Hawk-Eye for ball tracking and decision review, Pitch Vision for pitch analysis, bat sensors, DRS (Decision Review System)
Hockey	GPS (Global Positioning System)tracking for player movement analysis, video analysis software, smart hockey sticks
Athletics	Laser timing systems for accurate race timing, high-speed cameras for biomechanical analysis, wearable devices for performance tracking
Tennis	Hawk-Eye for line calling, smart tennis racquets with sensors, video analysis software for technique analysis
Football	VAR (Video Assistant Referee) for reviewing on-field decisions, GPS tracking systems for player analysis, smart footballs with sensors
Badminton	Shuttlecock speed sensors, video analysis software, wearable devices for player movement analysis
Kabaddi	GPS tracking systems for player movement analysis, video analysis software, wearable devices for performance monitoring
Basketball	Shot-tracking devices, wearable sensors for player movement analysis, video analysis software
Volleyball	Video analysis software for technique analysis, wearable devices for performance monitoring
Swimming	Underwater cameras for stroke analysis, wearable devices for lap timing and performance tracking
Boxing	Punch trackers for measuring punch force and speed, video analysis software for technique assessment
Fencing	Electronic scoring systems, motion capture for technique analysis, smart fencing equipment with sensors

These technologies have revolutionised the game by providing players, coaches and umpires with valuable insights and tools for decision-making, performance analysis and player development. They contribute sports to more transparent and accurate adjudication of matches. This enhances the overall quality of the game.

Sports Kinanthropometry

Kinanthropometry is the scientific study of human body size, shape, composition, proportion and function in relation to physical activity, sports performance, health and nutrition.

Kinanthropometry involves the measurement and assessment of various anthropometric characteristics, including height, weight, body mass index (BMI), body composition (e.g. fat mass, lean fat mass), circumferences and skinfold thickness.

Somatotype

The somatotype scoring system, developed by American Psychologist William H. Sheldon in the 1940s, is a method used to classify human body types based on three fundamental components: endomorphy, mesomorphy and ectomorphy. Each component is scored on a scale ranging from 1 to 7, with higher scores indicating a greater predominance of that component.

Table illustrating the somatotype scoring system:

Component	Score Range	Description
Endomorphy	1 - 7	Soft round body, tendency to store body fat
Mesomorphy	1 - 7	Muscularity, skeletal robustness
Ectomorphy	1 - 7	Linearity, lack of body fat

Here's an example of how an individual's somatotype scores might look in a table format:

Somatotype	Endomorphy	Mesomorphy	Ectomorphy
4-5-3	4	5	3

In this example, the individual has moderate levels of endomorphy, slightly higher levels of mesomorphy and moderate levels of ectomorphy.

Procedure of Somatotype

Step	Procedure	Description	Equipment Required
1	Preparation	Ensure that the participant is in minimal clothing (e.g. underwear) and stands barefoot on a flat surface.	-
2	Height Measurement	Measure the participant's standing height to the nearest millimetre.	Stadiometer or wall-mounted height measure.

Step	Procedure	Description	Equipment Required
3	Weight Measurement	Measure the participant's body mass to the nearest 0.1 kg.	Scale calibrated in kilograms.
4	Skinfold Thickness Measurement	Measure skinfold thickness at specific sites using skinfold callipers. Typically, measurements are taken at triceps, subscapular and suprailiac sites.	Skinfold callipers.
5	Circumference Measurement	Measure girth or circumference at specific body sites including relaxed arm, relaxed waist and calf.	Flexible measuring tape
6	Calculation of Sum of Skinfold Thicknesses	Sum the skinfold thickness measurements obtained from step 4.	Calculator
7	Calculation of Body Density	Use the sum of skinfold thickness measurements and body mass to calculate body density using appropriate equations (e.g. Jackson-Pollock, Durnin-Womersley).	Somatotye software or equations.
8	Calculation of Fat Mass Percentage	Convert body density to percentage of body fat using equations specific to the somatotype method.	Calculator or somatotype software.
9	Calculation of Lean Body Mass	Subtract fat mass from total body mass to determine lean body mass.	Calculator
10	Somatotype Component Calculation	Determine the endomorphy, mesomorphy and ectomorphy components using specific equations based on skinfold thicknesses, body mass and height.	Somatotype software or equations.
11	Somatotype Classification	Classify the individual's somatotype based on the values obtained for endomorphy, mesomorphy and ectomorphy components.	Somatotype chart or classification system.

Kinanthropometry is applied in sports science, physical education, nutrition, medicine and other fields to evaluate individuals' physical characteristics, track changes over time, assess health risks, design training programmess and optimise performance.

The contents of units II and III are covered in 1 to 45 days lesson.

Unit IV

Health and Exercise Nutrition

Health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. It is a dynamic and multidimensional condition influenced by various factors including genetics, lifestyle choices, environmental conditions and access to healthcare. Optimal health involves maintaining a balance across all aspects of life including nutrition, exercise, sleep, stress management and social connections. It is about feeling energised and vital, being able to cope with the demands of daily life and experiencing a sense of purpose and fulfilment.

Introduction to Holistic Health

"Holistic health is a wellness approach that considers the whole person – body, mind, spirit and emotion" – is the quest for optimal health and wellness.

The term "holism" refers to the whole and when it comes to health it is related to the all-round development of wellness. Holistic health is related to the holistic wellness and it emphasises the interconnectedness of the mind, body and spirit in achieving the overall well-being.

At its core, holistic health recognises that each person is a complex and unique being, influenced by various factors including physical, emotional, mental, social and environmental elements. Therefore, achieving optimal health requires addressing not only physical ailments but also nurturing mental and emotional balance, fostering meaningful relationship and creating a supportive environment.

Central to the concept of holistic health is the belief that the body has an innate ability to heal itself when its given the right conditions and support. This perspective aligns with ancient healing traditions from cultures around the world which have long recognised the importance of harmony and balance in maintaining health.

In practice, holistic health incorporates a wide range of approaches and modalities including nutrition, exercise, stress management, meditation, acupuncture, herbal medicine, energy healing and more. Rather than relying solely on pharmaceutical interventions, holistic practitioners often seek to empower individuals to take an active role in their own health and wellness through lifestyle modifications and self-care practices.

One of the key principles of holistic health is prevention with an emphasis on maintaining balance and harmony to prevent illness and promote longevity. By addressing underlying imbalances and supporting the body's natural healing mechanisms, holistic approaches aim to not only alleviate symptoms but also to address the root causes of disease.

Moreover, holistic health recognises the interconnectedness between individuals and their larger ecosystems, including the natural environment and the communities in which they live. This broader perspective highlights the importance of sustainability, social justice and environmental stewardship in promoting health and well-being for all.

In recent years, holistic health has gained increasing recognition and acceptance within mainstream healthcare systems, as more people seek alternative and integrative approaches to wellness. As research continues to uncover the inter-connectedness of various aspects of health, holistic principles are being incorporated into diverse fields, from medicine and psychology to public health and environmental science.

In essence, holistic health offers a comprehensive and integrative approach to health and healing, recognising the intricate interplay between the mind, body, spirit and environment. By embracing this holistic perspective, individuals can cultivate greater vitality, resilience and overall well-being, leading to a fulfilling and balanced life.

CLASS XII Grid							
Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Day 8**
Throwball Spin Serve	Throwball Jump Serve	Throwball Jump Shot	Throwball Drop	Sirasasana and Savasana	Tennikoit Receiving	Tennikoit Returning	400m Run Start and Acceleration Phase
Day 9	**Day 10**	**Day 11**	**Day 12**	**Day 13**	**Day 14**	**Day 15**	**Day 16**
400m Run Maintaining Speed and Finish	Gomukhasana and Alternate Breathing	Hockey Tackling	Hockey Scooping	Hockey Deception	Hockey Positioning and Leading	Paschimottanasana and Sheethkari	Judo Throwing Technique
Day 17	**Day 18**	**Day 19**	**Day 20**	**Day 21**	**Day 22**	**Day 23**	**Day 24**
Judo Grappling Technique	3000m Run Standing Start	3000m Run Stride and Finishing	Poorna Dhanurasana and Bellow Breathing	Ball Badminton High Service	Ball Badminton Drop Shots	Ball Badminton Spin Shots	Ball Badminton Smash
Day 25	**Day 26**	**Day 27**	**Day 28**	**Day 29**	**Day 30**	**Day 31**	**Day 32**
Sarvangasana and Alternate Breathing	Road Cycling Breaking	Road Cycling Balance	110m Hurdles Lead leg Action	110m Hurdles Running between Hurdles	Poorna Salabasana and Bellow Breathing	Table Tennis Forehand Push	Table Tennis Backhand Push
Day 33	**Day 34**	**Day 35**	**Day 36**	**Day 37**	**Day 38**	**Day 39**	**Day 40**
Table Tennis Forehand Chop	Table Tennis Backhand Chop	Halasana and Sheethkari	Fencing Position, Lunge and Attack	Fencing Parrying and Riposte	4 x 400m Relay Zone Techniques	4 x 400m Relay Passing Techniques	Triple Jump Approach and Hop Phase
Day 41	**Day 42**	**Day 43**	**Day 44**	**Day 45**	**Day 46**	**Day 47**	**Day 48**
Triple Jump Step and Jump Phase	Javelin Throw Carry, Approach Techniques and Withdrawal	Javelin Throw Impulse Stride, Release and Recovery Techniques	Chess Pawns and its momentum	Chess Queen Fork	Health and Exercise Nutrition Factors Influencing Health	Health and Exercise Nutrition, Diet for Exercise	Health and Exercise Nutrition Food Intake Methods
Day 49	**Day 50**						
Exercise Therapy for Lifestyle Diseases, Obesity and Type 1 Diabetes	Exercise Therapy for Lifestyle Diseases Cardiovascular Diseases and Hypertension						

LEARNING OUTCOMES

Classes : 11 & 12

Unit-I Scientific Basis of Physical Education

- Students can understand and apply the key principles of Physical Education.
- Students can understand the impact of science on Physical Education.

Unit-II Sports Education

- Students are able to execute skills and techniques perfectly in sports and games.
- Application of rules and regulations in sports and games for positive results.
- Students can improve sports performance and excel in competitions.
- Students can exhibit sportsman spirit to have a better life.

Unit-III Asanas and Breathing Techniques

- Students can demonstrate different postures in asanas with ease.
- Students can execute proper respiration while practising asanas.
- Students are able to practise different types of breathing techniques.
- Students can develop neuromuscular coordination and concentration.

Unit-IV Health and Exercise Nutrition

- Students can understand the concept and different dimensions of health.
- Practising different health indicators in real life to improve physical health.
- Students can avoid the risks associated with dehydration and improve their performance.
- Students can practise proper hydration methods during exercise.
- Students can prepare homemade sports drinks and use them for better performance.

Unit-V Career Opportunities in Sports

- Students can study physical education courses and choose sports-related placements.

Unit-VI Exercise Therapy for Lifestyle Diseases

- Students bring positive changes in lifestyle to counter risk factors of lifestyle diseases.
- Students can use simple exercise therapy procedures in prevention and management of lifestyle diseases.

ASSESSMENT

Classes : 11 & 12

Unit-I Scientific Basis of Physical Education

Observation Method / Slip Test

Criteria	**Score**
1. Practice of Principles	2
2. Application of Principles in solving problems in functions	3
	5

Unit-II Sports Education

Observation Method

Criteria	**Score**
1. Initiative and effort	1
2. Proper execution	2
3. Following rules and regulations	1
4. Exhibiting values	1
	5

Unit-III Asanas and Breathing Techniques

Observation Method

Criteria	**Score**
1. Initiative and effort	1
2. Difficult to hold final position	1
3. Holding final position with ease	2
4. Proper respiration	1
	5

Unit-IV Health and Exercise Nutrition

Observation Method

Criteria	Score
1. Practising health indicators regularly in real life	1
2. Regular involvement in physical activities	1
3. Showing emotional stability in real life	2
4. Switch over to healthy food from fast food (junk food)	1
	5

Unit-V Career Opportunities in Sports

Slip Test

Criteria	Score
1. Awareness of academic eligibility for Physical Education courses	1
2. Awareness of eligible sports performance for Physical Education courses	2
3. Understanding career paths related to sports professions	2
	5

Unit-VI Exercise Therapy for Lifestyle Diseases

Observation Method

Criteria	Score
1. Awareness of risk factors for lifestyle diseases	2
2. Utilisation of exercise therapy techniques in managing injuries	3
	5

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