



According to the **Latest Syllabus** and **Examination Pattern** issued by the **CBSE**.

CBSE Chapterwise

MASTERMINDTM QUESTION BANK

Prepared and Reviewed by **Eminent Authors** and **ex-Paper Setters**

PHYSICAL EDUCATION Class 12

“

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Master Mind CBSE Chapterwise Question Bank

Physical Education-12

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In today's dynamic and ever-evolving educational world, we understand the importance of providing comprehensive resources that empower students and educators alike in their academic pursuits. With a focus on excellence and innovation, Blueprint's Master Mind Question Bank has been prepared as per the latest syllabus released by the CBSE.

The Question Bank serves as a unique resource designed to enhance understanding, reinforce learning and foster critical thinking skills among students. It adheres perfectly to the principles of the **National Education Policy 2020** and the approach of **Competency-based Education (CBE)**. It also fulfils the students' need for a book facilitating systematic, lucid and adaptive learning.

Our commitment to quality and relevance is reflected in every aspect of this Question Bank. We have devised this Question Bank with a view to helping students at all levels of thinking, learning and understanding. We have incorporated **various typologies of questions** as per the CBSE examinations.

In addition to the elements like, **Digital Support (QR Code)**, **Summary for Quick Revision**, **Previous Years' Questions**, **Tips and Tricks**, **Common Errors** and so on, the Question Bank also provides **Toppers' Answers/Experts' Answers** which will show you the way how to attempt and organise your answers. It will help you in presenting your answers effectively. The Question Bank also includes **4 Mock Papers based on the 2024 examination**. These mock papers will provide the students with substantial practice. All these elements make our Question Bank absolutely perfect whether used for self-study, classroom instruction or exam-preparation.

We are sure that this Question Bank will prove to be a valuable resource for both learners and educators. It will certainly enable the students to secure the highest grade and serve as a trusted companion fostering a culture of learning, growth and achievement.

— The Publisher



CBSE SYLLABUS

(2025 BOARD EXAMINATION)

Physical Education-12

Code-048

Unit No.	Units Name	NO. OF PERIODS (190 HRS)	THE WEIGHTAGE (MARKS) ALLOTTED
UNIT 1	Management of Sporting Events	15	05 + 04b*
UNIT 2	Children and Women in Sports	12	07
UNIT 3	Yoga as Preventive Measure for Lifestyle Disease	12	06+01 b*
UNIT 4	Physical Education & Sports for (CWSN)	13	04+04 b*
UNIT 5	Sports & Nutrition	12	07
UNIT 6	Test and Measurement in Sports	13	08
UNIT 7	Physiology & Injuries in Sport	13	04+04 b*
UNIT 8.	Biomechanics and Sports	18	10
UNIT 9	Psychology and Sports	12	07
UNIT 10	Training in Sports	15	09
PRACTICAL (LAB)#	Including 3 Practical	56	30
TOTAL	Theory 10 + Practical 3	134 + 56 = 190hrs	Theory 70 + Practical 30 = 100

Note: b*are the Concept based questions like Tactile diagram/data interpretation/case base study for visually Impaired Child

Unit 1: Management of Sporting Events

- Functions of Sports Events Management (Planning, Organising, Staffing, Directing & Controlling)
- Various Committees & their Responsibilities (pre; during & post)
- Fixtures and their Procedures – Knock-Out (Bye & Seeding) & League (Staircase, Cyclic, Tabular method) and Combination tournaments.
- Intramural & Extramural tournaments – Meaning, Objectives & Its Significance
- Community sports program (Sports Day, Health Run, Run for Fun, Run for Specific Cause & Run for Unity)

Unit 2: Children & Women in Sports

- Exercise guidelines of WHO for different age groups.
- Common postural deformities-knock knees, flat foot, round shoulders, Lordosis, Kyphosis, Scoliosis, and bow legs and their respective corrective measures.
- Women's participation in Sports – Physical, Psychological, and social benefits.
- Special consideration (menarche and menstrual dysfunction)
- Female athlete triad (osteoporosis, amenorrhea, eating disorders).

Unit 3: Yoga as Preventive measure for Lifestyle Disease

- **Obesity:** Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Pavanmuktasana, Matsayasana, Halasana, Pachimottansana, Ardha – Matsyendrasana, Dhanurasana, Ushtrasana, Suryabedhan pranayama.
- **Diabetes:** Procedure, Benefits & Contraindications for Katichakrasana, Pavanmuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Supta-vajarasana, Paschimottanasana, Ardha-Matsyendrasana, Mandukasana, Gomukasana, Yogmudra, Ushtrasana, Kapalabhati.
- **Asthma:** Procedure, Benefits & Contraindications for Tadasana, Urdhwahastottansana, UttanMandukasana, Bhujangasana, Dhanurasana, Ushtrasana, Vakrasana, Kapalabhati, Gomukhasana Matsyaasana, Anuloma-Viloma.
- **Hypertension:** Procedure, Benefits & Contraindications for Tadasana, Katichakrasana, Uttanpadasana, Ardha Halasana, Sarala Matyasana, Gomukhasana, UttanMandukasana, Vakrasana, Bhujangasana, Makarasana, Shavasana, Nadi- shodhanapranayam, Sitlipranayam.
- **Back Pain and Arthritis:** Procedure, Benefits & Contraindications of Tadasana, Urdhwahastootansana, Ardha-Chakrasana, Ushtrasana, Vakrasana, Sarala Matsyendrasana, Bhujangasana, Gomukhasana, Bhadrasana, Makarasana, Nadi-Shodhana pranayama.

Unit 4: Physical Education & Sports for CWSN (Children with Special Needs-Divyang)

- Organizations promoting Disability Sports (Special Olympics; Paralympics; Deaflympics)
- Concept of Classification and Divisioning in Sports.
- Concept of Inclusion in sports, its need, and Implementation;
- Advantages of Physical Activities for children with special needs.
- Strategies to make Physical Activities assessable for children with special needs.

Unit 5: Sports & Nutrition

- Concept of balanced diet and nutrition
- Macro and Micro Nutrients: Food sources & functions
- Nutritive & Non-Nutritive Components of Diet
- Eating for Weight control– A Healthy Weight, The Pitfalls of Dieting, Food Intolerance, and Food Myths
- Importance of Diet in Sports-Pre, During and Post competition Requirements

Unit 6: Test & Measurement in Sports

- Fitness Test – SAI Khelo India Fitness Test in school:
 - Age group 5-8 years/ class 1-3: BMI, Flamingo Balance Test, Plate Tapping Test
 - Age group 9-18yrs/ class 4-12: BMI, 50mt Speed test, 600mt Run/Walk, Sit & Reach flexibility test, Strength Test (Partial Abdominal Curl Up, Push-Ups for boys, Modified Push-Ups for girls).
- Measurement of Cardio-Vascular Fitness – Harvard Step Test – Duration of the Exercise in Seconds $\times 100 / 5.5 \times$ Pulse count of 1-1.5 Min after Exercise.
- Computing Basal Metabolic Rate (BMR)
- Rikli & Jones - Senior Citizen Fitness Test
 - Chair Stand Test for lower body strength
 - Arm Curl Test for upper body strength
 - Chair Sit & Reach Test for lower body flexibility
 - Back Scratch Test for upper body flexibility
 - Eight Foot Up & Go Test for agility
 - Six-Minute Walk Test for Aerobic Endurance
- Johnsen – Methney Test of Motor Educability (Front Roll, Roll, Jumping Half-Turn, Jumping full-turn)

Unit 7: Physiology & Injuries in Sports

- Physiological factors determining components of physical fitness
- Effect of exercise on the Muscular System
- Effect of exercise on the Cardio-Respiratory System
- Physiological changes due to aging
- Sports injuries: Classification (Soft Tissue Injuries -Abrasion, Contusion, Laceration, Incision, Sprain & Strain; Bone & Joint Injuries - Dislocation, Fractures - Green Stick, Comminuted, Transverse Oblique & Impacted)

Unit 8: Biomechanics & Sports

- Newton's Law of Motion & its application in sports
- Types of Levers and their application in Sports.
- Equilibrium – Dynamic & Static and Centre of Gravity and its application in sports
- Friction & Sports
- Projectile in Sports

Unit 9: Psychology & Sports

- Personality; its definition & types (Jung Classification & Big Five Theory)
- Motivation, its type & techniques.
- Exercise Adherence: Reasons, Benefits & Strategies for Enhancing it
- Meaning, Concept & Types of Aggressions in Sports
- Psychological Attributes in Sports – Self-Esteem, Mental Imagery, Self-Talk, Goal Setting

Unit 10: Training in Sports

- Concept of Talent Identification and Talent Development in Sports
- Introduction to Sports Training Cycle – Micro, Meso, Macro Cycle.
- Types & Methods to Develop – Strength, Endurance, and Speed.
- Types & Methods to Develop – Flexibility and Coordinative Ability.
- Circuit Training - Introduction & its importance

What is Competency Based Education (CBE) ?



Competency-based Education (CBE) is an educational approach which allows students to grow as per their ability to master a skill or competency at their own pace regardless of the environment. It is an approach to teaching, learning, and assessment that focuses on students' demonstration of learning outcomes and attaining proficiency in particular competencies in each subject.

This approach is modified to meet different learning abilities and can lead to more efficient student outcomes.

➤ Key Features of CBE

- Equity for all students.
- Differentiated support based on students' individual learning needs.
- Progress based on evidence of mastery rather than time in the classroom.
- The use of formative assessment, where students are encouraged to reflect on their own work and identify areas for improvement.

➤ Benefits of CBE

- It integrates higher order thinking skills, interdisciplinary approaches and problem-solving as these are essential to the modern world and workplace.
- It helps in developing social and emotional skills.
- It enables learners to be competent not only in the national context but also the international labour market.

➤ Competency-based Questions

- Competency-based Questions emphasises real-world applications of knowledge and skills, and the authenticity of the learning experience.
- Competency-based Questions, as per the CBSE, can be in the form of **MCQs, Case- based Questions, Source-based Integrated Questions, Gap-filling, True-False, Short Answer Questions, Long Answer Questions** or any other type.





Hone Your Exam Readiness

Top **T!PS**

Exam readiness for the CBSE Examinations can be a challenging task, but with the right approach, you can be well-prepared. Every student wants to score well in the exams and be among the toppers. They all work hard to achieve this goal. The difference, between those who achieve the goal and those who do not, is not much. Here are a few points that will surely help in covering that difference and achieving the desired goal.

KEEP ABREAST OF THE LATEST

First, get a clear understanding of the syllabus and the exam pattern of the CBSE Examinations. This will help you know which topics you need to focus on and what to expect in the exam.



DEVELOP A TARGETED STUDY PLAN

Create a realistic study plan that covers all the subjects and topics that you need to study. Set realistic study goals for each day.



OPTIMISE THE ORDER OF TOPICS

Identify the important topics and prioritise them in your study plan. This will help you focus on the most important concepts and reduce stress.



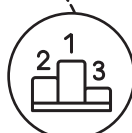
CAPTURE CORE ELEMENTS

Make concise notes and summaries of all the important topics. This will help you revise the concepts efficiently and effectively.



EXAM Demeanour

In the examination hall, ensure that you have filled your particulars in the answer sheet correctly. Answer the questions according to the given directions. First attempt the questions that you can answer easily. It will create a positive mindset.



MNEMONICS

Try to remember various concepts using the mnemonics like:

FANBOYS	:	(Coordinating conjunctions)— For, And, Nor, But, Or, Yet, So
PEMDAS	:	(Order of Maths operations)— Parentheses, Exponents, Multiplication, Division, Addition, Subtraction

You can also make your own mnemonics that will help in absorbing the key points.



OPTIMAL TIME MANAGEMENT

If you have solved the paper before time, don't leave the examination hall. Revise your answers and look for any correction or improvement. There is always room for improvement. Do utilise your time effectively.



Gear up yourself with these sure shot arrows and hit the desired target.

All The Best!

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Management of Sporting Events

FAST TRACK REVISION

► Functions of Sports Events Management

- **Planning:** It is the process of creating a comprehensive action plan to achieve organisational goal(s). Planning is an ongoing step, and can be highly specialised based on organisational goals, division goals, departmental goals, and team goals.
- **Organising:** This includes distributing resources and organising personnel in order to achieve the goals established in the planning function.
- **Staffing:** This refers to identifying key staff positions, and to ensuring that the proper talent is serving that specific job duty in order to achieve the aims and objectives of an organisation.
- **Directing:** Directing personnel is a leadership quality, and includes letting staff know what needs to be done, and also by when. It includes supervision of personnel while simultaneously motivating them.
- **Controlling:** Controlling refers to all the processes that leaders create to monitor success. It involves establishing performance standards, measuring actual performance and comparing them irregularities.

► Various Committees and their Responsibilities: The various committees and their roles are described below:

Name of the Committee	Roles and Responsibilities
Publicity Committee	Announcement of date, venue, and advertising any other information about the event to the public.
Boarding and Lodging Committee	Arranging accommodation and food for the participating teams and its players.
Reception Committee	Welcoming the chief guests and important personnel in the inauguration or closing ceremony of the event.
Decoration and Ceremony Committee	Decorating the sports stadium or the ceremony area during the inauguration, or presentation.
Transportation Committee	Providing transport to various national and international teams involved in the event.
Grounds and Equipment Committee	Preparing suitable ground/field for the event, for example, a cricket pitch or a football ground.
Committee for Entertainment and Refreshments	Providing refreshment and snacks to the chief guests, officials and competitors.

Committee on Entries and Programmes	Sending entry forms to the various institutions, arranging seats for guests and spectators and preparing fixtures of teams participating in the competition.
Committee for Officials	Selecting officials, judges, referees, starters, umpires, recorders, scorers, etc. for the events.
Announcement Committee	Making several important announcements during the conduct of the event, <i>e.g.</i> , names of the players during the presentation ceremony, while substituting a player, etc.
First Aid Committee	Consisting of well-qualified doctors, physicians and health experts, it is responsible for taking care of health of the players, or officials during an injury or mishappening.

► Pre, During and Post Tournament Responsibilities of Committees

► Technical Committee

- **Pre-sports Event/Tournament:** Before the event, it is the job of the Technical Committee to put forward a requisition to purchase equipment, invitation and confirmation from officials to conduct sports event, cleaning and layout of the fields arrangement of equipment and stationery, preparation of fixtures, rules and regulation of the sports event.
- **During Sports Event/Tournament:** While the tournament is in progress, the Technical Committee is responsible for conducting matches, presence of the jury, cleaning and layout of the fields, collection of score sheets and other related papers from officials, preparation of merit list, etc.
- **Post-sports Event/Tournament:** After the event is over, the Technical Committee arranges for the cleaning and layout of the fields, maintenance of the field, and placing of all equipment back to store.

► Logistics Committee

- **Pre-sports Event/Tournament:** It is the duty of the Logistics Committee to look after Placement/Arrangement/Requisition of purchase of stationery, chairs, tables souvenirs, light and sound equipment, bouquets, sending invitations to stakeholders including other schools/institutions

and VIP guests, requisition of purchase of medals and certificates, arrangement of refreshments, arrangement of boarding and lodging, selection of volunteers, preparation of first aid kit and arrangement of medical facilities.

- **During Sports Event/Tournament:** While the event is in progress, the Logistics Committee is responsible for the conduct of the Opening and Closing Ceremonies, checking registration, distribution of refreshment, management of spectators, handing over of medals and certificates, transportation of players/participants from place of stay to the field and back.
- **Post-Sports Event/Tournament:** After the event, the Logistics Committee supervises cleaning of the venue and placing of the items back in their appointed places.
- **Finance Committee**
 - **Pre-Sports Event/Tournament:** Before the event, it is the responsibility of Finance Committee to prepare the budget, to purchase sports equipment, stationery, medals, certificates, and other requirements as desired by the other committees, as well as preparing and finalising the MoU with sponsors.
 - **During Sports Event Tournament:** During the course of the event, the Finance Committee keeps a check on the outflow and inflow of finances including payment and remuneration to officials.
 - **Post-Sports Event/Tournament:** Once the event is over, the Finance Committee examines all records related to settlement of the bills and accounts, and prepares the financial report.
- **Marketing Committee**
 - **Pre-Sports Event/Tournament:** The Marketing Committee prepares a strategy for arranging for sponsorships, publicity of the event, arranging meetings or calling on sponsors, preparation of MoUs for sponsorships, etc.
 - **During Sports Event/tournament:** The Marketing Committee issues press release(s), work with media, manages methods of communication, fulfils the requirements of sponsors as per MoUs, arrangement for telecast of event, etc.
 - **Post-Sports Event/Tournament:** Once the event is over, the Committee issues a press release, and may arrange for a re-telecast of the event.
- **Tournament:** A tournament is a series of games or matches played among players or teams to determine the winner. It provides an opportunity to demonstrate skills, evaluates one's performance and motivate players to perform well, attract people towards sports to make sports popular and provide healthy entertainment.
- **Types of Tournament:** The various types of tournaments are mentioned below:
 - **Knock-out or Elimination Tournament:** In a knock-out tournament, winner of each match advances in the tournament and the loser gets eliminated. It means that the defeated team/player does not get a second opportunity and opportunities are only given to the winning teams/players.
 - **League or Round Robin Tournament:** In this type of tournament, each team plays with every other team once, if it is a **single league tournament**. In a **double league tournament**, each team plays twice with every other team. In these types of tournaments, every team plays with every other team irrespective of victory or defeat. It can be called the best type of tournament because it provides the maximum number of opportunities to each team/player to demonstrate its efficiency.
 - **Combination Tournament:** Combination tournaments are conducted when the matches are to be played on group basis or zonal basis. As a matter of fact, these tournaments depend on the suitability of the activity, the number of participating teams and the areas and distance from which they come to participate. After that, winner of each zone can participate at national level. Depending upon the number of teams in each zone and the availability of time, the tournament can be organised on the basis of knock-out or league and after that at national level, the tournament can also be conducted either on knock-out or league basis.
- Main combinations of a tournament are:
 - Knock-out cum Knock-out
 - League cum League
 - Knock-out cum League
 - League cum Knock-out
- **Procedure to Draw Fixtures:** Knock-out (Bye and Seeding) and League (Staircase and Cyclic): The success of a tournament depends upon suitable fixture. Tournaments are played in various forms of fixture. Fixture is a process of arranging the teams in a systematic order in various groups for competitive fights for physical activity. In other words, it is a set-up of various teams for competitive matches where they play in the systematic order as per fixture schedule.
- **Fixtures in Knock-out Tournaments:** In such tournaments, some teams may be given a bye and some are given seeding if the number of competitors or competing teams are not a multiple of 2.
 - **Bye:** When the number of entries in a knock-out tournament is not a power of two, we have to give byes to teams so that only four teams are left in the semi-finals. All the byes have to be given in the first round because a rest in the beginning does not give any advantage to a player or a team. The number of byes should be such that the number of contestants left should be in the power of two, i.e., 2, 4, 8, 16 or 32 etc. To arrive at the number of byes required, we subtract the number of contestants (say 11) from the next higher power of two (in this case 16). Byes should be distributed equally or as equally as possible, between the upper and the lower halves.
 - **Seeding:** There may be situations in a tournament that strong teams compete with weak teams or all strong teams are grouped in one half. There may also be a possibility that strong teams do not win their preliminary matches which may be a straight

elimination of the team. Seeding method is used to avoid such kind of situations. If two teams need seeding, then they are kept at the top of the upper half and bottom of the lower half in the arrangement. All top teams except seeded teams are kept in the fixture by lots.

For the selection of strong teams, their previous performances must also be kept in mind, to keep them at their appropriate places.

► **Fixtures in League Tournaments:** The methods used for drawing up fixtures in league tournaments are:

- **Staircase Method:** In this method, fixtures are made exactly on the pattern of a staircase. This is the easiest method as no byes are given in this method and there is no problem of odd or even numbers of teams.
- **Cyclic Method:** In this method, when the number of the participating teams is an even number, one team is fixed at top right hand position and the rest team numbers follow in ascending order consecutively on the right side downwards and left side upwards. But when the total number of teams is an odd number, a bye is used at the right top place. Rest procedure remains unchanged. Rotation is done in clockwise direction. If the number of teams is an even number, the number of rounds in this case will be $(N-1)$. To the contrary, if it is an odd number, the number of rounds will remain equal to the number of teams, i.e. N .

► **Tabular Method**

In this method, the fixtures are drawn in a tabular form. The numbers of columns to be drawn horizontally as well as vertically are:

- For even number of teams, $N + 1$ columns
- For odd number of teams, $N + 2$ columns

► **Method of Deciding the Winner in a League Tournament**

► **British Method**

$$\text{Percentage of points} = \frac{\text{Total points obtained}}{\text{Total possible points}} \times 100$$

The following way is used to give the points.

Winner of the match = 2 points

Loser of the match = 0 point

Draw/Tie = 1 point

► **American Method**

$$\text{Percentage} = \frac{\text{Matches won}}{\text{Total matches played}} \times 100$$

► **Intramural Tournaments:**

The meaning of the word 'intramural' is 'within the walls'. In context of sports, it refers to a tournament conducted within the walls of a single institution/school/community. Intramural competitions/tournament are conducted within players of one institution.

► **Objectives and Significance of Intramural Tournaments:** Few important objectives and significance of intramural tournaments are as follows:

- To encourage mass participation in sports in an institution.

- To focus on all-round development of children.
- To develop values like fair play, respect, friendship through sports.
- To provide first opportunity to compete in a controlled environment.
- To focus on fitness, wellness and health aspects of children.

► **Extramural Tournaments:** The word extramural means "outside the boundary or walls." Extramural tournaments are conducted between two or more players/teams of different schools/colleges/institutions. Few important objectives and significance of extramural tournaments are as follows:

- To achieve high performance at highest level of the tournament.
- To develop the feeling of integration with other institutions.
- To provide opportunities for choosing a career in sports.
- To promote social, cultural, economic development through sports.

► **Community Sports Programme:** Community sports programme is a society-based program of connecting and engaging people with opportunities to participate in sports, exercise and fitness activities.

Some community sports programmes are as follows:

- **Sports Day:** It is one of the important programmes that feature in the annual calendar of most residential areas, community schools. It is an event not only to showcase abilities and prowess of children and youth on the sports field but also a great opportunity for community members to meet, greet and interact with each other.

In recent times, Government of India is celebrating National Sports Day on 29th August on the occasion of birth anniversary of Major Dhyan Chand, a hockey legend.

- **Health Run:** Such kind of run is generally conducted for the purpose of improving the health standards in society and creating awareness about the importance of physical activities for maintaining good health or for raising charity.
- **Run for Fun:** The purpose of this run is to spread the message of staying fit and healthy among the masses. In schools, such races attract children and their parents. Examples of such races are lemon and spoon race, sack race, three legged race, parent and child race, teacher and child race, banana race, road running, etc.
- **Run for Specific Cause:** This event is generally conducted to spread awareness about social issues like cleanliness, promoting green environment, etc. Examples of this run are cancer, AIDS, gender inequality, etc.
- **Run for Unity:** In such a type of run the purpose is to promote the feeling of integrity and brotherhood in community, state, nation or among different religions.



Practice Exercise



Multiple Choice Questions ↓

Q 1. Given below are functions of Sports Management in List-I and their Explanation in List-II. (CBSE 2024)

List-I	List-II
A. Planning	(i) It is a function of guiding, inspiring and instructing people to accomplish organisational goals.
B. Controlling	(ii) Preparing a layout for the future course of action.
C. Directing	(iii) Ensuring that proper talent is serving that specific job.
D. Staffing	(iv) Establishing performance standards, measuring actual performance and comparing them for irregularities.

Match the items of List-I with List-II and choose the correct option from the following:

- | | | | | | | | |
|---------|------|-------|-------|---------|------|-------|-------|
| A | B | C | D | A | B | C | D |
| a. (i) | (ii) | (iii) | (iv) | b. (i) | (ii) | (iv) | (iii) |
| c. (ii) | (iv) | (i) | (iii) | d. (ii) | (iv) | (iii) | (i) |

Q 2. Match the following: (CBSE SQP 2021 Term-1)

List-I	List-II
A. Technical committee	(i) To provide shifting facility
B. Finance committee	(ii) To resolve dispute
C. Transport committee	(iii) To deal with money and expenditure
D. First aid committee	(iv) To provide medical facilities

- | | | | |
|----------|-------|------|------|
| A | B | C | D |
| a. (ii) | (iii) | (i) | (iv) |
| b. (iii) | (ii) | (i) | (iv) |
| c. (ii) | (iii) | (iv) | (i) |
| d. (iv) | (iii) | (i) | (ii) |

Q 3. Logistics committee deals with: (CBSE 2021 Term-1)

- | | |
|------------------|-------------------|
| a. Accommodation | b. Transportation |
| c. Medical Staff | d. All of these |

Q 4. Which fixture is also known as 'Berger system'?

(CBSE SQP 2021 Term-1)

- | | |
|------------------------|-------------------------|
| a. Knock-out fixture | b. Round-robin fixture |
| c. Combination fixture | d. Challenge tournament |

Q 5. In a double league tournament, a total of how many matches are played during the league phase if 7 teams participate?

- | | | | |
|-------|-------|-------|-------|
| a. 72 | b. 42 | c. 21 | d. 32 |
|-------|-------|-------|-------|

Q 6. Consider the following tournaments:

- I. Single league
- II. Knock-out cum knock-out
- III. League cum knock-out
- IV. Ladder

Out of these, the types of combination tournaments are:

- | | |
|------------------|-------------------|
| a. I, II and III | b. II, III and IV |
| c. II and III | d. I and IV |

Q 7. Knock-out tournament is also known as

(CBSE 2023)

- a. Elimination tournament
- b. Round-robin tournament
- c. League tournament
- d. Challenge tournament

Q 8. How many total matches will be played in a knock-out fixture of 19 teams? (CBSE 2023)

- | | | | |
|-------|-------|-------|-------|
| a. 18 | b. 17 | c. 20 | d. 16 |
|-------|-------|-------|-------|

Q 9. How many byes will be given if 21 teams are participating in a knock-out tournament?

- | | | | |
|-------|-------|-------|-------|
| a. 11 | b. 12 | c. 10 | d. 13 |
|-------|-------|-------|-------|

Q 10. How many byes will be given if there are 17 teams?

(CBSE SQP 2022-23)

- | | | | |
|------|------|-------|-------|
| a. 1 | b. 8 | c. 15 | d. 12 |
|------|------|-------|-------|

Q 11. Archana a P.E. Teacher of ABC School sent invitations to 26 teams to play Kho-Kho under Khelo India programme. All terms accepted the invitation. Now, help Archana and suggest her which type of tournament she should organise to make the competition successful. (CBSE 2021 Term-1)

- a. Knock-out tournament
- b. League tournament
- c. Round-robin tournament
- d. Berger tournament

Q 12. How many matches will be played in the knock-out tournaments first round if there are 15 teams?

(CBSE SQP 2022-23)

- | | |
|------|------|
| a. 8 | b. 7 |
| c. 5 | d. 6 |

Q 13. How many matches will be played in 2nd round, if 14 teams are participating in a knock-out tournament?

(CBSE 2021 Term-1)

- | | |
|------|------|
| a. 3 | b. 2 |
| c. 4 | d. 6 |

Q 14. In a knock-out tournament, if byes are in odd numbers then number of byes in lower half is calculated by:

(CBSE 2021 Term-1)

- | | |
|---------------------|---------------------|
| a. $\frac{nb+1}{2}$ | b. $\frac{nb-1}{2}$ |
| c. $\frac{nb}{2}$ | d. $nb-1$ |

Q 15. In a knock-out tournament, if 9 teams are participating then number of byes in upper half will be: (CBSE 2021 Term-1)

- a. 3 b. 4 c. 5 d. 2

Q 16. In a knock-out tournament, 4th Bye will be given to: (CBSE 2021 Term-1)

- a. Last team of Lower half
b. Last team of Upper half
c. First team of Upper half
d. First team of Lower half

Q 17. What is the formula to divide an odd number of teams in the upper half for a knock-out fixture? (CBSE 2021 Term-1)

- a. $N + 1/2$ b. $N - 1/2$
c. $N(N - 1)/2$ d. $N(N + 1)/2$

Q 18. Rohan and Satish organised a Volleyball tournament on Knock-out basis. They found that the spectators were losing interest in the tournament because two good teams were out of the tournament as they were defeated in the beginning.

Which provision could have avoided this kind of situation? (CBSE SQP 2021 Term-1)

- a. Bye b. Seeding
c. Pools d. Halves

Q 19. How many rounds will be played if the number of teams are 29 in the knock-out fixture? (CBSE SQP 2021 Term-1)

- a. 5 b. 6 c. 7 d. 3

Q 20. Which of the following procedures is not used for drawing up fixtures in a league tournament? (CBSE SQP 2021 Term-1)

- a. Tabular method b. Seeding method
c. Staircase method d. Cyclic method

Q 21. The formula for determining the number of rounds in a single league fixture when the number of teams is even? (CBSE SQP 2021 Term-1)

- a. N b. $N - 1/2$ c. $N - 1$ d. $N(N - 1)/2$

Q 22. How many byes will be given if there are 8 teams in the league tournament? (CBSE SQP 2021 Term-1)

- a. 7 b. 5 c. 4 d. 0

Q 23. If odd numbers of teams are participating in a Round-robin tournament then the formula for calculating number of rounds is: (CBSE SQP 2021 Term-1)

- a. $N - 1$ b. $N(N - 1)_2$
c. N d. $N + 1$

Q 24. Mr Gopti, Physical Education Teacher of a reputed CBSE school has decided to conduct an Inter School Kabaddi tournament in his school premises after proper drawing of fixtures. He consulted the Management and the Principal to conduct the Tournament of Inter School Kabaddi pattern but the Physical Education Teacher was not aware of Inter School Kabaddi Tournament. So, he discussed with the National Kabaddi Referee Association.

Which of the following is the best method to organise this kind of tournament? (CBSE SQP 2023-24)

- a. Knock-out b. League
c. Ladder d. Pyramid

Q 25. Which of the following is the objective of Intramural competition? (CBSE 2024)

- a. To achieve high performance
b. To provide career opportunities
c. To promote health and fitness
d. To promote cultural and economic development



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 26-29): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 26. Assertion (A): The knock-out tournament is an elimination tournament.

Reason (R): In knock-out tournament, winner of each match advances in the tournament and the loser gets eliminated.

Q 27. Assertion (A): League tournaments are considered the best type of tournaments.

Reason (R): It provides maximum number of opportunities to teams and the true winner is picked up easily at the end.

Q 28. Assertion (A): There will be no byes in a single knock-out tournament having 32 teams.

Reason (R): The third bye is given to the uppermost team of the upper half.

Q 29. Assertion (A): In cyclic method, one team will be fixed in position and the other will be placed in rotation to complete the cycle.

Reason (R): To draw fixture for odd number of terms one bye will be given to one team in one round and in next round another team will get a bye.

Answers

- (c) A-(ii), B-(iv), C-(i), D-(iii)
- (a) A-(ii), B-(iii), C-(i), D-(iv)
- (d) All of these
- (b) Round-robin fixture
- (b) 42
- (c) II and III
- (a) Elimination tournament
- (a) 18
- (a) 11
- (c) 15
- (a) Knock-out tournament

12. (b) 7
 13. (c) 4
 14. (a) $\frac{nb+1}{2}$
 15. (a) 3
 $nb = 16 - 9 = 7$
 No. of byes in upper half = $\frac{nb-1}{2} = \frac{7-1}{2} = \frac{6}{2} = 3$
 16. (b) Last team of Upper half
 17. (a) $N + 1/2$
 18. (b) Seeding
 19. (a) 5
 20. (b) Seeding method
 21. (c) $N-1$
 22. (d) 0
 23. (c) N
 24. (b) League
 25. (c) To promote health and fitness
 26. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 27. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 28. (c) Assertion (A) is true, but Reason (R) is false.
 Reason is false because third bye is given to the first team of the lower half.
 29. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

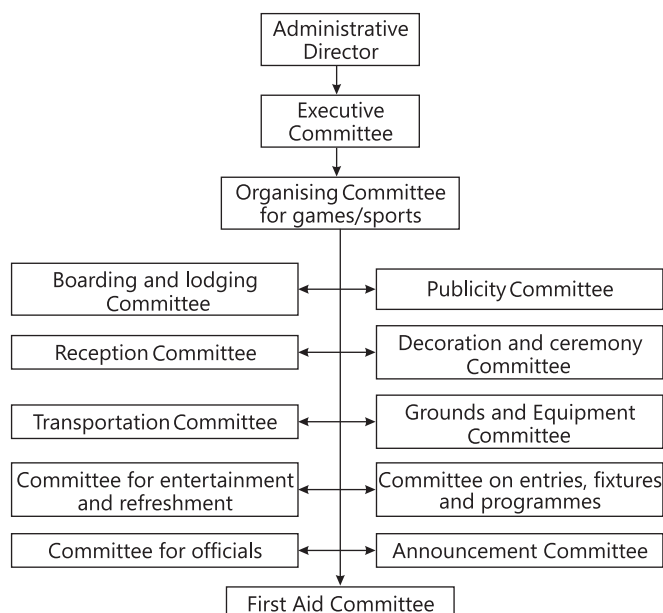


Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions. (CBSE SQP 2023-24)

While organising sports events for the Annual Sports Day, Arjuna and Ravi being the captain and vice-captain of sports, formed various committees as shown below:



- Q 1. The members of this committee are responsible for welcoming guests and spectators
- Q 2. The Committee responsible for liaison with Print Media is the Committee.
- Q 3. Purchase of sports equipment is a work of the Committee.
- Q 4. Publication of rules and regulations should be done
- Or To prepare a proper score sheet for record is responsibility.



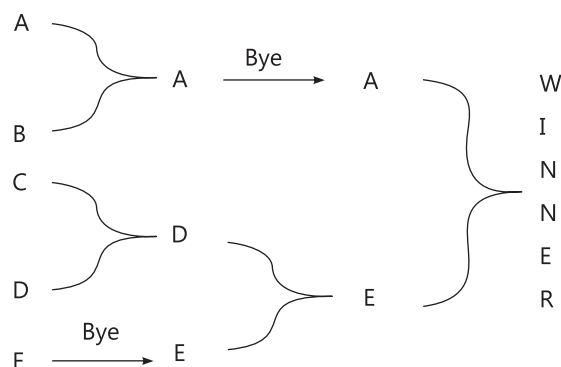
Answers

- Logistic Committee
- Marketing
- Finance
- pre-event
Or during tournament

Case Study 2

Read the following passage and answer the following questions.

Competing in physical activities has been the natural tendency of humans. The competitions or tournaments are held according to the set rules and regulations. The success of the tournament depends upon suitable fixture.



- Q 1. The advantage of this tournament is:
 a. economical b. less time
 c. Both a. and b. d. None of these
- Q 2. A privilege given to a team to play at a higher round is called:
 a. fixture b. bye
 c. reward d. All of these
- Q 3. In this type of tournament, a team once defeated gets:
 a. eliminated b. wild card entry
 c. another chance d. bye



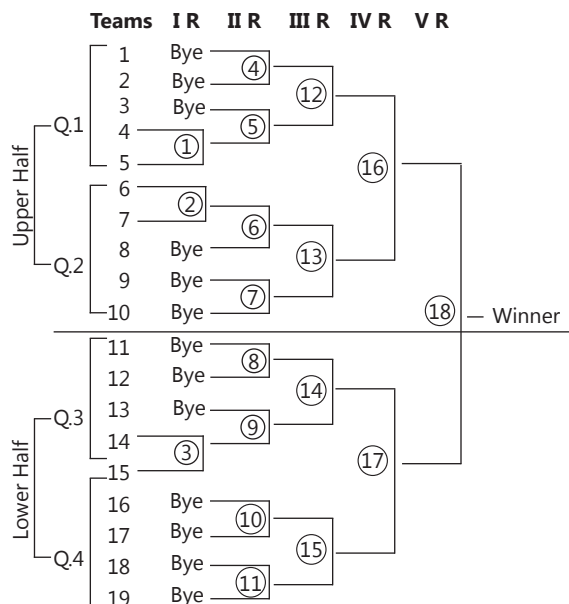
Answers

- (c)
- (b)
- (a)

Case Study 3

Based on the given fixture, answer the following questions:

(CBSE SQP 2022-23)



Q 1. Total number of matches in 2nd round are

Q 2. What is the formula for calculating the total number of matches?

Q 3. The fourth round in this case can also be called as

Q 4. What is the formula for calculating the number of bytes?

Or The formula for calculating number of rounds is

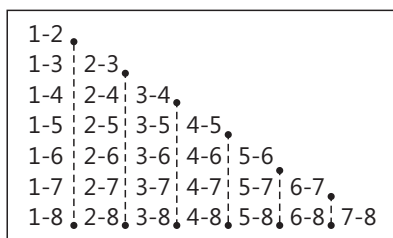
Answers

1. 8 2. N-1 3. Semi final 4. 2^{n-N}
Or n

Case Study 4

Based on the given fixture, answer the following questions: (CBSE 2023)

(CBSE 2023)



Q 1. Which method is shown in the picture to draw fixture in league tournament?

Q 2. What is the formula to calculate number of matches?

Q 3. In league or round-robin tournament, winner will be decided on the basis of

Q 4. If 7 teams participate in a league tournament, number of matches will be played.

Answers



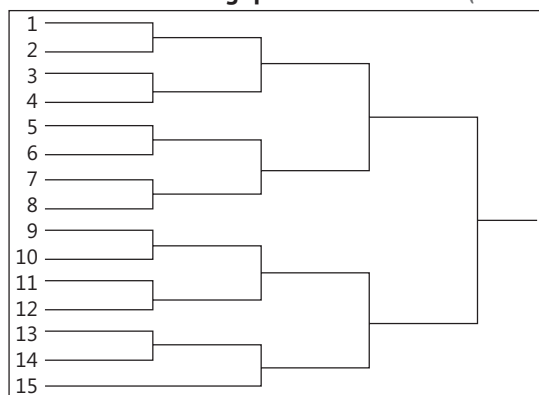
EXPERT'S Answer

1. Staircase method
2. Number of matches = $\frac{N(N-1)}{2}$,
where N is the number of teams in the tournament.
3. British method
4. Number of matches = $\frac{7(7-1)}{2} = 7 \times 3 = 21$

Case Study 5

On the basis of the given study and your knowledge, answer the following questions: (CBSE 2024)

(CBSE 2024)



Q1. According to the above fixture total number of rounds will be

Q 2. As shown in the fixture if the winner team plays least number of matches, then which number of team is the winner?

Q 3. What is the formula for calculating number of matches in a knock-out tournament?

Q 4. If 19 teams are participating in a knock-out tournament, then how many byes will be given to draw a knock-out fixture?

Or What is the formula for calculating total number of byes in a knock-out tournament?

Answers

1. 4
 2. 15
 3. Number of matches in a knock-out tournament = $N - 1$, where 'N' denotes the number of teams participating in a tournament.
 4. Total number of teams = 19
Next highest power of 2 = 32
Number of byes = $32 - 19 = 13$
- Or Total Number of byes = Next highest number which is the power of 2 – Number of teams participating in the tournament.



Very Short Answer Type Questions ↓

Q 1. What do you understand by 'Planning in Sports'?

(CBSE 2019)

Ans. Planning is a process of identifying a goal, gathering information about it through analysis and research, developing, implementing and executing the plans to meet the desired goals efficiently in the field of sports.

Q 2. What do you mean by league tournament?

Ans. League tournament is also called round robin-tournament. The league tournaments have fixed schedules, where every team plays with every other team irrespective of victory or defeat.

Q 3. Round-robin tournament is of two types. Name them and give one major difference between them.

(CBSE 2017)

Ans. The two types of league or round-robin tournament are:

(i) **Single League Tournament:** In this, every team plays against every other team once.

$$\text{Number of matches} = \frac{N(N-1)}{2},$$

where N is the number of teams.

(ii) **Double League Tournament:** In this, every team plays against every other team twice.

Number of matches = $N(N-1)$, where N is the number of teams.

Q 4. Fixtures are the schedule, fixed for the matches. What is a bye?

(CBSE 2017)

Ans. A bye is a privilege given to a team by exempting it from playing the first round, but plays the second round.

Q 5. What do you mean by 'Seeding'?

Ans. Seeding is the procedure by which good teams are placed in fixtures in such a way that stronger teams do not meet each other at the very start of the tournament. It can be done only if the previous performances of the teams are known.



Short Answer Type-I Questions ↓

Q 1. Discuss any two importance of tournaments.

Ans. The importance of tournaments is:

(i) **Source of Recreation:** Sports tournaments provide ample recreation to the spectators.

(ii) **Development of Skills:** By participating in tournaments, various sportsman skills and tactical skills are developed in sportspersons.

(iii) **Development of Social Qualities:** Social qualities such as cooperation, tolerance, honesty, fair play, sympathy, brotherhood and discipline are developed among participants through sports tournaments.

Common ERROR!

Though students are able to define tournament, most of the students are not aware about the importance of tournaments.

Q 2. What are the advantages of knock-out tournaments?

Ans. The advantages of knock-out tournaments are:

- Tournament finishes in a short time.
- They are less expensive.
- Minimum number of officials are required.
- The competition will be intense due to fear of elimination of a team, when defeated.

Q 3. Give the disadvantages of a round-robin tournament.

Ans. The disadvantages of round-robin tournament are:

- It takes more time.
- It is more expensive.
- It requires a lot of facilities.
- Moral of most of the teams becomes low due to their defeat again and again.



TIP

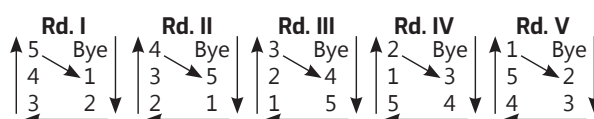
The students must learn the advantages and disadvantages of all the types of tournaments.

Q 4. Draw a fixture of 5 teams on league basic following the cyclic method.

Ans. $N = 5$

$$\text{No. of matches} = \frac{N(N-1)}{2} = \frac{5(5-1)}{2} = 10$$

No. of rounds = 5 (N is odd)



Q 5. How many byes will be given in total in the upper half and the lower half if the total number of teams is 21?

Ans. Total number of teams = 21

Next highest power of 2 = 32

Difference (nb) = $32 - 21 = 11$ byes

$$\begin{aligned} \text{Number of byes in upper half} &= \frac{nb-1}{2} = \frac{11-1}{2} \\ &= 5 \text{ byes} \end{aligned}$$

$$\begin{aligned} \text{Number of byes in lower half} &= \frac{nb+1}{2} = \frac{11+1}{2} \\ &= 6 \text{ byes} \end{aligned}$$

Q 6. Explain the staircase method of league tournament with its disadvantages.

Ans. In the staircase method, the fixture resemble a staircase or ladder. In this method, no byes are given and there is no ambiguity of odd and even number of teams.

Disadvantages

- It does not indicate the number of rounds to be played.
- It is not easy to fix the matches of rounds.

Q 7. Explain the methods of deciding the winner in league tournament.

Ans. There are two methods of deciding a winner:

(i) American Method

$$\text{Percentage of points} = \frac{\text{Matches won}}{\text{Total matches played}} \times 100$$

(ii) British Method

$$\text{Percentage of points} = \frac{\text{Total points obtained}}{\text{Total possible points}} \times 100$$



Short Answer Type-II Questions ↓

Q 1. Briefly explain the functions of Directing and Controlling to organise sports event. (CBSE 2023)



EXPERT'S Answer

Ans. Functions of Directing: Directing is the process of guiding and supervising people to achieve the goals of the sports event. In organising a sports event, directing involves assigning roles and responsibilities to each team member, communicating the objective of the event and providing guidance and feedback throughout the planning process. This function ensures that everyone involved in the event understands their roles and responsibilities and works together effectively to achieve the desired outcome.

Functions of Controlling: Controlling is the process of monitoring and measuring progress against the plan, identifying any deviations from the plan and taking corrective actions to ensure that the goals of the sports event are met. In organising a sports event, controlling involves setting performance standards, measuring progress against these standards and taking corrective action if necessary to keep the event on track. This function ensures that the event is running smoothly and that any issue that arise are addressed quickly and effectively.

Q 2. Describe the responsibilities of any three committees before a tournament.

Ans. The following are the responsibilities of committees before a tournament:

(i) Technical Committee: Before the event, it is the job of the Technical Committee to put forward a requisition to purchase equipment, invitation and confirmation from officials to conduct sports event, cleaning and layout of the fields, arrangement of equipment and stationery preparation of fixtures, rules and regulation of the sports event.

(ii) Logistics Committee: It is the duty of the Logistics Committee to look after placement/arrangement/requisition of purchase of stationery, chairs, tables, souvenirs, light and sound equipment, bouquets, sending invitations to stakeholders including other schools/institutions and VIP guests, requisition of purchase of medals and certificates, arrangement of refreshments, arrangement of boarding and lodging, selection of volunteers, preparation of first aid kit and arrangement of medical facilities.

(iii) Marketing Committee: The Marketing Committee prepares a strategy for arranging for sponsorships, publicity of the event, arranging meetings or calling on sponsors, preparation of MoUs for sponsorships, etc.

Q 3. Explain the responsibilities of any two committees during sports competition. (CBSE 2024)

Ans. The following are the responsibilities of committees during competition:

(i) Technical Committee: During sports competition, the technical committee is responsible for conducting matches, presence of the jury, cleaning and layout of the fields, collection of score sheets and other related papers from officials, preparation of merit list, etc.

(ii) Logistics Committee: During sports competition, the logistics committee is responsible for the conduct of the opening and closing ceremonies, checking registration, transportation of players from place of stay to the field and back, distribution of refreshment, management of spectators, handing over of medals and certificates.

Q 4. How various committees are formed for tournaments? Write briefly.

(CBSE 2016)

Ans.



Q 5. Your school is organising 'Run for Unity', explain the responsibilities of accreditation, technical and finance committee. (CBSE 2016)

Ans. Responsibilities of Accreditation Committee

(i) **Accreditation Committee:** It is overall responsible for organising the 'Run for Unity' event. It makes sure that ethics, rules and regulations are followed throughout the event. It is also responsible for registering the participants and managing the production and distribution of the validation passes.

(ii) **Technical Committee:** This committee is responsible for ensuring that the field of play is safe for competitors and officials. It also ensures the quality of equipment's.

(iii) **Finance Committee:** This committee is assigned to make the budget for the event and handle the expenses.

Q 6. Define bye. Explain the rules of giving bye with help of an example. (CBSE SQP 2022-23)

Ans. Bye refers to a dummy team that does not play in the first round but participates in the second round. The number of byes in a fixture is the actual difference between the number of teams participating in the tournament and the next higher number which is the power of 2.

Allotment of byes in the fixture should be given in following order:

First bye will be given to last team of Lower Half, Second bye will be given to first team of Upper Half, Third bye will be given to first team of Lower Half, Fourth bye will be given to last team of Upper Half. Same pattern will be followed after fourth bye till the remaining byes have been given.

Q 7. League tournament is a better way to judge the best team of the tournament. Comment.

Ans. League tournament is a better way to judge the best team of the tournament because of the following reasons:

- The deserving team wins the tournament, i.e., it decides the true winner.
- Every team or player gets maximum opportunity to demonstrate its efficiency.
- A team or a player needs not to win each and every match.
- The spectators get ample amount of time to enjoy the full tournament.
- Selection of players for future tournaments is done at an optimum level and with full satisfaction.



TiP

Students should write about the advantages of league tournaments.

Q 8. Draw a fixture of 11 football teams participating in a tournament on the basis of knock-out. (CBSE 2016)

Ans. Total number of teams (n) = 11

Number of teams in upper half

$$= \frac{n+1}{2} = \frac{11+1}{2} = \frac{12}{2} = 6 \text{ teams}$$

Number of teams in lower half

$$= \frac{n-1}{2} = \frac{11-1}{2} = \frac{10}{2} = 5 \text{ teams}$$

Total number of byes (nb) = Next highest power of 2

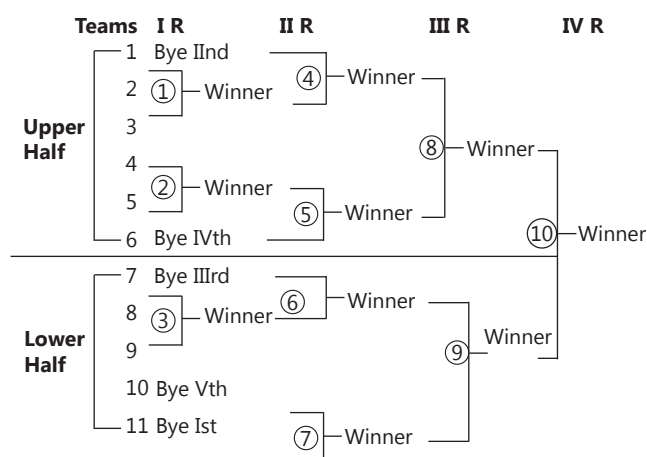
– Number of teams participating

$$= 16 - 11 = 5 \text{ byes}$$

$$\text{Number of byes in upper half} = \frac{nb-1}{2} = \frac{5-1}{2} = 2 \text{ byes}$$

$$\text{Number of byes in lower half} = \frac{nb+1}{2} = \frac{5+1}{2} = 3 \text{ byes}$$

Fixture



Q 9. Draw a fixture of 6 teams on league basis following the cyclic method. (CBSE 2016)

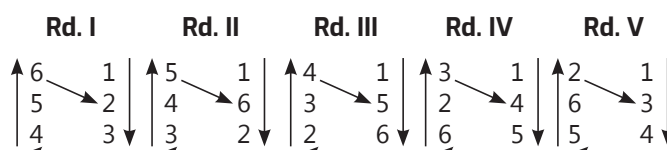
Ans. Total number of teams (n) = 6

$$\text{Total number of matches} = \frac{n(n-1)}{2}$$

$$= \frac{6(6-1)}{2} = \frac{30}{2} = 15 \text{ matches}$$

Number of rounds = n – 1 = 6 – 1 = 5 rounds

Fixture



Q 10. Draw a fixture of 12 teams on league basis according to the staircase method.

Ans. Number of rounds = n – 1 = 12 – 1 = 11 rounds

$$\text{Number of matches} = \frac{n(n-1)}{2} = \frac{12(12-1)}{2}$$

$$= 6 \times 11 = 66 \text{ matches}$$

Fixture

1-2												
1-3	2-3											
1-4	2-4	3-4										
1-5	2-5	3-5	4-5									
1-6	2-6	3-6	4-6	5-6								
1-7	2-7	3-7	4-7	5-7	6-7							
1-8	2-8	3-8	4-8	5-8	6-8	7-8						
1-9	2-9	3-9	4-9	5-9	6-9	7-9	8-9					
1-10	2-10	3-10	4-10	5-10	6-10	7-10	8-10	9-10				
1-11	2-11	3-11	4-11	5-11	6-11	7-11	8-11	9-11	10-11			
1-12	2-12	3-12	4-12	5-12	6-12	7-12	8-12	9-12	10-12	11-12		

Q 11. Draw a fixture of 7 teams on league basis according to the tabular method.

Ans. Total no. of teams (n) = 7

$$\begin{aligned}\text{Total no. of matches} &= \frac{n(n-1)}{2} \\ &= \frac{7(7-1)}{2} = \frac{42}{2} = 21.\end{aligned}$$

Fixture of 7 Teams

	A	B	C	D	E	F	G	Bye
A		1	2	3	4	5	6	7
B			3	4	5	6	7	2
C				5	6	7	1	4
D					7	1	2	6
E						2	3	1
F							4	3
G								5
Bye								

Q 2. Being sports captain of the school, prepare five important committees with their responsibilities to conduct one day run for health race. (CBSE 2015)

(CBSE 2015)

Ans. To conduct one day run for health, five important committees and their responsibilities are as follows:

S. No.	Name of the Committee	Roles and Responsibility
(i)	Transport Committee	Providing transport to various national and international teams involved in the event.
(ii)	Grounds and Equipments Committee	Preparing suitable ground/field for the event, for example, a cricket pitch or a football ground.
(iii)	Boarding and Lodging Committee	Arranging accommodation and food for the participating teams and its players.
(iv)	Official Committees	Selecting officials, judges, referees, starters, umpires, recorders, scorers, etc. for the events.
(v)	Refreshments Committee	Providing refreshment and snacks to the chief guests, officials and competitors.
(vi)	Announcement Committee	Making several important announcements during the conduct of the event, e.g., names of the players during the presentation ceremony, while substituting a player, etc.
(vii)	First Aid Committee	Consisting of well-qualified doctors, physicians and health experts, it is responsible for taking care of health of the players, or officials during an injury or mishappening. (Any five)



TiP

Students should be sure about the name of the committee and their roles and responsibility.

Common ERROR!

Students just mention names of the committee without mentioning their roles and responsibilities.

Q 3. Draw a knock-out fixture of 21 teams mentioning all the steps involved. (CBSE 2015)

Ans. Total number of teams (n) = 21

Total number of matches = $n - 1 = 21 - 1 = 20$

Number of teams in upper half

$$= \frac{n+1}{2} = \frac{21+1}{2} = 11 \text{ teams}$$

Number of teams in lower half = $\frac{n-1}{2} = \frac{21-1}{2} = 10 \text{ teams}$

Total number of byes (nb) = Next highest power of 2
– Number of teams
= $32 - 21 = 11 \text{ byes}$

Total no. of byes in upper half

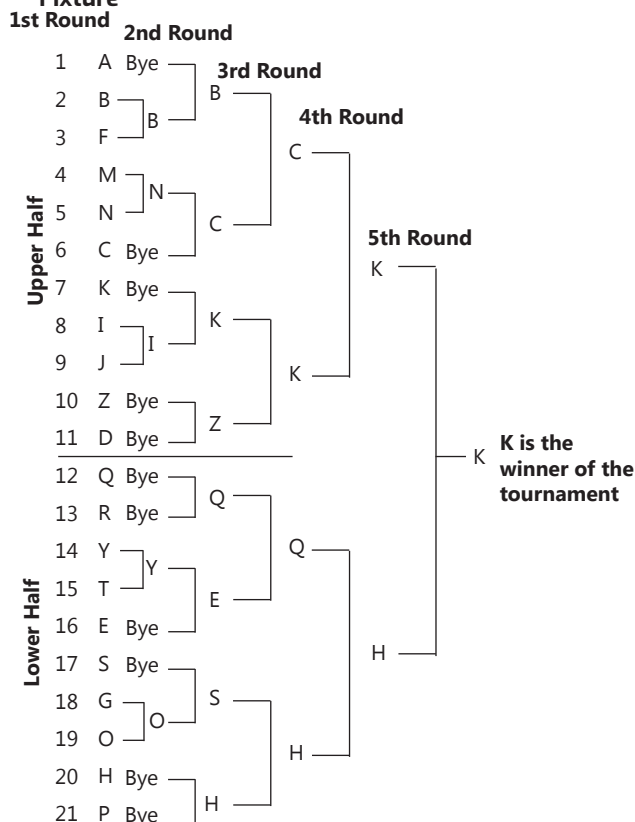
$$= \frac{nb-1}{2} = \frac{11-1}{2} = 5 \text{ byes}$$

Total no. of byes in lower half

$$= \frac{nb+1}{2} = \frac{11+1}{2} = 6 \text{ byes}$$

Number of rounds = 5

Fixture



Q 4. Draw a knock-out fixture of 25 teams with all steps involved. (CBSE 2020)

Ans. Total number of teams (n) = 25

Total number of matches = $n - 1 = 25 - 1 = 24$

Number of teams in upper half = $\frac{n+1}{2} = \frac{25+1}{2} = 13$

Number of teams in lower half = $\frac{n-1}{2} = \frac{25-1}{2} = 12$

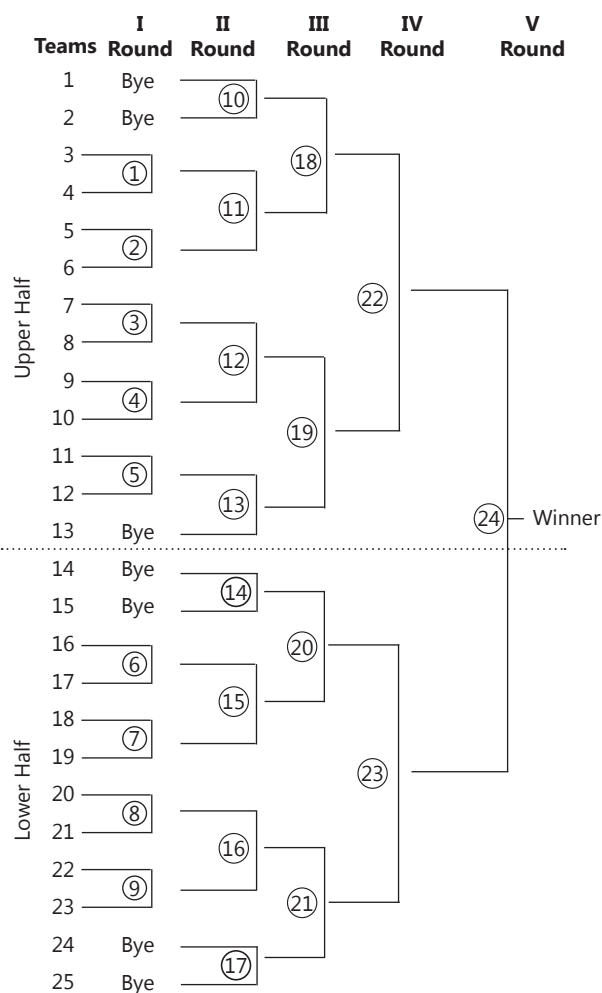
Total number of byes (nb) = Next highest number
that is the power of 2 – Number of teams

$$= 32 - 25 = 7 \text{ byes}$$

Total number of byes in upper half = $\frac{nb-1}{2} = \frac{7-1}{2} = 3$

Total number of byes in lower half = $\frac{nb+1}{2} = \frac{7+1}{2} = 4$

Number of rounds = 5



TiP

Practice a number of examples for drawing a knock-out fixture.

Common ERROR!

Students often draw incorrect fixtures.

Q 5. What is league tournament? Draw a fixture of nine (9) teams on the basis of league tournament using cyclic method. Explain British method to declare the winner. (CBSE 2019)

Ans. League tournament, also known as round-robin tournament is a tournament in which each team plays against each other team irrespective of victory or defeat. It provides maximum number of opportunities to the teams to display their best performance.

Fixture: No. of teams (n) = 9

$$\text{No. of matches} = \frac{\text{No. of teams} \times (\text{No. of teams} - 1)}{2}$$

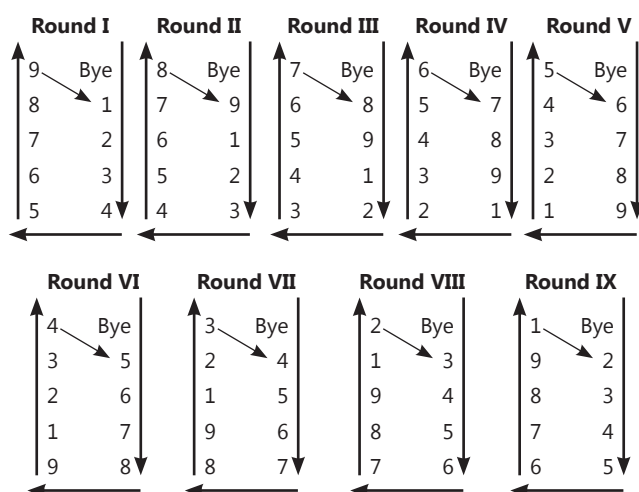
$$\frac{n(n-1)}{2} = \frac{9(9-1)}{2} = 36$$

No. of round = 9 ($\because$ no. of teams (n) is odd)



TiP

Practice drawing fixtures of different teams, as per cyclic or staircase method.



British Method to Declare Winner

Divide the total points obtained by each team by the maximum possible points, whole multiplied by 100, i.e.,

$$\text{Percentage} = \frac{\text{Total points obtained}}{\text{Maximum possible points}} \times 100$$

The point distribution is as follows:

- (i) Winner of the match = 2 points
- (ii) Loser of the match = 0 point
- (iii) Tie/Draw = 1 point

The team having the highest percentage is declared the winner.

Q 6. Define combination tournament. Draw a fixture of 16 teams using knock-out cum league method. (CBSE 2018)

Ans. Combination tournaments are conducted when the matches are to played on group basis or zonal basis. In this tournament, the initial rounds are played on particular basis (knock-out or league) and rest of the tournament is played on another basis (knock-out or league).

Usually, the following combinations of tournaments are used:

- (i) Knock-out cum knock-out
- (ii) League cum league
- (iii) Knock-out cum league
- (iv) League cum knock-out

Fixture using Knock-out Cum league Method

No. of teams = 16

Here, all the teams are divided into four equal groups.

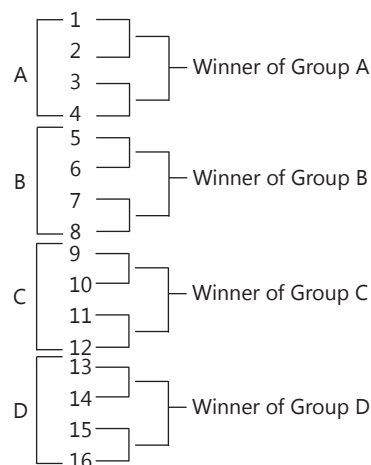
Group A: First four teams

Group B: Second four teams

Group C: Third four teams

Group D: Last four teams

Group Knock-out



Inter-group League

$$\text{No. of matches for league tournament} = \frac{n(n-1)}{2} = \frac{4 \times 3}{2} = 6 \text{ matches.}$$

Fixture of league tournament by staircase method:

Winner of each group will participate in a league tournament.

$$\begin{bmatrix} A-B & & \\ A-C & B-C & \\ A-D & B-D & C-D \end{bmatrix}$$

Common ERROR!

Most students are able to define different types of tournaments but are unable to draw their fixtures.

Q 7. Explain the meaning of community sports programmes. Briefly explain any four.

Ans. Community sports programmes are sports programmes which are not related to competitions, but are organised for various other objectives such as charity, health awareness, raising funds for noble causes etc.

Various community sports programmes are:

- (i) **Sports Day:** Sports day is organised by each and every school on a specific day in a year, in which children take part in competitive sporting activities, often with the aim of winning prizes. These activities instill various social qualities such as leadership, brotherhood, unity, discipline and respect in children.

(ii) **Health Run:** Health run is organised by social organisations or sports departments for the purpose of raising funds for charity and standards of health in a particular region or country. There is no competition in it but registration of participants, date and time are fixed in advance.

(iii) **Run for Fun:** This event is organised to spread the message among the masses to exercise on a regular basis and keep their body fit and healthy. It is community organised for raising funds for charity, in which people participate to enjoy and not to compete.

(iv) **Run for Unity:** This is to inculcate peace and harmony among the people of different religions. It is a great way of invoking the spirit of unity, togetherness, Love and harmony towards the country and its people.



TiP

Each type of community programmes should be discussed briefly in at least three-four lines.



Chapter Test

Multiple Choice Questions

Q 1. Which of the following committee is headed by a qualified doctor?

- Reception
- Finance
- First Aid
- Grounds and Equipment

Q 2. In a knock-out tournament, how many byes will be allocated to upper half if 21 teams are participating?

- 7
- 6
- 5
- 4

Q 3. How many teams will be placed in 3rd quarter if 30 teams are participating in knock-out tournament?

- 6
- 7
- 8
- 9

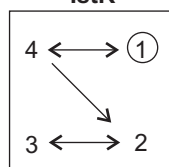
Q 4. What is the formula to determine number of matches in League fixture for even number of teams?

(CBSE SQP 2023-24)

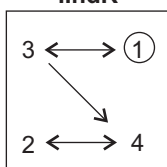
- $N + 1/2$
- $N - 1/2$
- $N(N - 1)/2$
- $N(N + 1)/2$

Q 5. Which method of league tournament is shown below?

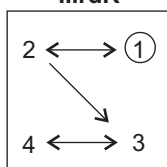
IstR



IIndR



IIIRD



- Cyclic method
- Staircase method
- Rand robin method
- None of the above

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true, but Reason (R) is false.
- Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): League tournaments are less expensive.

Reason (R): Only strong or deserving team gets victory in this tournament.

Q 7. Assertion (A): A bye refers to a dummy team that does not play in the first round but participates in the second round.

Reason (R): The number of byes in a fixture is the difference between the number of teams participating in the tournament and the next highest number which is the power of 2.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

ABC School is one of the reputed school in their location for the number of sports facilities it provides to its stakeholders. Keeping that in consideration CBSE Sports cell has given them the responsibility of conducting CBSE Football cluster. 35 teams have sent their entry for participation in the tournament.

(i) Due to large number of teams willing to participate, the school is conducting the competition by fixture.

- league
- knock-out
- staircase
- challenge

(ii) Total number of matches will be

- 34
- 30
- 28
- 24

(iii) Total number of rounds will be

- 4
- 5
- 6
- 7

Very Short Answer Type Questions

Q 9. Explain procedure for giving byes.

Q 10. List the various types of tournaments.

Short Answer Type-I Questions

- Q 11. Describe the role of any two committees during tournament.
- Q 12. What is a knock-out tournament? Mention any two disadvantages of knock-out tournament.
- Q 13. Draw a fixture of 7 football teams participating in a tournament on the basis of knock-out.

Short Answer Type-II Questions

- Q 14. Briefly explain the types of league tournaments. Also, describe the advantages of league tournaments.

- Q 15. Explain the staircase method of a league tournament for 7 teams.

- Q 16. Enlist the committees for organising sports events and explain any five of them in detail.

Long Answer Type Questions

- Q 17. What is the meaning of tournament? Draw knock-out fixture for 27 teams.
- Q 18. Draw a fixture of 9 teams on the basis of league tournament using cyclic method. Explain British method to declare the winner.

Scan the **QR Code**

To get Answers of this Chapter Test





Children and Women in Sports

FASTRACK REVISION

► Exercise Guidelines of WHO for Different Age Groups

WHO has developed following guidelines with guidance on the frequency, duration, intensity, type and total amount of physical activity needed for the prevention of Non-communicable Diseases or Lifestyle Diseases.

► Infants (Less than 1 year)

- Infants should be given 30 minutes in prone position (tummy time).
- During this period, encourage babies to be physically active by reaching and grasping, pulling and pushing, moving her/his head, body and limbs during daily routines, and during supervised floor play.

► Toddlers (1-2 years of age)

- Toddlers should aim to do moderate-to-vigorous intensity physical activities for at least 180 minutes spread throughout the day.
- During this period, toddlers should be encouraged to undertake fundamental physical activity like walking, running, jumping, catching, throwing, leaping, etc.

► Children (3-4 Years)

- Children should aim to do spend at least 180 minutes in a variety of types of physical activities at any intensity, of which at least 60 minutes is spent in moderate to vigorous intensity physical activity.
- During this period, children should be encouraged to undertake light activity such as standing up, moving around, rolling and playing, as well as more energetic activities like skipping, hopping, running and jumping.

► Children and Youth (5-17 Years)

- Children and Youth should aim to do moderate-to-vigorous intensity physical activities for at least 60 minutes in a day.
- During this period, children and youth should be encouraged to undertake aerobic, basic exercises for strengthening of muscles and fundamental activities (Jumping, running, throwing, turning, twisting, etc.).
- Regular physical activity helps to improve cardiorespiratory and muscular fitness, bone health, cardiovascular and metabolic health biomarkers and to reduce symptoms of anxiety and depression.

► Adults (18-64 Years)

- Adults should aim to do moderate intensity physical activities for 150 to 300 minutes per week or vigorous intensity physical activities for 75 to 150 minutes per week.

- During this period, adults should be encouraged to undertake physical activities like walking, jogging, swimming, weight training, dancing, etc., occupational work, household work (car wash, gardening, etc.), games, sports, recreation, transportation (walking, cycling), planned exercises with or within family and community.
- Regular physical activity helps to lower the risk of heart diseases, blood pressure, stroke, Type 2 diabetes, metabolic syndrome, colon and breast cancers and depression, hip or vertebral fractures, and to develop higher level of cardiorespiratory muscular fitness and maintain healthy weight.

► Older Adults (65 Years and Above)

- Older adults should aim to do moderate intensity physical activities for 150 to 300 minutes per week or vigorous intensity physical activities for 75 to 150 minutes per week.
- During this period, older adults should be encouraged to undertake physical activities like walking, jogging, swimming, weight training, dancing, etc., occupational work, household work (car wash, gardening, etc.), games, sports, recreation, transportation (walking, cycling), planned exercises with or within family and community.
- Regular physical activity helps to lower the risk of heart diseases, blood pressure, stroke, Type 2 diabetes, metabolic syndrome, colon and breast cancers and depression, hip or vertebral fractures, and to develop higher level of cardiorespiratory muscular fitness and maintain healthy weight. It lowers the risk of Non-communicable Diseases, depression and cognitive decline.

► **Common Postural Deformities:** Postural deformities reduce the efficiency of individual to great extent and cause many more health problems. These can easily be corrected or prevented if early steps are taken. Some postural deformities are Knock knees, Flat foot, Round shoulders, Lordosis, Kyphosis, Bow legs and Scoliosis.

- **Knock Knees:** Knock knees (also known as Genu valgum) is one of the major postural deformities. In this deformity, both the knees knock or touch each other in normal standing position. The gap between ankles goes on increasing. The individual faces difficulty in walking and running. He cannot walk or run in a proper manner. Owing to this deformity, they cannot be good players and even they are not selected in defence services.

➤ **Corrective Measures**

- Perform Padmasana and Gomukhasana regularly for some time.
- Cod liver oil may be beneficial in reducing this deformity up to some extent.
- Keep a pillow between the knees and stand erect for some time.
- Use of walking calipers may also be beneficial.
- Horse-riding is the best exercise for correction of knock knee.

➤ **Flat foot:** It is also known as pes Planus or fallen arches. It is a deformity of the feet. In this deformity, there is no arc in the foot and the foot is completely flat.

➤ **Corrective Measures**

- Walking on heels.
- Activities like picking up marbles with toes, writing numbers in sand with toes etc.
- Walking on toes.
- Skipping rope.
- Jumping on toes for some time.
- Perform Vajrasana and Adho Mukh Svanasana regularly.

➤ **Round Shoulders:** It is a postural deformity in which the shoulders become round as they are drawn forward, the head is extended with the chin pointing forward.

➤ **Corrective Measures**

- Keep your tips of fingers on your shoulder and encircle your elbows in clockwise and anticlockwise direction for same number of times.
- Hold the hanging portion of horizontal bar for some time.
- Perform Chakrasana and Dhanurasana regularly.
- Perform stretching exercises like T-stretch, wall stretch, handclasp stretch and planks, etc.

➤ **Lordosis:** It is the inward curvature of the spine. Here, lumbar curve becomes more pronounced and front central position of pelvic region is tilted forward. It creates problem in standing and walking. It is also known as sway back.

➤ **Corrective Measures**

- Forward bending from hip level.
- Alternate toe touching.
- Sloop walking.
- Perform Dhanurasana and Halasana.
- Perform sit-ups regularly.

➤ **Kyphosis:** It is also known as hunch back or round upper back. It is a deformity of the spine in which there is an increase or exaggeration of the upper back.

➤ **Corrective Measures**

- Perform Dhanurasana regularly.
- Swimming, gym ball exercises and exercises with bands.
- Perform Bhujangasana and Chakrasana.

➤ **Bow Legs:** It is a deformity opposite of knock knees. In this deformity, if there is a wide gap between the knees when standing with feet together. It is also known as Genu varum.

➤ **Corrective Measures**

- Vitamin 'D' should be taken in required amount.
- Use of braces and modified shoes.
- Bow legs can be corrected by walking on the inner edge of the feet.
- Walking by bending the toes inward.

➤ **Scoliosis:** Postural adaptation of the spine in lateral position is called scoliosis. It means bending, twisting or rotating of spine in such a way that it makes a 'C' or an 'S' shape.

➤ **Corrective Measures**

- Perform Trikonasana.
- Holding the horizontal bar with hands and swing your body to the left and right sides.
- Swimming by breast stroke technique.

► **Women Participation in Sports**

Women participation in sports helps them to stay fit and reduces chances of diseases. These benefits are as true for women as for their male counterparts. Some benefits are as follows:

➤ **Physical Benefits**

- Sports participation helps women to stay active which, in turn, reduces chances of lifestyle diseases such as diabetes, high blood pressure, obesity, etc. and enables them to live a healthy life.
- Sports help them to increase bone density and stronger bones.
- Women has more chances of being obese than men, regular participation in sports helps them to stay in shape and stay fit.

➤ **Psychological Benefits**

- Sports persons, men and women, who participate in sports can manage their stress better than those who do not participate in the sports.
- When a woman participates in sports and wins, it gives not just her, but other women sports persons a sense of achievement and really boost their confidence.
- One of the best quality about sports is that it inculcates or bring out the leadership skills or qualities of an individual.

➤ **Social Benefits**

- Women who participate in sports learn the skills of working in coordination with others.
- Sports helps women participants to be more vocal and expressive.
- Women learn to cooperate with each other when they are playing on the field.

➤ **Menarche:** Menarche is the first menstrual cycle or first menstrual bleeding in females. From both, the social and the medical perspectives, it is considered the central event of female puberty, as it signals the possibility of fertility. Girls experience menarche at different ages but usually it occurs between the ages of 8 and 15 years.

► **Menstrual Dysfunction**

➤ Menstrual dysfunction is an abnormal condition in a woman's menstrual cycle. Normal range of the menstruation cycle is 21 to 35 days. If it happens earlier than 21 days or after more than 35 days, then

it's a problem. Other menstrual problems include missing three or more periods, menstrual flow heavier or lighter in comparison with usual, cycle happening longer than seven days, any pain, cramping or vomiting during period, bleeding after menopause, etc. Causes of abnormal menstrual cycles or menstrual order are: overweight, stress, dietary disorder, disease, sudden change in exercise schedule, travel, other medical complications, etc.

► There are different types of menstrual disorders which are given below:

- **Pre-menstrual Syndrome:** Pre-menstrual Syndrome includes unpleasant or uncomfortable symptoms during the cycle. These may include depression, anxiety, irritation, headache, fainting, vertigo, infection, etc., and may last from a few hours to few days. Symptoms Such symptoms may be reduced through moderate exercise, taking a balanced diet, having a good sleep and rest.
- **Amenorrhea:** Amenorrhea is known as missed periods or absence of a normal monthly period or menstrual cycle. There are two types of amenorrhea.
 - **Primary Amenorrhea:** Menstruation cycle does not begin at puberty.
 - **Secondary Amenorrhea:** It happens when menstruation for three months or more. This is the most common type of amenorrhea.
- **Dysmenorrhea:** When menstruation happens with severe pain or frequent menstrual cramps, the condition is called dysmenorrhea. Symptoms associated with dysmenorrhea may be cramping in lower abdomen, low back pain, pain in legs, nausea, fatigue, weakness, etc.
- **Menorrhagia:** Menorrhagia is characterised by heavy and long term or continuous menstrual bleeding.
- **Polymenorrhea:** Polymenorrhea is a term used to describe a menstrual cycle that is shorter than 21 days.

- **Oligomenorrhea:** Oligomenorrhea is infrequent menstruation. More strictly, it is menstrual periods occurring at intervals of greater than 35 days.
- **Metrorrhagia:** Metrorrhagia refers to missed, delayed or erratic periods or abnormal bleeding patterns.
- **Postmenopausal bleeding:** Postmenopausal bleeding is bleeding that occurs after one year of menopause or after a woman has stopped having menstrual cycles due to menopause.

► **Female Athletes Triad:** It is a combination of three related conditions: **Amenorrhea, Osteoporosis and Eating Disorders**. It is observed that females who take part in intense sports activities are at risk of female athlete triad.

- **Osteoporosis:** It is a skeletal disorder characterised by weakening of bones due to reduced bone density, leading to increase in fracture risk. Low estrogen levels and low calcium and vitamin D intake can lead to osteoporosis.
- **Amenorrhea:** It is a menstrual disorder in females where girls of 16 years and above either never began menstruating or there is absence of menstrual period for 3 months or more in a woman with a history of normal menstruation. Intensive training, hormonal changes and insufficient intake of calories enhance the chances of amenorrhea.
- **Eating Disorders:** It refers to the habit of over-eating or under-eating of food by an individual due to mental stress or illness, causing disturbances in the regular diet schedule of the individual. There are following types of eating disorders:
 - **Anorexia Nervosa:** It is an eating disorder characterised by self-starvation and excessive weight loss. They consider themselves overweight even though they are underweight and also vomit or use laxatives to reduce weight.
 - **Bulimia Nervosa:** It is an eating characterised by eating a large amount of food in a short period of time, followed by self-induced vomiting or other forms of purging in order not to gain weight.



Practice Exercise



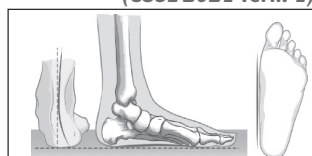
Multiple Choice Questions ↓

Q 1. According to W.H.O. (World Health Organisation) recommendations, children of should be engaged in physical activities for 180 minutes and should have 10-13 hours of good quality sleep per day. (CBSE 2024)

- a. less than 1 year b. 1-2 years
- c. 3-4 years d. 5-17 years

Q 2. Which postural deformity is shown in the illustration? (CBSE 2021 Term-1)

- a. Bow Leg
- b. Knock Knee
- c. Flat foot
- d. Round Foot



Q 3. 'Sway Back' is also known as: (CBSE 2021 Term-1)

- a. Lordosis b. Kyphosis
- c. Scoliosis d. Round shoulder

Q 4. Kyphosis is also known as: (CBSE SQP 2023-24)

- a. Hallow Back b. Hunch Back
- c. Both a. and b. d. Curve Back

Q 5. Kyphosis is a deformity found in: (CBSE 2021 Term-1)

- a. shoulders b. lumber region
- c. thoracic region d. hips

Q 6. Lateral curvature or sideways curvature of spine is related to: (CBSE 2021 Term-1)

- a. Round shoulder b. Kyphosis
- c. Knock knee d. Scoliosis

Q 7. Which of the following is not a spinal curvature deformity?
(CBSE SQP 2021 Term-1)

- a. Lordosis
- b. Scoliosis
- c. Kyphosis
- d. Flat foot

Q 8. Which of the following asana should be performed for curing Kyphosis?

- a. Trikonasana
- b. Bhujangasana
- c. Pavanmuktasana
- d. Tadasana

Q 9. Match List I with List II and select the correct answer from the codes given below:
(CBSE 2023)

List-I	List-II
A. Knock knee	(i) Increase or exaggeration of backward curve
B. Kyphosis	(ii) Wide gap between the knees when standing with feet together
C. Lordosis	(iii) Knees touch each other in normal standing position
D. Bow legs	(iv) Inward curvature of the spine

- | | | | |
|----------|------|------|-------|
| A | B | C | D |
| a. (iii) | (i) | (ii) | (iv) |
| b. (i) | (ii) | (iv) | (iii) |
| c. (ii) | (iv) | (i) | (iii) |
| d. (iii) | (i) | (iv) | (ii) |

Q 10. Scoliosis is a postural deformity related with:

(CBSE 2020)

- a. foot
- b. leg
- c. vertebral column
- d. hand

Q 11. Halasana is used for curing which of the following deformities?
(CBSE SQP 2021 Term-1)

- a. Kyphosis
- b. Scoliosis
- c. Lordosis
- d. Flat foot

Q 12. What is the name of the postural deformity caused due to increase in the curve at the lumbar region?

(CBSE SQP 2021 Term-1)

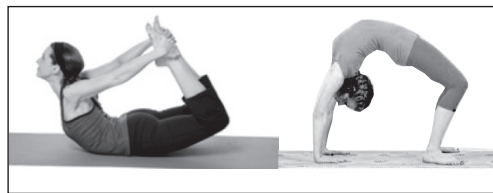
- a. Knock knees
- b. Bow legs
- c. Kyphosis
- d. Lordosis

Q 13. Sandy is diagnosed with postural adaptation of the spine in lateral direction. The curve is identified as convexity right. It happened due to Sandy's underdeveloped legs and carrying heavy loads on one side only.

What kind of postural deformity doctors found in Sandy?
(CBSE SQP 2021 Term-1)

- a. Scoliosis
- b. Kyphosis
- c. Bow legs
- d. Flat foot

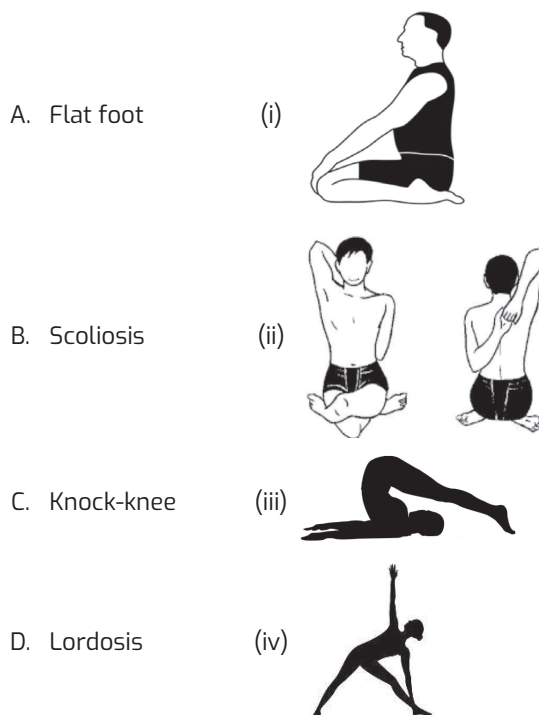
Q 14. Asanas show in the picture are performed to correct:



(CBSE SQP 2021 Term-1)

- a. Kyphosis and Lordosis
- b. Round shoulder and Kyphosis
- c. Scoliosis and Lordosis
- d. Lordosis and Round Shoulders

Q 15. Match the following postural deformities with their corrective Asanas:



(CBSE SQP 2021 Term-1)

- | | | | |
|---------|-------|-------|-------|
| A | B | C | D |
| a. (i) | (iv) | (iii) | (ii) |
| b. (ii) | (iii) | (i) | (iv) |
| c. (ii) | (i) | (iii) | (iv) |
| d. (i) | (iv) | (ii) | (iii) |

Q 16. Which postural deformity has convexities right or left?
(CBSE SQP 2021 Term-1)

- a. Flat foot
- b. Knock knees
- c. Kyphosis
- d. Scoliosis

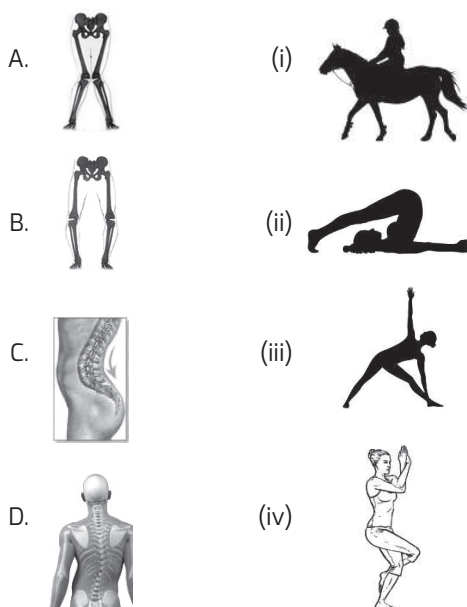
Q 17. Posture plays a very significant role in our daily activities. Correct posture means the balancing of the body in an accurate and proper manner. Various types of postural deformities can be identified in individuals.
(CBSE SQP 2021 Term-1)



From the above given picture, the deformities seen on the left most is caused due to deficiency of which nutrient?

- a. Iron b. Calcium
c. Vitamin D d. Both b. and c.

Q 18. Match the postural deformities with their remedial activity: (CBSE SQP 2021 Term-1)



- | | | | | | | | |
|------------------------|------------------------|---|---|---|---|---|---|
| A | B | C | D | A | B | C | D |
| a. (i) (iii) (ii) (iv) | b. (i) (iv) (iii) (ii) | | | | | | |
| c. (i) (iii) (iv) (ii) | d. (iv) (ii) (iii) (i) | | | | | | |

Q 19. Psychological benefits of women participation in sports includes:

- a. cooperation b. emotion control
c. physical fitness d. communication

Q 20. Menarche is defined as the: (CBSE 2023, 20)

- a. ending of menstrual period in women
b. beginning of menstrual period in women
c. time of pregnancy
d. beginning of pregnancy

Q 21. If the menstruation cycle does not begin at puberty, the condition is called

(CBSE SQP 2023-24)

- a. Primary amenorrhea
b. Secondary amenorrhea
c. Oligomenorrhea
d. Dysmenorrhea

Q 22. Weakening of bones due to loss of bone density and improper bone formation is: (CBSE SQP 2022-23)

- a. Amenorrhea b. Anorexia nervosa
c. Osteoporosis d. Lordosis

Q 23. Eating large amounts of food at very short intervals of time is known as:

- a. Anorexia nervosa
b. Osteoporosis
c. Bulimia nervosa
d. None of the above

Q 24. In which type of Anorexia does an individual lose weight by taking laxatives or diuretics?

- a. Bulimia nervosa b. Purging type
c. Restricting type d. Anorexia nervosa



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 25-29): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 25. Assertion (A): In a normal standing posture, both knees touch each other, while there is a gap of 3-4 inches between the ankles.

Reason (R): It occurs due to Genu Valgum and it can develop due to an injury or infection in the knee or leg, rickets, severe lack of vitamin D and calcium, obesity, or arthritis in the knee. (CBSE 2024)

Q 26. Assertion (A): Majorities of babies are born with flat feet but as they grow or get involved in physical activities the arch in the foot develops.

Reason (R): Foot or ankle injury due to obesity, wearing improper shoes and carrying heavy weight for long time are the causes of flat foot.

Q 27. Assertion (A): Postural deformities can be cured with the help of the different asanas.

Reason (R): Round shoulders can be cured by performing Chakrasana and Dhanurasana regularly.

Q 28. Assertion (A): Menstrual dysfunction include missing three or more periods, menstrual flow heavier or lighter in comparison with usual, cramping etc.

Reason (R): Menstrual dysfunction is common in sports women.

Q 29. Assertion (A): The female athlete triad is a combination of Amenorrhea, Osteoporosis and Scoliosis.

Reason (R): Insufficient intake of calcium and vitamin D in the diet is the main cause of Osteoporosis.

Answers

- (c) 3-4 years
- (c) Flat foot
- (a) Lordosis
- (b) Hunch Back
- (c) thoracic region

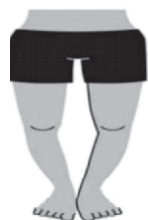
6. (d) Scoliosis
7. (d) Flat foot
8. (b) Bhujangasana
9. (d) A-(iii) B-(i) C-(iv) D-(ii)
10. (c) vertebral column
11. (c) Lordosis
12. (d) Lordosis
13. (a) Scoliosis
14. (b) Round shoulder and Kyphosis
15. (d) A-(i) B-(iv) C-(ii) D-(iii)
16. (d) Scoliosis
17. (d) Both b. and c.
18. (b) A-(i) B-(iv) C-(iii) D-(ii)
19. (b) emotion control
20. (b) beginning of menstrual period in women
21. (a) Primary amenorrhea
22. (c) Osteoporosis
23. (c) Bulimia nervosa
24. (d) Anorexia Nervosa
25. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
26. (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
27. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
28. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
29. (d) Assertion (A) is false, but Reason (R) is true.

Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Posture plays a very significant role in our daily activities. Correct posture means the balancing of body in accurate and proper manner. Various types of postural deformities can be identified in individuals.



Person (i)



Person (ii)



Person (iii)

- Q 1. From the above given picture, the deformities seen in person (i) is caused due to deficiency of:
 - a. iron
 - b. calcium
 - c. vitamin-D
 - d. Both b. and c.
- Q 2. Walking on the inner edge of the feet can be a remedy for:
 - a. person (i)
 - b. person (ii)
 - c. person (iii)
 - d. All of these

Q 3. Person (ii) is suffering from:

- a. round shoulders
- b. knock knees
- c. bow legs
- d. elephant foot

Q 4. Performing this asana regularly can be a remedy for Person (iii):

- a. Padmasana
- b. Tadasana
- c. Vajrasana
- d. Halasana

Answers

1. (d)
2. (a)
3. (b)
4. (c)

Case Study 2

Read the following passage and answer the following questions.

Aparna, a student of class XII, used to read books in the school library. One day, she was studying about female athlete triad and finds that women participation in sports leads to various problems during pregnancy, menarche, menstruation and menopause.

Q 1. Amenorrhea is a condition of:

- a. menstrual disorder
- b. eating disorder
- c. psychological disorder
- d. postural disorder

Q 2. Osteoporosis refers to:

- a. habit of over-eating or under-eating.
- b. the gap in the menstrual cycle.
- c. decreased bone material density.
- d. exaggeration of posterior curve.

Q 3. Choose the incorrect statement from the following:

- a. Amenorrhea is of two types.
- b. Athletes affected by Amenorrhea practice self-induced vomiting.
- c. Abnormal reproductive hormonal changes may lead to Amenorrhea in athletes.
- d. Amenorrhea is the cessation of woman's menstrual cycle for more than three months.

Answers

1. (a)
2. (c)
3. (d)

Very Short Answer Type Questions ↓

Q 1. State the common postural deformities. (CBSE 2017)

Ans. Some common postural deformities are flat foot, knock knee, bow legs and round shoulders.

Q 2. Suggest two exercises for correcting flat foot.

(CBSE 2016)

Ans. The following exercises should be done to correct flat foot:

- (i) Perform Vajrasana.
- (ii) Walking on inner and outer side of feet.
- (iii) Jumping on toes for sometime.
- (iv) Perform towel scrunch.

Q 3. What is Lordosis? Explain.

(CBSE 2017)

Ans. Lordosis, also known as swayback, is a postural deformity of the spine. It is the inward curvature of the spine in the lumbar region.

Common ERROR!

Most of the students get confused between lordosis and scoliosis and define scoliosis.

Q 4. Which type of deformity is 'Kyphosis'? (CBSE 2019)

Ans. Kyphosis is a deformity of the spine in which there is an increase or exaggeration of a backward curve, causing hunching of the back.

Q 5. Explain the term 'Menarche'. (CBSE 2016)

Ans. Menarche is the first menstrual cycle or first menstrual bleeding in females. It usually occurs between the age of 9 to 15 years.

Q 6. What is Menopause? (CBSE 2017)

Ans. Menopause is a natural event where menstrual cycles permanently cease in women of age between 45-55 years due to the natural loss of ovarian function from aging.

Q 7. Among females, what type of menstrual Dysfunction is called Amenorrhea? (CBSE 2019)

Ans. Amenorrhea is a menstrual disorder in females where girls of 16 years and above either never began menstruating or there is an absence of menstrual period for three months or more in a woman with a history of normal menstruation.

**TiP**

Female Athletes Triad (Osteoporosis, Amenorrhea and Eating disorders) is very important from examination point of view.

Q 8. What do you mean by 'Bulimia'? (CBSE 2016, 18, 19)

Ans. Bulimia, also known as bulimia nervosa, is an eating disorder characterised by eating a large amount of food in a short amount of time, followed by self-induced vomiting or other forms of purging in order not to gain weight

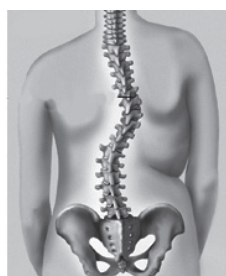
Common ERROR!

Many students get confused between the different types of eating disorders.

**Short Answer Type-I Questions ↓**

Q 1. Identify the deformities and give their names:

(i)



.....

(ii)



.....

(iii)



.....

(iv)



.....

Ans. (i) Scoliosis (ii) Bow legs
(iii) Kyphosis (iv) Knock knee

Q 2. List the physical activities that can be undertaken to correct knock knee deformity.

Ans. The deformity of knock knee can be corrected with the help of following exercises:

- Horse-riding is the best exercise for correction of knock knee.
- Keep a pillow between the knees and stand erect for sometime.
- Perform Padmasana and Gomukhasana regularly for sometime every day.
- Use of walking calipers may also be beneficial.

Q 3. Suggest any two free hand exercises for correcting round shoulders.

Ans. Exercises for correcting round shoulders are:

- Keep your tips of fingers on your shoulder and encircle your elbows in clockwise and anticlockwise direction for same number of times.
- Hold the hanging position of horizontal bar for some time.
- Perform Chakrasana and Dhanurasana regularly.

(Any two)

Q 4. Mention the corrective measures related to lordosis.

Ans. The following exercises should be performed to correct lordosis:

- Perform sit-ups regularly.
- Perform Paschimottanasana and Halasana.
- Forward bending form hip level.
- Alternate toe touching.

Q 5. Write a short note on 'Menarche'. (CBSE 2024)

Ans. Menarche is defined as the first menstrual period in a female. It is the process in which female reproductive system matures and the body prepares itself for potential pregnancy. It is associated with the development of secondary sexual characteristics. The average age for a girl to get her first period ranges from 8 to 15 years old.



Short Answer Type-II Questions ↓

Q 1. Write in brief the corrective measures of Bow Leg, Knock Knee and Flat foot. (CBSE SQP 2023-24)

Ans. Corrective Measures of Bow Leg:

- Vitamin 'D' should be taken in required amount.
- Use of braces and modified shoes.
- Bow legs can be corrected by walking on the inner edge of the feet.
- Walking by bending the toes inward.

Corrective Measures of Knock Knee:

- Perform Padmasana and Gomukhasana regularly for some time.
- Cod liver oil may be beneficial in reducing this deformity up to some extent.
- Keep a pillow between the knees and stand erect for some time.
- Use of walking calipers may also be beneficial.
- Horse-riding is the best exercise for correction of knock knee.

Corrective Measures of Flat foot:

- Walking on heels.
- Activities like picking up marbles with toes, writing numbers in sand with toes etc.
- Walking on toes.
- Skipping rope.
- Jumping on toes for some time.
- Perform Vajrasana and Adho Mukha Svanasana regularly.

Q 2. What do you mean by 'Round Shoulders'? Suggest any four physical activities for correcting round shoulders. (CBSE 2023, 15)



EXPERT'S Answer

Ans. Round shoulders is a postural deformity in which the shoulders are bent forward, from the ideal alignment, thereby giving a narrow curve to upper back.

Physical activities for correcting round shoulder are as follows:

- Perform chest stretches, T stretch, wall stretch etc.
- Hold the horizontal bar for sometime.
- Perform Chakrasana and Dhanurasana regularly.
- Sit on a chair, rest the back against it, pull the shoulders backward and see upwards.

Q 3. Write about the deformities of spinal curvature. (CBSE 2016)

Ans. Spinal curvature deformities are related to the spine. There are three types of spinal curvature:

- Lordosis:** It is the inward curvature of the spine. It is an increased forward curve in the lumbar region. It creates problem in standing and walking.
- Kyphosis:** It is a postural deformity in which there is an increase of exaggeration of a backward curve or decrease of a forward curve.
- Scoliosis:** Postural adaptation of the spine in lateral position is called scoliosis. It means bending, twisting or rotating.

Q 4. Write a short note on female Athletes Triad. (CBSE 2024)

Or What is the meaning of female athletes Triad? Explain any two in brief. (CBSE SQP 2022-23)

Ans. Female Athletes Triad: It is a combination of three related conditions: **Amenorrhea**, **Osteoporosis** and **Eating Disorders**. It is observed that females who take part in intense sports activities are at risk of female athlete triad.

- Osteoporosis:** It is a skeletal disorder characterised by weakening of bones due to reduced bone density, leading to increase in fracture risk. Low estrogen levels and low calcium and vitamin D intake can lead to osteoporosis.
- Amenorrhea:** It is a menstrual disorder in females where girls of 16 years and above either never began menstruating or there is absence of menstrual period for 3 months or more in a woman with a history of normal menstruation. Intensive training, hormonal changes and insufficient intake of calories enhance the chances of amenorrhea.

Q 5. Write in brief about Osteoporosis. What are the causes of Osteoporosis in women? (CBSE 2017, 19)

Ans. Osteoporosis is a skeletal disorder characterised by weakening of bones leading to bone fragility and increase in fracture risk.

Causes of Osteoporosis:

- Low Calcium and Vitamin D Intake:** Low calcium intake contributes to diminished bone density and bone loss, so developing osteoporosis. In addition to calcium, vitamin D should also be included in diet because it is essential for absorbing calcium in our body.
- Amenorrhea:** Women suffering from amenorrhea for more than six months are likely to face osteoporosis because secretion of estrogen is decreased in this condition. Estrogen is necessary for the absorption of calcium in our body.

Q 6. Write briefly about the prevention and management of 'Anorexia'. (CBSE 2019)

Ans. Anorexia can be prevented by:

- (i) encouraging people to inculcate a positive self-esteem and body image.
- (ii) making a healthy approach towards eating nutritious food and exercising habits.
- (iii) making students aware about body shape and size, and must not consider 'being thin' as perfect bodies.
- (iv) staying away from people who induce anorexia.

Management of Anorexia can be accomplished by:

- (i) **Restoring Healthy Weight:** An affected person cannot recover from anorexia without restoring appropriate body weight.
- (ii) **Psychotherapy:** A psychologist can play an effective role in helping the affected person to return to a healthy weight.



Long Answer Type Questions ↓

Q 1. What are the causes of 'Flat foot' and 'Knock Knees'? Suggest physical activities as corrective measures for these deformities. (CBSE 2017,19)

Ans. Causes of Flat foot:

- (i) The main cause of flat foot is weak muscles.
- (ii) Use of poor quality footwear and carrying heavy weight for a longer period are also the causes of flat foot.

Causes of Knock Knee:

- (i) Lack of balanced diet, especially vitamin D and calcium.
- (ii) It may also be caused due to flat foot and carrying heavy weight at early age.

Corrective measures for Flat foot:

- (i) Walking on heels and toes.
- (ii) Walking on inner and outer side of feet.
- (iii) Perform Vajrasana and Tadasana regularly.

Corrective measures for Knock Knee:

- (i) Perform Padmasana and Gomukhasana regularly.
- (ii) Horse-riding to be done regularly, as it is one of the best exercise for correcting this deformity.
- (iii) Keep a pillow between the knees and stand erect for some time.



TiP

The students must prepare about the causes and corrective measures of various postural deformities efficiently.

Q 2. Suggest exercises as corrective measures for Kyphosis and Bow legs.

Ans. Corrective Measures for Kyphosis:

- (i) Perform Dhanurasana regularly.
- (ii) Bend your head backward in standing position.
- (iii) Foam roll is used to release tension in the thoracic region.
- (iv) Hold arms at the shoulder level and bend your elbows.

Corrective Measures for Bow Legs:

- (i) Balanced diet should be taken.
- (ii) Vitamin D should be taken in required amount.
- (iii) It can be corrected by walking on the inner edge of the feet.
- (iv) One should walk by bending the toes inward.
- (v) Use of braces and modified shoes.

Q 3. Discuss in detail about 'Female Athletes Triad'.

(CBSE 2016)

Ans. The 'Female Athlete Triad' is a syndrome of three related conditions seen in female athletes who aren't meeting their energy requirement, which ultimately leaves them undernourished.

The three components of female athlete triad include:

- (i) **Osteoporosis:** It is a skeletal disorder characterised by weakening of bones due to reduced bone density, leading to increase in fracture risk. Low estrogen levels and low calcium and vitamin D intake can lead to osteoporosis.
- (ii) **Amenorrhea:** It is a menstrual disorder in females where girls of 16 years and above either never began menstruating or there is absence of menstrual period for 3 months or more in a woman with a history of normal menstruation. Intensive training, hormonal changes and insufficient intake of calories enhance the chances of amenorrhea.
- (iii) **Eating Disorders:** It refers to the habit of over-eating or under-eating of food by an individual due to mental stress or illness, causing disturbances in the regular diet schedule of the individual. There are following types of eating disorders:

(a) Anorexia Nervosa: It is an eating disorder characterised by self-starvation and excessive weight loss. They consider themselves overweight even though they are underweight and also vomit or use laxatives to reduce weight.

(b) Bulimia Nervosa: It is an eating disorder characterised by eating a large amount of food in a short period of time, followed by self-induced vomiting or other forms of purging in order not to gain weight.



Chapter Test

Multiple Choice Questions

- Q 1. What is the cause of Osteoporosis in women?**
 a. High blood pressure
 b. Menarche
 c. Excessive exercise
 d. Lack of calcium and vitamin D
- Q 2. If the menstruation cycle is shorter than 21 days, the condition is caused:**
 a. Oligomenorrhea b. Polymenorrhea
 c. Metrorrhagia d. Dysmenorrhea
- Q 3. According to W.H.O. (World Health Organisation) recommendations, children of should be engaged in physical activities for 180 minutes and should have 10-13 hours of good quality sleep per day. (CBSE 2024)**
 a. less than 1 year b. 1 - 2 years
 c. 3 - 4 years d. 5 - 17 years
- Q 4. Which of the following is not for knock knee?**
 a. Regular horse riding
 b. Keeping a pillow between the knees and stand erect for some time
 c. Performing Bhujangasana and Chakrasana regularly
 d. Using walking calipers
- Q 5. Which of the following deformity can be treated by doing the exercise given in the below picture?**



- a. Knock knee b. Bow legs
 c. Kyphosis d. Flat foot

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

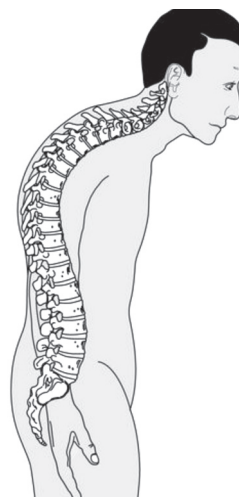
- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 c. Assertion (A) is true, but Reason (R) is false.
 d. Assertion (A) is false, but Reason (R) is true.

- Q 6. Assertion (A): Bow legs is opposite to knock knee position.**
Reason (R): Bow legs can be a sign of an underlying disease, such as rickets or arthritis.
- Q 7. Assertion (A): Menarche is the process in which female reproduction system matures and the body prepares itself for potential pregnancy.**
Reason (R): The time when sexual maturity is reached is called Menopause.

Case Study Based Question

- Q 8. Read the following passage and answer the following questions.**

Sheethal spent her weekend checking the health status of all the security guards of her huge gated community as a part of project work assigned by PE teachers. She found out that more than half of them have shown a significant deformity in the upper part of their vertebral column.



- (i) The term used to define this deformity is**

- a. Lordosis b. Scoliosis
 c. Both a. and b. d. Kyphosis

- (ii) This deformity is mainly caused due to**

- a. Osteoporosis
 b. Malnutrition
 c. Unstable furniture
 d. All of the above

- (iii) The asana/s which helps in rectifying such condition/ is/are**

- a. Chakrasana
 b. Bhujangasana
 c. Both a. and b.
 d. Halasana

Very Short Answer Type Questions

- Q 9. Define Postmenopausal bleeding.
- Q 10. Suggest two exercises for correcting Round shoulders.

Short Answer Type-I Questions

- Q 11. Write a short note on Menarche.
- Q 12. Explain the causes and remedies of Bow legs.
- Q 13. Briefly explain the types of eating disorders.



Scan the QR Code

To get Answers of this Chapter Test

Short Answer Type-II Questions

- Q 14. What do you mean by Flat foot? Write down the causes and precautions to avoid it.
- Q 15. Explain various types of disorders related to menstrual dysfunction.
- Q 16. Write three corrective measures taken to correct Scoliosis.

Long Answer Type Questions

- Q 17. Explain any five postural deformities with their corrective measures.
- Q 18. What is 'Female Athletes Triad' ? Explain.



Yoga as Preventive Measure for Lifestyle Disease

FASTRACK REVISION

► **Asana:** The term 'asana' means sitting in a particular posture, which is comfortable and which could be maintained steadily for long time. Asana gives stability and comfort both at physical and mental level.

► **Asanas as Preventive Measures:** Asanas can be used as preventive measures as they provide following physiological benefits which ultimately help in avoiding various lifestyle diseases such as obesity, diabetes, etc. The following are the benefits of asanas for prevention of diseases:

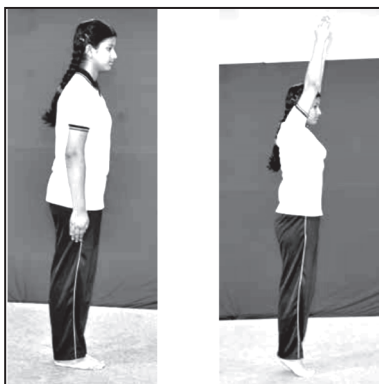
- Joints and muscles become strong.
- Respiratory organs become efficient.
- The nervous system improves.
- Immune system is strengthened.
- Efficiency of digestive system increases.

► **Obesity:** Obesity is that condition of the body in which the amount of fat increases at extreme level. It is condition in which the BMI is greater than 30. Some of the asanas practised to control obesity are as follows:

► **Tadasana (Palm Tree Posture):** Tada in Sanskrit means 'palm tree'. This is called Tadasana because in this asana the student stands straight like a palm tree. Hence, it has been named Tadasana.

► **Procedure**

- Stand erect, feet together, hands by the side of the thighs. Keep the back straight and gaze in front.
- Stretch the arms upward, keep them straight and parallel with each other in vertical position, with the palms facing inward.
- Slowly raise the heels as much as you can and stand on toes. Stretch body up as much as possible. Maintain the position for 5-10 seconds.
- To come back, bring the heels on the floor first. Slowly bring down the hands by the side of the thighs and relax.



► **Benefits**

- It gives vertical stretch to whole body muscles.
- It strengthens thighs, knees and ankles.
- It helps to increase height of the children.
- This posture plays an important role in increasing one's self-awareness.
- It helps to remove laziness and lethargy.

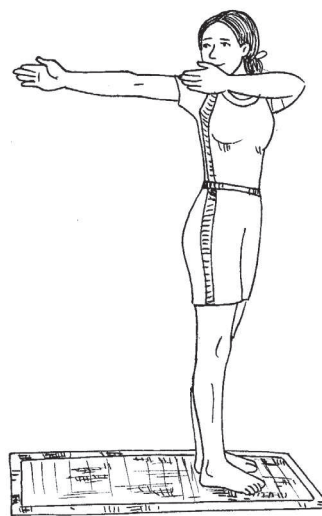
► **Contraindication**

- Those having complaints of vertigo should not practice this asana.

► **Katichakrasana (Lumber Twist Posture):** Kati in Sanskrit means 'waist' and chakra means 'wheel'. In this asana, the waist is moved towards right side and left side. The movements of the waist along with arms look like a wheel. Hence, it is called Katichakrasana.

► **Procedure**

- Stand erect on the ground with feet 12 inches apart.
- Now, keep the arms out-stretched in front of the body with palms facing each other at the shoulder level.



- While inhaling, swing the arms slowly towards right side of your body.
- Twist your body from the waist to the right and take your arms back as far as possible.
- While swinging towards right side, keep the right arm straight and left arm bent.
- Repeat the practice twisting toward left side as well.

➤ **Benefits**

- It helps in making slim.
- It relieves constipation and makes the lumber region strong.
- It is good for respiratory ailments. Tuberculosis of lungs can be prevented.
- It strengthens shoulders, neck, arms, abdomen, back and thighs.

➤ **Contraindication**

- Do not practice it if suffering from chronic spinal pain or injury.

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

➤ **Procedure**

- Lie supine with legs together and hands kept by the sides of the body, palms resting on the floor.
- Inhaling, fold both the legs at the knee over the belly.
- Hold the knees with the interlocked arms and press them on the belly.
- While exhaling, raise the head and let the chin touch the knees.
- Bring the head down cautiously.
- Release the interlocked arms and bring them on the floor.
- Exhaling, unfold the legs back on the floor.
- Bring legs together, hands by the side of the body, palms placed on floor and relax.

➤ **Benefits**

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

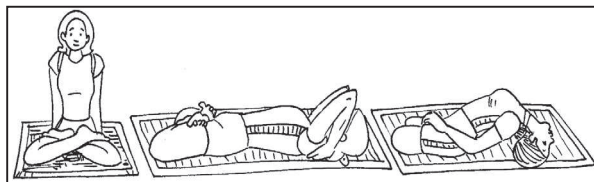
➤ **Contraindication**

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

- **Matsyasana (Fish Posture):** In Sanskrit, Matsya means 'fish'. In final posture of this asana, the body takes shape of a floating fish. The folded legs resemble the tail of a fish, hence, it is called Matsyasana. This asana should be performed under the supervision of an expert.

➤ **Procedure**

- Sit in Padmasana.
- Lie on the back with support of the elbows.
- Lift the neck and chest slightly up; the back should be arched and raised from the ground.
- Bend the head backward and place the crown of the head on floor.
- Make hooks with the index fingers of both hands; and clasp the big toes with hooks of opposite hands.



- Maintain the position for 10-15 seconds or as long as comfortable.
- To come back, release the toes; place hands on the ground; raise head up with the support of hands. Sit with the help of the elbows.

➤ **Benefits**

- It improves blood supply to the brain.
- It regulates the functioning of thyroid gland and improves immune system.
- It alleviates backache and cervical spondylitis.
- It divert the blood from the legs to the pelvic region and helps to increase the tone of the abdominal muscles.
- It is beneficial in lungs and respiratory disorders.

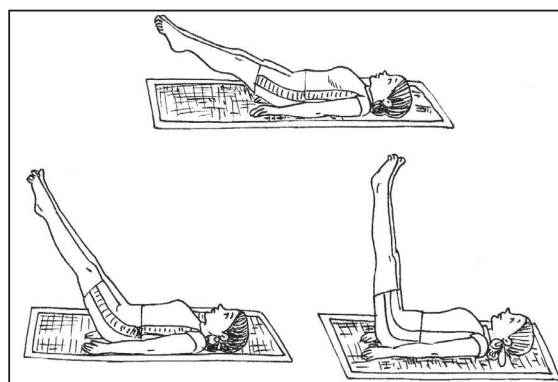
➤ **Contraindication**

- Avoid practising this asana in case of vertigo, cardiovascular diseases, hernia, arthritis, knee and ankle and spinal problems.

- **Halasana (Plough Posture):** Hala in Sanskrit and Hindi means 'plough'. In the final position of this asana, the body resembles the shape of a plough. As plough makes the hard ground soft, in this asana, the veins are stretched which reduces the stiffness of the body.

➤ **Procedure**

- Lie in supine position, legs together and arms beside the body.
- Keeping the knees straight, raise the legs up to 30°.
- Raise the legs further up to 60°.



- Raise the legs still further up to 90°, keeping them vertical and straight.
- Pressing the arms raise the trunk by lowering the legs over the head, the toes touching the ground. Push the legs a little beyond the head.
- Keep the arm straight on floor. Maintain the position for 5-10 seconds.
- To come back, remove the arms, slowly lower the back and buttocks to the ground, bring the legs to 90° position. Lower the legs to starting position.

► Benefits

- It gives good exercise to the thyroid gland/parathyroid gland.
- It gives a good stretch to the spinal column and back deep muscles, making the spine strong and healthy.
- It helps in increasing the height of children.
- It alleviates problem of dyspepsia and constipation is removed.

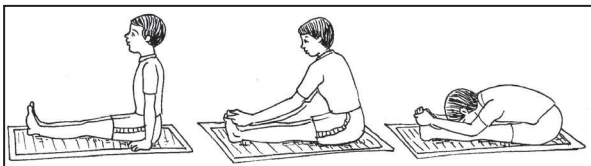
► Contraindication

- Practice of this asana should be avoided in case of stiffness in spine, cervical spondylitis, hernia, high blood pressure and slipped disc.

- **Paschimottanasana:** Paschimottanasana means stretching the posterior region. In Sanskrit, Pashchima means 'posterior' and uttana means 'stretch-up'. In this posture, posterior muscles of the body get stretched. Hence, it is called Paschimottanasana.

► Procedure

- Sit with the legs extended together.
- Bend the elbows. Make hooks with the index fingers.
- Bend the body forward and catch hold of the toes with the hooks of the fingers.



- Place the head between the arms.
- Keeping a little bend in the elbows and without bending the knees, try to touch the forehead with the knees. Maintain the position for 5-10 seconds.
- Raise the head slowly.
- Release the hold of the toes and keeping the body erect, bring the hooks of the fingers near the chest.
- Place the hands on the respective sides of the body.
- Sit with the legs extended together.

► Benefits

- It gives a good posterior stretch to the spinal column.
- It helps to increase the flexibility of the spinal and abdominal muscles.
- It helps to improve the blood circulation in organs situated in the abdominal region.
- It helps to correct postural deformities.

► Contraindication

- Person suffering from heart diseases, ulcer in abdomen, slipped disc, sciatica should not practise it.

► Ardhamatsyendrasana (Half Spinal Twist):

Ardhamatsyendrasana is a milder version of the Matsyendrasana which is named after Yogi Matsyendranath. Ardha means 'half'. The original Matsyendrasana is difficult to practise, hence its easier version called Ardhamatsyendrasana is generally practised. In Ardhamatsyendrasana, the spine is given the maximum lateral twist.

► Procedure

- Sit on the ground with legs extended in front.
- Bend the knee of the left leg, place left foot close to the right buttock, heel touching the side of hip and the left knee touching the ground.
- Bend the right knee; and place right foot flat on the ground near outside of the left knee. Toes of the right foot should face forward.
- Place left arm over right knee in such a way that it covers outside of the right knee. Hold the right foot or ankle with left hand. The right knee should be close to the left armpit.
- Bend the right arm from the elbow and take it behind and encircle the waist as much as possible as if trying to touch the navel.
- Turn the head towards right side. Try to look behind over the shoulder.
- Stay in this position for 5-10 seconds.
- To come back, bring your head to the centre. Bring the right arm in the front. Similarly, bring the left arm, right leg and left leg in the starting position. Repeat it on the other side.



► Benefits

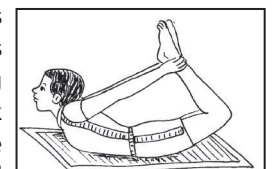
- It stimulates liver, spleen and pancreas and helps to regulate their functioning.
- It benefits intestines also.
- It is beneficial for free movements of the shoulders.
- It rejuvenates the nerves around the navel.
- It is useful for persons suffering from diabetes mellitus and lower back pain.
- It strengthens the spinal column and muscles of the back.

► Contraindication

- Person suffering from peptic ulcer, hernia and severe arthritis should avoid this practice. Person with sciatica or slipped disc should be cautious and seek expert advice.

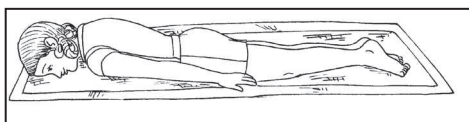
► Dhanurasana (Bow Posture)

- In Sanskrit Dhanur means 'bow'. This is called the bow posture because in this posture the body resembles a bow with its string attached to it. The trunk and the thighs represent the bow, whereas the hands and legs take the place of the string.

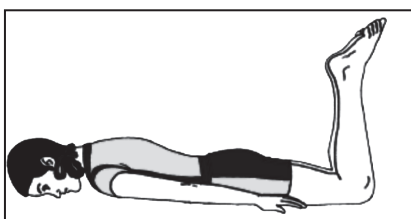


➤ **Procedure**

- Lie down in prone position.



- Exhaling, slowly bend the legs backwards at the knees.



- Hold the toes or ankles firmly with hands as per your capacity.
- Inhaling, raise thighs, head and chest as high as possible. Stretch and bring the toes or ankles towards head. Look upward, maintain the position comfortably for 5-10 seconds.
- To come back, release the arms and keep them beside the body. Straighten the legs. Bring the legs, head, shoulders and chest slowly on the floor and relax in starting position.

➤ **Benefits**

- Dhanurasana is a good exercise for joint of the shoulders, knees, ankles and entire backbone.
- It is beneficial for management of diabetes mellitus as it massages the liver and pancreas.
- It helps to reduce excess fat around the belly, waist and hips.
- It strengthens the ligaments, muscles and nerves in the back, arms, legs, shoulders, neck and abdomen.
- It stimulates and regulates thyroid and adrenal glands.
- It helps in reducing backache pain.
- It is good for the conditions of hunched back and drooping shoulders.

➤ **Contraindication**

- Person with high blood pressure, hernia, peptic ulcer, appendicitis, colitis slipped disc, lumbar spondylitis should not practice this asana.

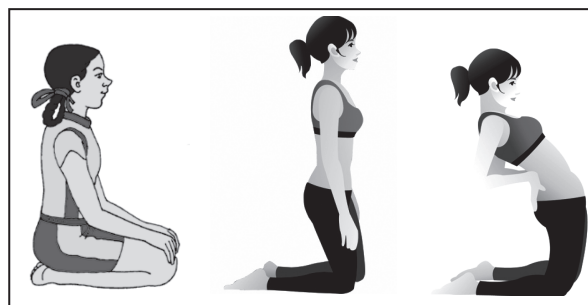
➤ **Ushtrasana (Camel Posture):** In Sanskrit, Ushtra means 'camel'. In the final position of this asana, the body resembles a camel. Hence, this is called Ushtrasana. This asana should be practised after Sarvangasana.

➤ **Procedure**

- Sit in Vajrasana.
- Stand on the knees with toes pointing backward and resting on the floor.
- Inhaling, bend backward giving the spine a backward bend.
- Place the palms on the respective heels or soles.
- Keep the head tilted backwards.
- Maintain the posture comfortably for 5-10 seconds.



- To come back, release the hands one by one, bring the head, neck and chest back to the normal position and slowly come to the Vajrasana.

➤ **Benefits**

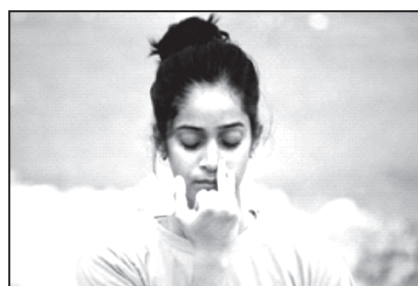
- It is beneficial for people with drooping shoulders and hunched back.
- It helps to regulate the functions of the endocrine system especially the thyroid glands.
- It helps to tone-up the entire digestive system as well as excretory system.
- It makes the spine flexible; loosens up the vertebrae and stimulate spinal nerves.

➤ **Contraindication**

- Avoid practising this asana in hernia, abdominal complaints, severe arthritis and vertigo.

➤ **Surya Bhedhana Pranayama (Right Nostril Breathing):**

'Surya' means 'Sun', 'Bhedhana' means 'Piercing' or 'Entering'. While Pranayama comprises 'Prana' is the 'Life Force' and 'Yama' is the 'Control'. It translates to a breathing exercise that let Prana enter (Bhedhana) through the right nostril in the form of sun-energy (Surya) in the body.

➤ **Procedure**

- Sit comfortably on the mat in any cross-legged postures.
- Make Mrigi mudra (fold your right-hand's index finger and middle finger down towards palm while keep ring and little finger as in the natural position.) with your right hand and bring it close to the left nostril to shut it from ring finger and little finger. Make Gyan mudra with your left hand.
- Begin Surya Bhedhana Pranayama with taking a deep breath in from the right nostril (while left nostril kept closed).
- After inhaling through the right nostril, close your right nostril with your right thumb and hold the breath in for a while.
- Release your ring and little finger from left nostril (while kept shut your right nostril with thumb). Exhale out completely the held air from the left nostril.

- One Round of Surya Bhedhana Pranayama – Step 3 (Inhale right) + Step 4 (Hold) + Step 5 (Exhale left).
- Repeat this act for 5 to 10 times.

➤ Benefits

- Surya Bhedhana increases the efficiency of the digestive system.
- Replenishes the oxygen supply in the blood.
- It cleans the frontal sinuses.
- It provides relief from anxiety, depression and mental illness.
- It helps in treating problems related to low blood pressure.

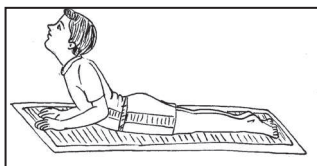
➤ Contraindication

- Surya Bhedhana Pranayama is contraindicated in epilepsy, heart disease, anxiety, and high blood pressure. Avoid it at night as it may lead to difficulty in falling asleep.

➤ Diabetes

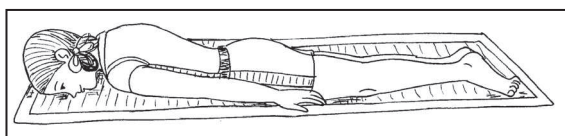
- Diabetes is such a disease that causes sugar to build up in our blood instead of being used by the cells in our bodies. In fact, our body uses a hormone (Insulin) to control the level of sugar in our blood. There are two types of diabetes—Type-I and Type-II. In Type-I diabetes, the pancreas gland does not produce insulin. In Type-II diabetes, the body does not produce sufficient amount of insulin hormone or hormone is produced but it is not used properly. Some of the asanas to control diabetes are as follows:

- **Bhujangasana (Cobra Posture):** Bhujangasana comprises of two words — bhujanga and asana. In Sanskrit, bhujanga means cobra (snake) and asana means posture. In the final position of this asana, the body resembles the shape of a hooded snake, hence the posture is called Bhujangasana.



➤ Procedure

- Lie prone on the ground with forehead touching the floor; legs together, hands by the side of thighs.



- Fold the hands at elbows and place the palms by the side of the shoulders, thumbs under armpits, with tip of the fingers not crossing the shoulder line.
- Inhaling, slowly raise the head, neck and shoulders. Shoulders should be shrugged backwards.
- Raise the trunk up to the navel region. Raise the chin as high as possible.
- Eyes should be kept gazing upward.
- Maintain the position for 5-10 seconds or as long as comfortable.
- To come back, bring down the upper part of navel region, chest, shoulders, chin and head.

- Place the forehead on the ground and arms along the body, hands by sides of the thighs. Relax.

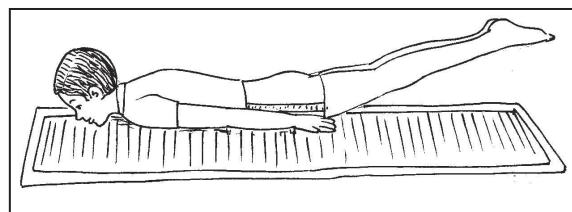
➤ Benefits

- It affects the spinal column and makes it flexible.
- It solves digestive complaints.
- It increases intra-abdominal pressure benefitting the internal organs especially the liver and kidneys.
- It relaxes both body and mind.

➤ Contraindication

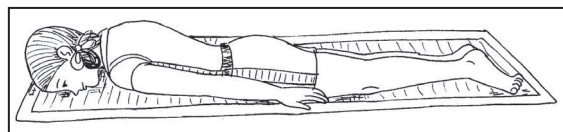
- Those suffering from hernia, peptic ulcer, intestinal tuberculosis and acute abdominal pain should avoid this practice.

- **Shalabhasana (Locust Posture):** This asana is named after the locust. In Sanskrit Shalabha refers to 'locust' and asana means 'posture'. In the final posture of this asana, body resembles a locust.



➤ Procedure

- Lie flat on the stomach, legs together, hands by the side of the thighs, palms facing downward and heels together. Chest and forehead should be placed on the ground.



- Place both palms under the thighs.
- Stretch the chin slightly forward and keep it on the floor.
- Inhaling and pressing the palms on the ground, raise both the legs upward as high as possible.
- Maintain the position with normal breathing for few seconds.
- To come back, slowly bring down the legs to the floor. Take out the hands from the thighs. Lie flat on the stomach, legs together, hands by the side of the thighs and palms facing downward.

➤ Benefits

- Shalabhasana stimulates the autonomic nervous system especially the parasympathetic system.
- It strengthens the lower back and pelvic organs.
- It gives relief in the conditions of mild sciatica, backache and non-serious slip disc.
- It is a good exercise for the legs, thighs, hips, buttocks, the lower abdomen, diaphragm and wrists.
- It improves blood circulation in the pelvic region.
- It helps to reduce excessive fat formed around the knees, the thighs, the waist and the abdomen and thereby improve physical appearance and positive body image.

- It helps to regulate the functioning of liver.
- It is beneficial to increase elasticity and flexibility of spine.

➤ **Contraindication**

- People suffering from high blood pressure, asthma and cardiac diseases, weak lungs, hernia, peptic ulcers and intestinal tuberculosis should avoid practising this asana.

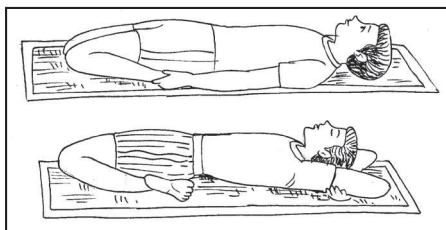
➤ **Supta Vajrasana:** Supta Vajrasana means 'lying backward' in Vajrasana. This asana is the extension of Vajrasana.

➤ **Procedure**

- Sit in Vajrasana.



- Slowly bend backwards taking the support of the elbows.
- Lie on the back in Vajrasana. Keep the hands on thighs or take the arms behind and hold the elbow/arm with the hand of another arm.



- Place your hands by the side of your body. Come to the Vajrasana with the support of elbows and arms.

➤ **Benefits**

- It stretches abdominal muscles.
- It makes the back flexible.
- It reduces backache.
- It is useful for high blood pressure.
- It gives relief in constipation.

➤ **Contraindication**

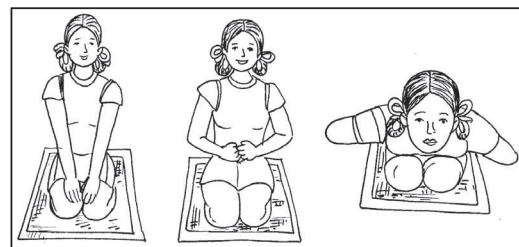
- Person suffering from knee complaints, slipped disc, sciatica and pain in the hip should not practise this asana.

➤ **Mandukasana (Frog Posture):** Manduka, a Sanskrit word means 'frog'. In this asana, the final posture resembles the shape of a frog. Hence, it is named Mandukasana.

➤ **Procedure**

- Sit in Vajrasana.
- Make the fists with thumbs inside and put them near navel and press the navel area.
- Exhale slowly, lean forward from the waist, lower the chest, so that it rests on the thighs.
- Keep the head and neck raised and gaze in front.
- Maintain the position comfortably for 5-10 seconds.

- To release the posture, come back to the sitting position by raising the trunk; remove your fists from the navel area and sit in Vajrasana.



➤ **Benefits**

- This asana is beneficial for the people having heavy bellies, thighs or hips.
- It eliminates gases from the abdomen.
- It benefits people suffering from constipation, diabetes and digestive disorders.

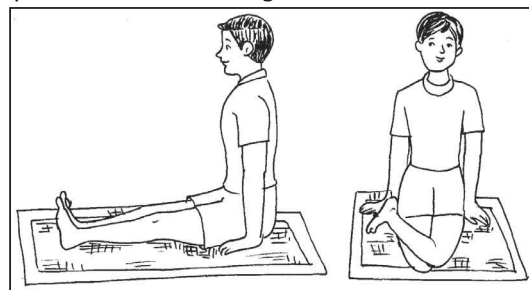
➤ **Contraindication**

- Person with slipped disc, lumber spondylitis or any other major disease of the spine should not practise this asana.

➤ **Gomukhasana:** Go means 'cow' and mukha means 'mouth' or 'face'. In this asana, the position of legs look like the face of cow, hence, it is called Gomukhasana.

➤ **Procedure**

- Sit in long sitting posture.
- Bend the right leg at the knee, bring the right foot to the left side and place it close to the left buttock.
- Fold the left leg in the knee. Bring the left foot to the right side and place it close to the right buttock.
- Take the left arm over the left shoulder and right arm behind the back. Clasp the fingers of both hands at the back.
- Sit in this position for 10-15 seconds.
- Release the fingers. Bring the arms on the side of the body.
- Release the left leg and extend it.
- Release the right leg, extend it and come to the starting position. Repeat it by changing the position of arms and legs.



➤ **Benefits**

- It increases concentration and induces inner peace.
- It is helpful in correcting postural deformities like drooping shoulders.
- It is beneficial for improving lung capacities.
- It is useful in arthritis.
- It relieves backache, sciatica and general stiffness in shoulders and neck.

➤ Contraindication

- Those who are suffering from bleeding piles should not practise this asana.

➤ **Yogamudrasana:** Yogamudrasana is a further extension of Padmasana.

➤ Procedure

- Sitting in Padmasana, take both arms behind the back. Hold the right wrist with palm of the left hand.



- Exhaling, bend forward and bring forehead or chin to the floor. You may stay in the final position inhaling and exhaling normally. Maintain the position for 5-10 seconds.
- Raise your body, release the hands and inhaling come to the starting position.

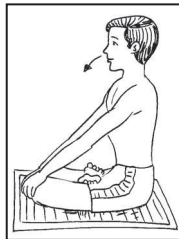
➤ Benefits

- It stretches spine and makes it flexible.
- It improves digestion.
- It helps in improving concentration.
- It tones spinal nerves.

➤ Contraindication

- Persons with heart problems and back problems should not practise this asana.

➤ **Kapalabhati (Frontal Brain Cleansing):** Kapalabhati is considered a Kriya (cleansing practice) which cleanses the frontal brain. In Sanskrit, Kapala means 'skull' and bhati means 'shine'. Kapalabhati helps to improve the functions of the organs located in the skull.



➤ Procedure

- Sit straight in any meditative pose like Padmasana or Vajrasana.
- Take deep breath through the nostrils.
- Exhale forcefully in such a way that the lower abdomen is contracted to expel out the air. Inhale spontaneously and passively without making any efforts. Do not make effort to inhale. Air will enter the body through the passive inhalation. This is one stroke of Kapalabhati. Begin with 20 strokes at a time. This is one round. One can practise one to three rounds in a practical session. Gradually increase the strokes in one round.

➤ Benefits

- It stimulates the nerves in the abdominal region, tones up the abdominal muscles and improves digestion.
- Kapalabhati expels more carbon-dioxide and other waste gases from the lungs than the normal breathing.
- It improves heart and lungs capacity and therefore good for bronchial asthma.
- It improves blood circulation throughout the body.

- It energises the body and removes lethargy.

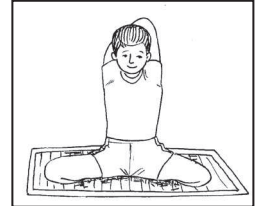
➤ Contraindication

- Those suffering from cardio-vascular problems, high blood pressure, hernia, vertigo and gastric ulcer complaints, should avoid practising Kapalabhati.

➤ **Asthma:** Asthma is a disease of lungs in which our airways narrow and swell and produce extra mucus. This can make breathing difficult and trigger coughing, wheezing and shortness of breath. Asthma can be prevented as well as cured by performing the following asanas regularly.

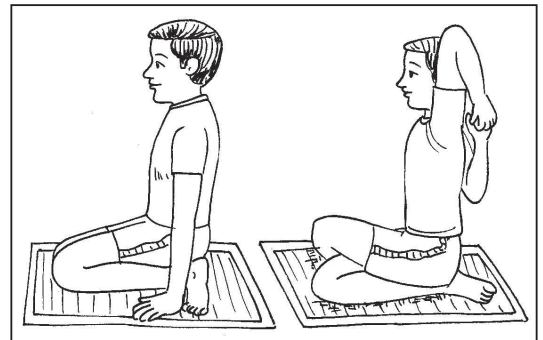
➤ Uttana mandukasana (Stretched up Frog Posture):

Uttana means 'upright' or 'stretched up' and manduka means 'frog'. In final position of this asana, the body looks like a stretched up or upright frog, hence, it is called Uttana-mandukasana.



➤ Procedure

- Sit in Vajrasana.
- Keep both the knees wide apart to such an extent that toes of both the feet touch each other. The head, neck and trunk are kept erect. The eyes are either closed or kept open.
- Raise the arms above the head, fold them and take them behind.



- Place the right palm below left shoulder and left palm below right shoulder.
- Maintain this position comfortably for 5-10 seconds.
- To come back, remove the arms one by one, bring the knees together and come to Vajrasana.

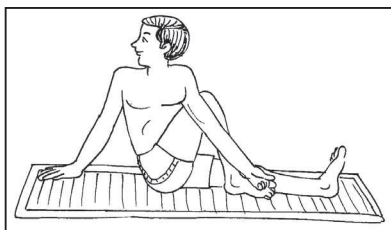
➤ Benefits

- It helps in reducing backache.
- It improves the blood circulation in the chest and abdomen.
- It tones the abdominal and shoulder muscles.
- It improves the functioning of lungs by improving the movements of diaphragm.

➤ Contraindication

- Those suffering from chronic knee pain and piles should avoid this asana.

➤ **Vakrasana (Half Spinal Twist Pose):** Vakrasana comes from a combination of two words, Vakra which means twisted and asana which means yoga posture. Earlier, Vakrasana was a simplified form of Ardhamatsyendrasana.



➤ Procedure

- Start in a sitting position with legs stretched out and hands resting on the ground by the side.
- Slightly bend your left leg while keeping the sole of your feet resting on the ground. Keep your right leg straight on the ground.
- Twist your torso towards the left and bring in your right hand over the left leg.
- The right hand should be placed over the left toe or you can hold the left ankle with your right hand. Position the left hand behind to support the body. The neck is in a twisted position, in line with the torso.
- Keep a normal breath in this position and maintain the pose for at least 30 seconds.
- Now, release the pose by slowly releasing the hands. Twist towards your right and assume the normal forwards looking position. Bring the hands to the side of the body, resting on the ground. Lower the left leg and let it rest on the ground.
- Repeat the same steps on the right side as well. Do as many rounds of Vakrasana as comfortable.
- Rest in Shavasana after you practice the yoga twist poses.

➤ Benefits

- Vakrasana benefits the spinal nerves and back nerves.
- The regular practice of Vakrasana benefits in treating back pain, headache and neck pain.
- Vakrasana is one of the best post-yoga poses that reduces the stiffness in the body and increases its flexibility.
- Vakrasana improves the digestion process.
- Massages the abdominal organs and reduces belly fat.

➤ Contraindications

- It is advised not to practice Vakrasana if you are suffering from peptic ulcers, spinal cord injury, extreme back pain and hernia.
- Avoid the practice during sciatica or slipped disc conditions.
- Women should not practice Vakrasana after the first trimester of the pregnancy.

➤ **Anuloma-viloma Pranayama (Alternate Nostril Breathing):** The Anuloma means 'towards' and Viloma means 'reverse'. It is called Anuloma-viloma because alternate nostrils are used for each inhalation and exhalation. One inhales through the left nostril and then exhales through the right nostril, then the order is reversed by inhaling through the right nostril, and exhaling through the left nostril. This pranayama is called Nadi-shodhana

pranayama also, if it is performed with kumbhaka (holding the breath).

➤ Procedure

- Sit in the position of Padmasana or in any other comfortable meditative posture.



- Keep the body erect and place the hands on the respective knees.
- Raise the right hand and place the right thumb on the right nostril and close it.
- Inhale slowly through the left nostril.
- Close the left nostril by the ring finger and the little finger and exhale slowly through the right nostril.
- Again inhale through the right nostril.
- Close the right nostril with thumb and exhale through the left nostril. This is one round of Anuloma-viloma.
- Repeat it 10 times.

➤ Benefits

- It calms down the mind and improves concentration.
- It improves functioning of all cells of the body by providing them sufficient oxygenated blood.
- It purifies the blood.
- It improves blood supply to brain.
- It helps to regulate blood pressure.
- It helps in managing stress by reducing anxiety.
- It is beneficial in many diseases such as asthma, high or low blood pressure, insomnia, chronic pain, endocrine imbalances, heart- problems, hyperactivity, etc.

➤ Contraindication

- In the beginning, retention of breath should be avoided.

➤ Urdhwahastottansana

The name for this asana comes from the Sanskrit *urdhva*, meaning upward, and *hasta*, meaning hands. It is called upward salute or upward hands pose in English.

➤ Procedure

- Stand upright in the overhead-stretch pose with fingers interlocked.
- Breathing in, stretch the hands high, but keep the feet flat on the floor.
- Breathing out, slowly bend to the left/right. Pause for few seconds at the limit of the bend.



- Strengthen up slowly, breathing in.
- Slowly bend to the opposite side (left/right), breath out, hold for few seconds.
- Straighten up slowly, inhaling.

➤ **Benefits**

- The regular practice of this yogasana is helpful in overcoming back pain.
- It is beneficial for spinal health.
- It ensures the betterment of lungs health and gives relief from asthma too.
- This asana is good for the health of toes, feet, ankles, knees, buttocks, etc.
- It helps to reduce sciatica pain drastically.

➤ **Contraindications**

- The asana should be avoided during pregnancy.
- A person suffering from varicose veins should take help of a yoga expert.
- Don't perform during headache.
- During insomnia, a yoga therapist should be consulted before practicing the yoga pose.

- **Hypertension:** High blood pressure, or hypertension is the most common cardiovascular disease, which occurs when our blood pressure increases to unhealthy levels. High blood pressure can lead to many serious health problems, such as heart attack, stroke and kidney disease. Asanas to control high blood pressure are:

- **Uttanapadasana:** In Sanskrit uttana means 'raised' and Pada means 'leg'. In this asana, legs are raised hence the name of the asana is uttanapadasana. This is a traditional posture. It can be practised by raising one leg at a time or by raising both legs simultaneously.

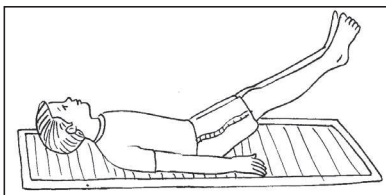
➤ **Procedure**

Ek-Pada Uttanāsana

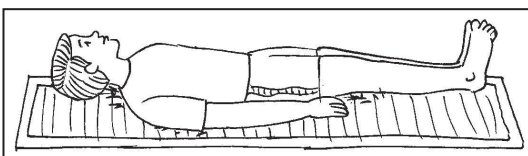
- Lie on back (supine) with legs together, hands by the side of the body, palms placed on floor.
- Inhaling, slowly raise the left leg at 30°, 45° and upto 60° angle and maintain the posture for 5-10 seconds.
- Lower down the leg slowly at 45° and 30° come back on the floor while exhaling. Practise with right leg in a similar way.

➤ **Dvi-Pada Uttanāsana**

- Lie supine with legs together, hands by the side of the body, palms placed on floor.



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



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

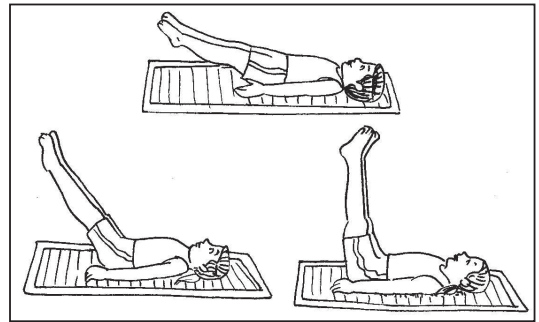
➤ **Benefits**

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

➤ **Contraindication**

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

- **Ardhahalasana (Half Plough Pose):** Ardha means 'half' and hala means 'plough'. It is a preparatory practise of Halasana.



➤ **Procedure**

- Lie in supine position with legs together, hands by the side of the body, palms placed on floor.
- Raise your both legs up stopping at 30°, 45° and 60° angles.
- Further raise and bring the legs up to 90° without bending at knees. Maintain the posture comfortably for 10 seconds.
- Lower down the legs stopping at 60°, 45° and 30° angles.
- Lower down slowly the legs on the floor. Keep hands by the sides of the body.

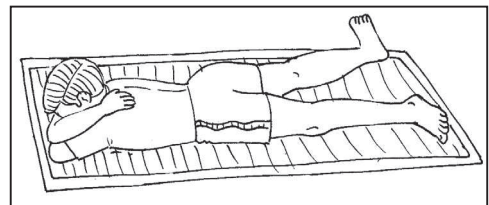
➤ **Benefits**

- It stretches leg muscles and ligaments of leg.
- It improves digestion and removes constipation.
- It helps in bringing about stability in body and mind.

➤ **Contraindication**

- Person having complaints of hernia, slipped disc, high blood pressure and sciatica should avoid the practice of this asana.

- **Makarasana (Crocodile Posture):** The posture is called Makarasana as the body resembles the shape of makara, which in Sanskrit means 'crocodile'. Makarasana is a relaxing asana to body and mind and is very beneficial for reducing stress.



➤ **Procedure**

- Lie down on your stomach.
- Keep the legs at a comfortable distance with heels inside and toes pointing outward.
- Fold arms at elbows, and keep them under the head.

- Place the head on the cushion of the arms, close the eyes and relax.
- To come back bring the arms along the body and legs together.

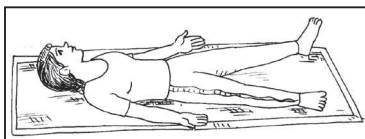
➤ Benefits

- Traditionally, it is a relaxing posture.
- It is beneficial in almost all psychosomatic disorders.
- It is beneficial for respiratory organs, as well as digestive organs.

➤ Contraindication

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

- **Shavasana (Corpse Posture):** In Sanskrit, Shava means a 'dead body'. In this posture the body resembles like a dead body, hence, this asana is called Shavasana. As the name suggests, this asana takes the person away from tension; reduces stress and is relaxing to the body and the mind.



➤ Procedure

- Lie flat in supine position.
- Keep the legs straight with feet at 8-12 inches apart. Keep heels inside and toes outside.
- Keep the palms facing upward slightly away from the body with fingers in a semi-flexed position.
- Take deep breath and simultaneously close the eyes. Feel complete relaxation in your body. Try to relax all parts of your body.
- Breathe normally and concentrate on the flow of breath.
- To come back, open your eyes and come to the starting position.

➤ Benefits

- It removes stress and tension.
- It is useful to reduce high blood pressure.
- It relaxes the body and mind.
- It removes fatigue from the body.
- It is beneficial in the case of insomnia, as it helps to induce sleep.

➤ Contraindication

- Do not practise if suffering from low blood pressure.

- **Nadi-Shodhana Pranayama (Alternate Nostril Breathing Exercise):** Nadis are subtle energy channels in the human body that can get blocked due to various reasons. The Nadi-Shodhana pranayama is a breathing technique that helps to clear these blocked energy channels, thus calming the mind.



➤ Procedure

- Sit comfortably with your spine erect and shoulders relaxed.
- Place your left hand on the left knee, and palms open to the sky or in Chin Mudra (thumb and index finger gently touching at the tips).
- Place the tip of the index finger and middle finger of the right hand in between the eyebrows, the ring finger and little finger on the left nostril, and the thumb on the right nostril.
- Press your thumb down on the right nostril and breathe out gently through the left nostril.
- Now breathe in from the left nostril and then press the left nostril gently with the ring finger and little finger. Removing the right thumb from the right nostril, breathe out from the right.
- Breathe in from the right nostril and exhale from the left. You have now completed one round of Nadi-Shodhana pranayama.
- Complete 9 such rounds by alternately breathing through both the nostrils.

➤ Benefits

- Excellent breathing technique to calm and center the mind.
- High blood pressure/hypertension is also overcome by this asana.
- This pranayama is beneficial in removing constipation or acidity.
- Nadi-shodhana Pranayama is very beneficial for relieving anxiety and stress of the mind.

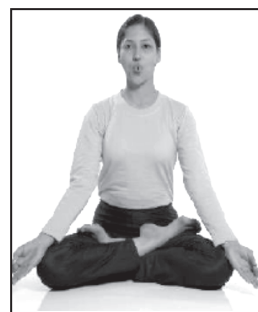
➤ Contraindications

- Nadi-shodhana should not be practiced while suffering from cold, flu or fever.
- Patients with sinus should avoid practicing Nadi-shodhana pranayama while they experience pain or inflammation in the nasal or throat region.

- **Sheetali Pranayama:** Sheetali means 'cooling'. Sheetali pranayama cools the body and mind, hence the name is sheetali pranayama.

➤ Procedure

- Sit in Padmasana or any other meditative posture.
- Keep the hands in jnana mudra.
- Open the mouth. Extend the tongue and bring it outside the mouth as far as possible.



- Roll the tongue from the sides to make it like a tube. The sides of the tongue should be curled up.
- Inhaling draw the air from the curled tongue and fill the lungs with air to the maximum.

- Draw the tongue inside and close the mouth.
 - Exhale through the nose making a sound similar to the rushing wind.
- (This is one round of Sheetali Pranayama. Practise it 3-5 times).

➤ Benefits

- It cools the body and tranquilises the mind.
- It quenches thirst and improves digestion.
- It enhances endurance to short deprivation of water.
- It is beneficial in the case of high blood pressure and also in low fever.
- It is beneficial for skin and eyes also.

➤ Contraindication

- Persons suffering from low blood pressure, asthma, bronchitis and constipation should avoid practising this asana. It should not be practised in cold climate also.

➤ Ardha Chakrasana (Half Wheel Pose)



➤ Procedure

- Stand straight with your feet together and arms alongside the body.
- Hold your lower back with your hands by bending the elbows.
- With slow inhalation, bend your head backwards without bending your knees.
- Remain in the pose for a while.
- Exhale and come to the original position.

➤ Benefits

- Ardha Chakrasana stimulates the abdominal organs and aids in digestion.
- The pose reduces flab in the waist and thighs.
- It helps to alleviate upper back pain. When you do Ardha Chakrasana, your lung capacity improves and respiratory disorders are cured.
- The pose relieves stress in the neck and shoulders.
- It tones the lower back muscle and improves flexibility of the back.
- It improves heart functions and regulates blood pressure.

➤ Contraindications

- Those with serious hip or spinal problems as well as those with high blood pressure and brain ailments should avoid this asana.
- It is best avoided by those with peptic or duodenal ulcers and hernia.

➤ Bhadrasana

Bhadrasana means Gracious Yoga, it consists of two words- Bhadra and Asana. Bhadra is a Sanskrit word, which means Auspicious or Gracious, while asana indicates Yoga pose.

➤ Procedure



- Sit on the mat with legs fully stretched forward.
- Bring the feet, with the toes pointing outward, close to the generative organ, the heels touching the perineum very closely.
- If required, clasp the feet to bring the heels as close to the body as possible.
- Once this position is secured, place the hands on the respective knees pressing them down.
- Keep the neck straight, upper body (chest) forward, stomach held in normal contour, focus eyes at one point straight ahead.

➤ Benefits

- Helps to loosen the joints by flexing and stretching the tendons. The muscles of the pelvis, knees and ankles become more supple.
- Relieves tension from the spinal region.
- Provides relief in cases of sciatica, varicose veins and menstrual disorders.
- Prevents Arthritis
- Improves posture

➤ Contraindication

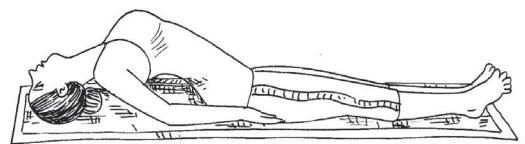
- Although beneficial for prevention from arthritis, practitioners with serious arthritis should consult yoga expert before practising this asana.

➤ Sarala Matsyasana

The word Sarala means easy and Matsya means fish.

➤ Procedure

- Lie flat on the back.
- With the support of your hands keep the top of your head on the mat.
- Neck, upper back and shoulders will be lifted from the ground.
- Relax your hands at the side of your body.
- Breathe normally and keep your toes stretched out.
- Hold the position for 30 seconds, then relax.



➤ Benefits

- It improves digestive system.
- Helps to cure irritable bowel syndrome.
- Helps to get rid of abdominal-related issues.

➤ Contraindication

- People with cervical spondylitis and frozen shoulder should avoid practicing this asana.

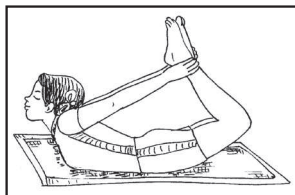


Practice Exercise



Multiple Choice Questions ↓

Q 1. Identify the asana: (CBSE SQP 2022-23)



- a. Paschimottasana
- b. Halasana
- c. Vajrasana
- d. Dhanurasana

Q 2. Which asana is helpful in increasing height? (CBSE SQP 2022-23)

- a. Sukhasana
- b. Tadasana
- c. Bhujangasana
- d. Vajrasana

Q 3. Which of the following pranayama is helpful to reduce obesity? (CBSE 2024)

- a. Kapalabhati Pranayama
- b. Anuloma-viloma Pranayama
- c. Surya Bhedhana Pranayama
- d. Sheetali Pranayama

Q 4. Identify the asana: (CBSE 2023)



- a. Bhujangasana
- b. Halasana
- c. Vajrasana
- d. Dhanurasana

Q 5. Which of the following asana is not used to cure Asthma? (CBSE 2023)

- a. Tadasana
- b. Dhanurasana
- c. Parvatasana
- d. Bhujangasana

Q 6. Identify the asana shown in the picture given below and choose the correct option from the following: (CBSE 2024)



- a. Bhujangasana
- b. Katichakrasana
- c. Pawanmuktasana
- d. Shalabhasana

Q 7. Identify the asana: (CBSE SQP 2023-24)



- a. Pawanmuktasana
- b. Sukhasana
- c. Chakrasana
- d. Gomukhasana

Q 8. Which gland is associated with Diabetes?

(CBSE 2023-24)

- a. Endocrine glands
- b. Pituitary
- c. Pancreas
- d. Hypothalamus

Q 9. Katichakrasana is used to cure:

- a. diabetes
- b. hypertension
- c. Both a. and b.
- d. asthma

Q 10. The disease of lung where airways are blocked or narrowed is:

- a. diabetes
- b. hypertension
- c. asthma
- d. back pain

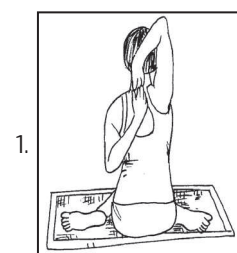
Q 11. Which of these is not a symptom of Asthma?

- a. Weight loss
- b. Wheezing
- c. Coughing
- d. Shortness of breath

Q 12. Gomukhasana, Vakrasana and Matsyasana are helpful in curing which disease?

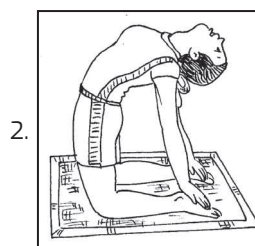
- a. Diabetes
- b. Back pain
- c. Asthma
- d. Obesity

Q 13. Match the asanas:



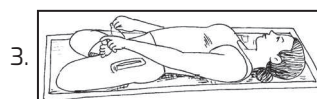
1.

A. Matsyasana



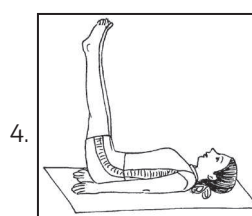
2.

B. Ardha halasana



3.

C. Gomukhasana



4.

D. Ushtrasana

- a. 1-D, 2-C, 3-B, 4-A
- b. 1-C, 2-D, 3-A, 4-B
- c. 1-C, 2-D, 3-B, 4-A
- d. 1-D, 2-A, 3-B, 4-C

Q 14. Which of these asanas helps in curing one from hypertension?

- Paschimottasana
- Ardhamatsyendrasana
- Shavasana
- Shalabhasana

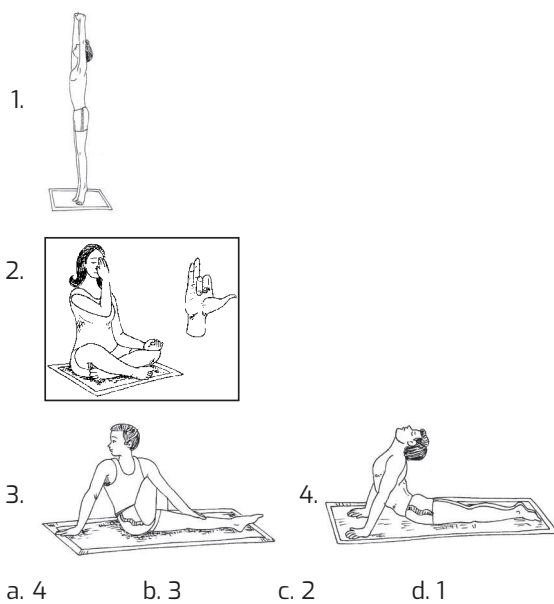
Q 15. Which asana is helpful in maintaining normal blood pressure?

- Makarasana
- Uttanapadasana
- Vakrasana
- All of the above

Q 16. Which of the following asana is useful for relaxation and removing fatigue? (CBSE 2024)

- Chakrasana
- Shavasana
- Makarasana
- Uttanapadasana

Q 17. Identify the odd one:



Q 18. Match the following: (CBSE SQP 2022-23)

A. Garudasana	(i) Round shoulder
B. Gomukhasana	(ii) Lordosis
C. Chakrasana	(iii) Bow legs
D. Naukasana	(iv) Knock knees

- A-(iii), B-(iv), C-(i), D-(ii)
- A-(i), B-(iii), C-(iv), D-(ii)
- A-(iv), B-(ii), C-(i), D-(iii)
- A-(ii), B-(iii), C-(iv), D-(i)

Q 19. Identify the asana:



- Ardha chakrasana
- Sheetali Pranayama
- Bhadrasana
- Yogamudrasana

Q 20. Ardha chakrasana is also known as:

- half wheel pose
- crocodile pose
- half plough pose
- None of these



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 21-25): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 - Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 - Assertion (A) is true, but Reason (R) is false.
 - Assertion (A) is false, but Reason (R) is true.
- Q 21. Assertion (A): The best time to practise asana is the morning time before breakfast.**
Reason (R): At morning, the energy is highest and asanas can be done with ease and freshness.
- Q 22. Assertion (A): Bhujangasana is a part of sequence of yoga postures in Surya Namaskar.**
Reason (R): Bhujangasana should be avoided if suffering from hernia or back injuries.
- Q 23. Assertion (A): Obesity is that condition of the body in which the amount of fat increase to extreme levels.**
Reason (R): People with obesity usually fall prey to diabetes.
- Q 24. Assertion (A): Regular practice of Gomukhasana helps in the treatment of sciatica.**
Reason (R): Gomukhasana makes the leg muscles strong and elastic.
- Q 25. Assertion (A): A person whose blood pressure readings are beyond 140/90 mm Hg, is said to have hypertension.**
Reason (R): Bhujangasana, Tadasana and Surya Bhedhana Pranayama are helpful in curing hypertension.

Answers

- (d) Dhanurasana
- (b) Tadasana
- (c) Surya Bhedhana Pranayama
- (a) Bhujangasana
- (d) Bhujangasana
- (d) Shalabhasana
- (a) Pawanmuktasana
- (c) Pancreas
- (c) Both a. and b.
- (c) asthma
- (a) Weight loss
- (c) Asthma
- (b) 1-C, 2-D, 3-A, 4-B
- (c) Shavasana
- (a) Makarasana
- (b) Shavasana
- (b) 3
- (a) A-(iii), B-(iv), C-(i), D-(ii)
- (c) Bhadrasana
- (a) half wheel pose
- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

22. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
23. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
24. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
25. (c) Assertion (A) is true, but Reason (R) is false.

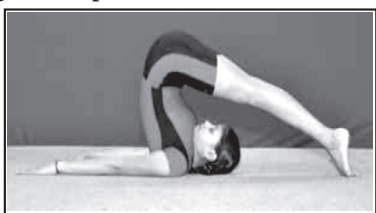


Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Mrs Iyer aged 50 years is recommended to practice the below asana as a preventive measure. She is a software engineer by occupation and spends lot of time sitting at one place.



- Q 1. The above pose can be identified as:**
- Ardhahalasana
 - Halasana
 - Chakrasana
 - Supta vajrasana
- Q 2. This asana is used to cure:**
- Back pain
 - Diabetes
 - Knee pain
 - Obesity
- Q 3. This asana is contraindicated when a person is suffering with:**
- Appendicitis
 - Epilepsy
 - Sciatica
 - Hernia



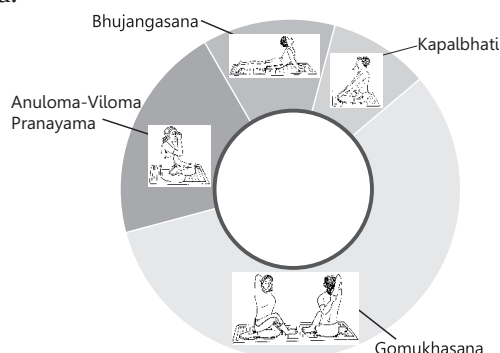
Answers

1. (a) 2. (d) 3. (a)

Case Study 2

Read the following passage and answer the following questions.

Bharti, a yoga instructor at ABC school conducted a survey on which is the favourite asana of students. She was able to make a pie chart on the basis of the data.



On the basis of the chart answer the following questions:

Q 1. Which is the most famous asana?

- Bhujangasana
- Chakrasana
- Gomukhasana
- Vajrasana

Q 2. Which amongst these is a lying asana?

- Vajrasana
- Bhujangasana
- Chakrasana
- Gomukhasana

Q 3. Which amongst these is used to prevent hypertension?

- Gomukhasana
- Bhujangasana
- Both a. and b.
- Kapalabhati



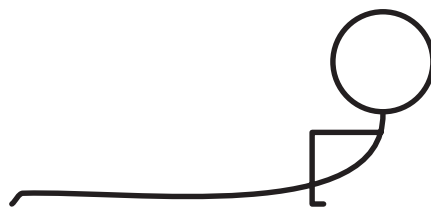
Answers

1. (c) 2. (b) 3. (c)

Case Study 3

Read the following passage and answer the following questions.

Mr Shyam aged 53 years, is recommended to practice the given, asana as a therapeutic measure. He is a clerk in a private bank and spends most of the time sitting at one place. He developed symptoms like frequent urge for urination, tiredness, excessive weight gain, anxiety and gets easily irritated.



Based on the above given picture, answer the following questions:

Q 1. From the shape of the body in the given pose, it can be identified as:

- Gomukhasana
- Bhujangasana
- Tadasana
- Vajrasana

Q 2. Mr. Shyam is diagnosed with:

- only diabetes
- both diabetes and hypertension
- only hypertension
- obesity

Q 3. This asana should be avoided by people suffering from:

- migraine
- peptic ulcer
- high blood pressure
- hyper acidity



Answers

1. (b) 2. (b) 3. (b)



Very Short Answer Type Questions ↓

Q 1. Define asana.

Ans. Asana is a physical yoga posture that is formed to improve physiological functions of the body.

Q 2. Name any one asana to cure obesity.

Ans. Halasana, Dhanurasana, Ardhamatsyendrasana, etc. are performed to cure obesity.

Q 3. What do you understand by diabetes?

Ans. Diabetes is a disease in which the person has high blood glucose (blood sugar), either because insulin production is inadequate, or because the body's cells do not respond properly to insulin, or both.

Q 4. Discuss any two benefits of Paschimottanasana.

Ans. Two benefits of Paschimottanasana are as follows:

- (i) It helps to correct postural deformities.
- (ii) It helps to increase the flexibility of the spinal and abdominal muscles.

Q 5. Explain the benefits of Pawanmuktasana.

Ans. Benefits of Pawanmuktasana are as follows:

- (i) It helps to increase digestive power.
- (ii) It helps to dissolve extra fat deposited in the abdominal region.

Q 6. What is the main physiological cause of Asthma?
(CBSE 2018)

Ans. Main causes of Asthma includes:

- (i) Genetic changes
- (ii) Air pollution
- (iii) Allergens such as pollens, mold, etc.
- (iv) Irritants like strong odors from perfumes
- (v) Tobacco smoke
- (vi) Stress

(Any two)

Q 7. State two contraindications of Uttanamandukasana.

Ans. The two contraindications of Uttanamandukasana are as follows:

- (i) Avoid if you are suffering from knee pain.
- (ii) Avoid if you are suffering from piles.

Q 8. What is hypertension?

Ans. Hypertension is a serious medical condition in which the force of the blood pumping through our arteries is too high.

Q 9. What is the normal range for blood pressure?

Ans. The normal range for blood pressure is 120/80 mm Hg.

Q 10. Write any two benefits of Sheetali Pranayama.

Ans. Two benefits of Sheetali Pranayama are as follows:

- (i) It cools the body and tranquilises the mind.
- (ii) It is beneficial for skin and eyes.

**Short Answer Type-I Questions ↓****Q 1. Explain any two benefits of Ardhamatsyendrasana:**
(CBSE SQP 2022 Term-2)

Ans. Benefits of Ardhamatsyendrasana:

- (i) It increases the flexibility of the spine.
- (ii) It stimulates the kidneys, liver and lungs.
- (iii) It relieves fatigue, sciatica, backache and menstrual discomfort.
- (iv) It energises and stretches the backbone.

Q 2. Discuss the procedure of Pawanmuktasana.

Ans. Procedure of Pawanmuktasana:

- (i) Start off in the spine position with your back on the floor. Inhale deeply and bring your knees

close to your chest. Wrap your arms around your knees as you hold them in and clasp your fingers together.

- (ii) Simultaneously, exhale, lift your head and bring your chin towards your chest.
- (iii) Take a deep breath and hold this position for four to eight breaths.
- (iv) While exhaling, slowly return your head back onto the floor and straighten your legs.

Q 3. Elucidate the benefits and contraindications of Matsyasana.
(CBSE 2022 Term-2)**Ans. Benefits of Matsyasana:**

- (i) It stimulates the thyroid and pituitary gland.
- (ii) It provides relief from respiratory disorders and cures asthma and bronchitis.
- (iii) It helps in relieving tension in the neck and shoulders.
- (iv) It improves blood circulation in the body.

Contraindications of Matsyasana:

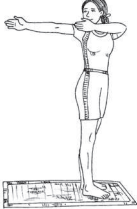
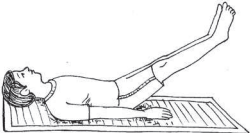
- (i) Avoid doing this asana if you have high or low blood pressure.
- (ii) Migraine and insomnia patients should also refrain from performing this asana.
- (iii) Individuals who have lower back or neck injuries should not perform this asana.

Q 4. Mention the benefits of Tadasana.

Ans. The benefits of Tadasana are as follows:

- (i) It is an excellent asana for those who want to enhance their height.
- (ii) It regulates digestive, nervous and respiratory systems.
- (iii) It improves body posture.
- (iv) Knees, thighs and ankles become stronger.
- (v) It alleviates sciatica.

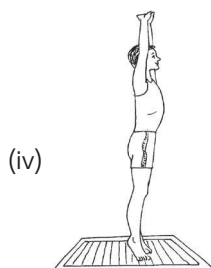
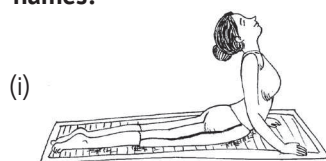
Q 5. Identify the below given Asanas and write the names:

- (i) 
- (ii) 
- (iii) 



Ans. (i) Katichakrasana, (ii) Uttanapadasana,
(iii) Gomukhasana, (iv) Kapalabhati

Q 6. Identify the below given Asanas and write the names:



Ans. (i) Bhujangasana,
(ii) Paschimottanasana,
(iii) Matsyasana,
(iv) Tadasana

Q 7. Enlist four asanas those help to control asthma.

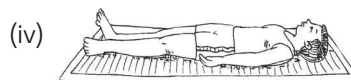
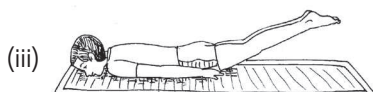
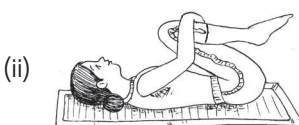
(CBSE 2024)

Ans. The four asanas that help to control asthma are as follows:

- | | |
|-----------------|-------------------|
| (i) Tadasana | (ii) Bhujangasana |
| (iii) Vakrasana | (iv) Kapalabhati |
| (v) Gomukhasana | (vi) Ushtrasana |

(Any four)

Q 8. Identify the below given Asanas and write the names:



Ans. (i) Supta Vajrasana, (ii) Pawanmuktasana,
(iii) Shalabhasana, (iv) Shavasana.



Short Answer Type-II Questions ↓

Q 1. "Asanas can be used as a preventive measure."
Comment. (CBSE 2022 Term-2)

Ans. The term asana means sitting in a particular posture, which is comfortable and could be maintained steadily for a long time. Various types of asanas which include meditative and relaxative asanas can be used as preventive measures because they stimulates blood circulation, balances the nervous system, benefits the various system running in our body such as digestive system, nervous system, cardiovascular system, muscles, joints, etc. Asanas also help in relieving stress, treating anxiety and makes a person mentally rejuvenated, which ultimately help us in preventing various lifestyle diseases such as diabetes, obesity etc.

Q 2. What is the role of yoga in preventing lifestyle diseases? (CBSE 2019)

Ans. Yoga help us in preventing various lifestyle diseases such as diabetes, back pain, etc., because it provides the following benefits:

(i) **Muscles become Strong:** By performing yoga asanas regularly, muscles of the body becomes stronger and flexible.

(ii) **Respiratory Organs become Efficient:** By doing yoga asanas regularly the size of the lungs enhances, the diaphragm is strengthened and oxygen uptake is improved.

(iii) **Joints become Strong:** As a result of performing yoga asanas regularly, the joints are able to bear more pressure. It also enhances the flexibility of joints. Diseases like arthritis, sciatica, etc., are controlled with the help of yoga.

Q 3. Write the procedure and benefits of Dhanurasana.

Ans. **Procedure of Dhanurasana:**

- Lie down in prone position.
- Exhaling, slowly bend the legs backwards at the knees.
- Hold the toes or ankles firmly with hands as per your capacity.
- Inhaling, raise thighs, head and chest as high as possible. Stretch and bring the toes or ankles towards head. Look upward, maintain the position comfortably for 5-10 seconds.
- To come back, release the arms and keep them beside the body. Straighten the legs. Bring the legs, head, shoulders and chest slowly on the floor and relax in starting position.

Benefits of Dhanurasana:

- (i) Dhanurasana is a good exercise for joint of the shoulders, knees, ankles and entire backbone.
- (ii) It is beneficial for management of diabetes mellitus as it massages the liver and pancreas.
- (iii) It helps to reduce excess fat around the belly, waist and hips.

Q 4. Explain about the procedure and advantages of Bhujangasana. (CBSE 2019)

Ans. Procedure of Bhujangasana:

- (i) Lie flat on your stomach. Place your hands on the side and legs close together.
- (ii) Then, move your hands to the front, making sure they are at the shoulder level, and place your palms on the floor.
- (iii) Now, straighten up your arms slowly and raise you head and trunk.
- (iv) You need to arch your neck backward in an attempt to replicate the cobra with the raised hood.
- (v) Press your hips, thighs, and feet to the floor.
- (vi) Hold the asana for about 15 to 30 seconds.
- (vii) Exhale and slightly bring the body in starting position.
- (viii) Repeat this asana 4-5 times.

Advantages of Bhujangasana:

- (i) It cures acidity, indigestion and constipation.
- (ii) It increases blood circulation.
- (iii) It helps to lose weight.
- (iv) It strengthens the arms, shoulders and abdomen.
- (v) It enhances the function of the liver and the kidney.
- (vi) It improves the function of male and female reproductive organ.



TiP

 The students must prepare about the procedure of each yoga asana thoroughly.

Q 5. Explain the procedure and benefits of Mandukasana.

Ans. Procedure of Mandukasana:

- (i) Sit in Vajrasana.
- (ii) Make the fists with thumbs inside and put them near navel and press the navel area.
- (iii) Exhale slowly, lean forward from the waist, lower the chest, so that it rests on the thighs.
- (iv) Keep the head and neck raised and gaze in front.
- (v) Maintain the position comfortably for 5-10 seconds.
- (vi) To release the posture, come back to the sitting position by raising the trunk; remove your fists from the navel area and sit in Vajrasana.

Benefits of Mandukasana:

- (i) This asana is beneficial for the people having heavy bellies, thighs or hips.

- (ii) It eliminates gases from the abdomen.
- (iii) It benefits people suffering from constipation, diabetes and digestive disorders.

Q 6. Write the benefits of Anuloma-viloma.

Ans. Benefits of Anuloma-viloma:

- (i) It calms down the mind and improves concentration.
- (ii) It improves functioning of all cells of the body by providing them sufficient oxygenated blood.
- (iii) It purifies the blood.
- (iv) It improves blood supply to brain.
- (v) It helps to regulate blood pressure.
- (vi) It helps in managing stress by reducing anxiety.
- (vii) It is beneficial in many diseases such as asthma, high or low blood pressure, insomnia, chronic pain, endocrine imbalances, heart- problems, hyperactivity, etc.

Q 7. List down any three asanas used for preventing of Asthma and write two benefits of each.

(CBSE SQP 2022 Term-2)

Ans. Asanas used for preventing Asthma are as follows:

- (i) Uttana-mandukasana (ii) Vakrasana
(iii) Dhanurasana (iv) Ushtrasana
(v) Gomukhasana
(vi) Matsyasana (Any three)

Benefits of Uttanamandukasana:

- (i) It helps in reducing backache.
- (ii) It improves the blood circulation in the chest and abdomen.
- (iii) It tones the abdominal and shoulder muscles.
- (iv) It improves the functioning of lungs by improving the movements of diaphragm.

Benefits of Vakrasana:

- (i) The regular practice of Vakrasana benefits in treating back pain, headache and neck pain.
- (ii) Vakrasana is one of the best post-yoga poses that reduces the stiffness in the body and increases its flexibility.
- (iii) Vakrasana improves the digestion process.
- (iv) Massages the abdominal organs and reduces belly fat.

Benefits of Dhanurasana:

- (i) It helps in reducing backache pain.
- (ii) It stimulates and regulates thyroid and adrenal glands.

Q 8. Discuss the procedure of Nadi-shodhana Pranayama and Sheetal Pranayama for hypertension.

Ans. Procedure of Nadi-shodhana Pranayama:

- (i) Sit comfortably with your spine erect and shoulders relaxed.
- (ii) Place your left hand on the left knee, and palms open to the sky or in Chin Mudra (thumb and index finger gently touching at the tips).
- (iii) Place the tip of the index finger and middle finger of the right hand in between the eyebrows, the ring finger and little finger on the left nostril, and the thumb on the right nostril.
- (iv) Press your thumb down on the right nostril and breathe out gently through the left nostril.

- (v) Now breathe in from the left nostril and then press the left nostril gently with the ring finger and little finger. Removing the right thumb from the right nostril, breathe out from the right.
- (vi) Breathe in from the right nostril and exhale from the left. You have now completed one round of Nadi-Shodhana Pranayama.
- (vii) Complete 9 such rounds by alternately breathing through both the nostrils.

Procedure of Sheetali Pranayama for Hypertension:

- (i) Sit in Padmasana or any other meditative posture.
- (ii) Keep the hands in jnana mudra.
- (iii) Open the mouth. Extend the tongue and bring it outside the mouth as far as possible.
- (iv) Roll the tongue from the sides to make it like a tube. The sides of the tongue should be curled up.
- (v) Inhaling draw the air from the curled tongue and fill the lungs with air to the maximum.
- (vi) Draw the tongue inside and close the mouth.
- (vii) Exhale through the nose making a sound similar to the rushing wind.
(This is one round of Sheetali Pranayama. Practise it 3-5 times).

Q 9. Explain the procedure and benefits of any one asana for back pain. (CBSE 2024)

Ans. Procedure of Ardha Chakrasana

- (i) Stand straight with your feet together and arms alongside the body.
- (ii) Hold your lower back with your hands by bending the elbows.
- (iii) With slow inhalation, bend your head backwards without bending your knees.
- (iv) Remain in the pose for a while.
- (v) Exhale and come to the original position.

Benefit of Ardha Chakrasana

- (i) Ardha Chakrasana stimulates the abdominal organs and aids in digestion.
- (ii) The pose relieves stress in the neck and shoulders.
- (iii) It tones the lower back muscle and improves flexibility of the back.
- (iv) It improves heart functions and regulates blood pressure.



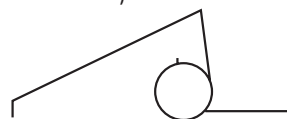
Long Answer Type Questions ↓

Q 1. What is obesity? Draw stick diagrams of any two asanas recommended to control obesity and explain their procedure. (CBSE 2022 Term-2)

Ans. Obesity is a condition in which excess body fat accumulates to such an extent that health may be affected. It is commonly defined as a Body Mass Index (BMI) of 30 kg/m² or higher.

Procedure of Halasana:

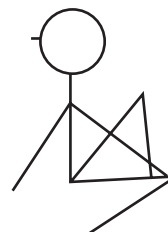
- (i) Lie in supine position, legs together and arms beside the body.



- (ii) Keeping the knees straight, raise the legs up to 30°.
- (iii) Raise the legs further up to 60°.
- (iv) Raise the legs still further up to 90°, keeping them vertical and straight.
- (v) Pressing the arms raise the trunk by lowering the legs over the head, the toes touching the ground. Push the legs a little beyond the head.
- (vi) Keep the arm straight on floor. Maintain the position for 5-10 seconds.
- (vii) To come back, remove the arms, slowly lower the back and buttocks to the ground, bring the legs to 90° position. Lower the legs to starting position.

Procedure of Ardhamatsyendrasana:

- (i) Sit on the ground with legs extended in front.
- (ii) Bend the knee of the left leg, place left foot close to the right buttock, heel touching the side of hip and the left knee touching the ground.
- (iii) Bend the right knee; and place right foot flat on the ground near outside of the left knee. Toes of the right foot should face forward.



- (iv) Place left arm over right knee in such a way that it covers outside of the right knee. Hold the right foot or ankle with left hand. The right knee should be close to the left armpit.
- (v) Bend the right arm from the elbow and take it behind and encircle the waist as much as possible as if trying to touch the navel.
- (vi) Turn the head towards right side. Try to look behind over the shoulder.
- (vii) Stay in this position for 5-10 seconds.
- (viii) To come back, bring your head to the centre. Bring the right arm in the front. Similarly, bring the left arm, right leg and left leg in the starting position. Repeat it on the other side.

Q 2. Briefly explain the administration of Pawanmuktasana along with its contraindications and draw stick diagram. (CBSE SQP 2022 Term-2)

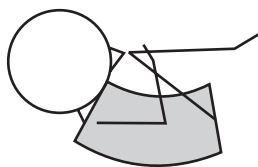
Ans. Administration of Pawanmuktasana:

- (i) Lie on your back with your feet together and arms besides your body and relax, breathing deeply.
- (ii) With a deep inhalation raise your legs to 90° and completely exhale.

- (iii) Now with another inhalation bring both the knees close to your chest and press on the lower abdomen, holding the knees with your hands. Exhale completely.
- (iv) Remain with the bent knees for a few breaths. With every exhalation press the thighs and knees on the abdomen and hold them with your hands.
- (v) With a deep breath raise your head, neck and chest and bring them close to your knees. If possible, bring your chin in between your knees. Ensure the head moves less and the knees come closer to the face. That way the pressure on the abdominal muscles will help in releasing the unwanted gas/wind around the abdominal organs.
- (vi) Remain in this posture for a few breaths focusing on maintaining the position of the head and neck in place. With every exhalation press the thighs closer and deeper into the chest and face deeper into the knees.
- (vii) Try to maintain the balance while breathing slowly and keeping the body relaxed.
- (viii) Now with an inhalation, release the neck and head and exhale completely. With another inhalation straighten the legs and bring them back to 90° and as you exhale release the leg from 90° to the relaxed posture. With complete exhalation, bring the legs stretched out on the floor and relax the neck.
- (ix) Take a few breaths, and then continue with the next round. The longer you hold in this posture the faster the muscles around the abdomen with loosen.

Contraindications of Pawanmuktasana:

To be avoided or performed under guidance by those suffering from:



- (i) Severe migraine
- (ii) High or low blood pressure
- (iii) Asthma
- (iv) Slip disc
- (v) Advanced stages of spondylitis
- (vi) Girls/Women should avoid this asana or take the guidance of the teacher while practicing it during menstrual cycle.

Q 3. Describe the procedure for performing Gomukhasana along with its benefits and contraindications. (CBSE SQP 2019-20)

Ans. Procedure of Gomukhasana:

- (i) Sit erect on the ground with your legs stretched out in front of you.

- (ii) Now gently bend your left leg, and place it under your right hip.
- (iii) Fold your right leg and place it over your left thigh.
- (iv) Place both your knees close together as they are stacked one on top of the other.
- (v) Gently fold your left arm and place it behind your back.
- (vi) Take your right arm over your right shoulder, and stretch it as much as you can until it reaches your left hand. With practice, you will be able to not just reach, but also catch your left hand.
- (vii) Keep the trunk erect, expand your chest, and lean slightly back.
- (viii) Hold this pose for as long as you are comfortable, as you breathe slowly and deeply. Concentrate on your breathing.

Benefits of Gomukhasana:

- (i) It helps to stretch and strengthen the muscles of the ankles, hips and thighs, shoulders, triceps, inner armpits and chest.
- (ii) Regular practice of this asana aids in the treatment of sciatica.
- (iii) It enhances the working of the kidneys by stimulating it, thus helping those suffering from diabetes.
- (iv) Practising this asana regularly can reduce stress and anxiety.

Contraindications of Gomukhasana:

- (i) Do not attempt this asana in case of neck, knee hip and shoulder injury.
- (ii) Avoid this asana in case of migraine or spinal disorders.

Q 4. List down any four asanas used for prevention of asthma. Explain the procedure for administration of any one of them with help of a stick diagram. (CBSE SQP 2022-23)

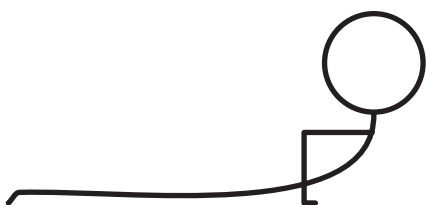
Ans. Asanas to prevent Asthma are as follows:

- (i) Bhujangasana
- (ii) Gomukhasana
- (iii) Tadasana
- (iv) Vakrasana
- (v) Kapalabhati
- (vi) Anuloma-viloma Pranayama (Any four)

Procedure of Bhujangasana:

- (i) Lie prone on the ground with forehead touching the floor; legs together, hands by the side of thighs.
- (ii) Fold the hands at elbows and place the palms by the side of the shoulders, thumbs under armpits, with tip of the fingers not crossing the shoulder line.

- (iii) Inhaling, slowly raise the head, neck and shoulders. Shoulders should be shrugged backwards.
- (iv) Raise the trunk up to the navel region. Raise the chin as high as possible.
- (v) Eyes should be kept gazing upward.
- (vi) Maintain the position for 5-10 seconds or as long as comfortable.
- (vii) To come back, bring down the upper part of navel, region, chest, shoulders, chin and head.
- (viii) Place the forehead on the ground and arms along the body, hands by sides of the thighs. Relax.



Stick Diagram

Q 5. List down any four asanas used for prevention of hypertension. Explain the procedure and contraindication of any one of them with help of a stick diagram. (CBSE 2023)

Or Discuss the asanas helpful for a person suffering from hypertension. Write down the procedure and contraindications of Sarala Matsyasana in detail.

(CBSE SQP 2023-24)



Chapter Test

Multiple Choice Questions

Q 1. Name the lifestyle disease prevented by performing this asana:



- a. Kapalabhati
- b. Pawanmuktasana
- c. Anuloma-viloma
- d. Matsyasana

Q 2. Which of the following is a benefit of performing the above discussed asana:

- a. it helps to reduce laziness
- b. it increases the flexibility of spinal and abdominal muscles
- c. it helps to regulate thyroid and adrenal glands
- d. it balances the navel centre



EXPERT'S Answer

Ans. Four asanas used for prevention of Hypertension are as follows:

- (i) Sarala Matsyasana
- (ii) Ardhalasana
- (iii) Shavasana
- (iv) Gomukhasana

Sarala Matsyasana

The word Sarala means easy and Matsya means fish.



Stick Diagram

Procedure

- (i) Lie flat on the back.
- (ii) With the support of your hands keep the top of your head on the mat.
- (iii) Neck, upper back and shoulders will be lifted from the ground. Inhale as you lift the chest and tuck the head.
- (iv) Relax your hands at the side of your body.
- (v) Breathe normally and keep your toes stretched out.
- (vi) Hold the position for 30 seconds, then relax. Exhales while relaxing the body and bring it to the initial position.

Contraindication

People with cervical spondylitis and frozen shoulder should avoid practicing this asana.

Q 3. Which one of the following asanas is not a remedial asana for treating obesity?

- a. Ardhalasana
- b. Ushtrasana
- c. Tadasana
- d. Surya Bhedhana Pranayama

Q 4. Makarasana is also known as:

- a. Plough Posture
- b. Crocodile
- c. Corpse Pose
- d. Fish Posture

Q 5. Match the following:

List-I (Disease)	List-II (Asana)
A. Asthma	(i) Shavasana
B. Hypertension	(ii) Kapalabhati
C. Obesity	(iii) Gomukhasana
D. Diabetes	(iv) Halasana

- | | A | B | C | D |
|----|-------|-------|------|------|
| a. | (iii) | (i) | (ii) | (iv) |
| b. | (i) | (iii) | (iv) | (ii) |
| c. | (i) | (iii) | (ii) | (iv) |
| d. | (iii) | (i) | (iv) | (ii) |

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 c. Assertion (A) is true, but Reason (R) is false.
 d. Assertion (A) is false, but Reason (R) is true.
- Q 6. Assertion (A):** Asthma is a disease of respiratory system where the airways get narrowed, often in response to a trigger such as exposure to an allergen, cold air, exercise, etc.
Reason (R): It causes symptoms such as wheezing, shortness of breath, chest tightness and coughing.
- Q 7. Assertion (A):** High blood pressure is also referred to as 'the silent killer'.
Reason (R): It is asymptomatic, i.e., there is no indication or any clear symptoms.

Case Study Based Question

- Q 8. Read the extract given below and answer the questions on the basis of the same.**
- Gunjan, a Yoga instructor at XYZ school was consulted by a student of class XI in relation to her over weight. The child wants to do asanas to reduce her weight.
- (i) Gunjan has asked the child to practice**
- Paschimottanasana
 - Gomukhasana
 - Shalabhasana
 - Vakrasana

- (ii) While practicing this asana child should not be suffering from**

- Arthritis
- High BP
- Scurvy
- Constipation

- (iii) Which of the following is a benefit of performing the above discussed asana?**

- it helps to reduce laziness
- it increases the flexibility of spinal and abdominal muscles
- it helps to regulate thyroid and adrenal glands
- it balances the naval centre

Very Short Answer Type Questions

- Q 9. State any two benefits of asanas for prevention of diseases.**
- Q 10. Discuss any two benefits of Matsyasana.**

Short Answer Type-I Questions

- Q 11. Explain Asthma and its symptoms.**
- Q 12. How do asanas help bones and joints to grow stronger?**
- Q 13. Write the procedure of practicing Surya Bhedhana Pranayama.**

Short Answer Type-II Questions

- Q 14. List down any three asanas used for preventing Hypertension and write two benefits of each.**
- Q 15. Explain about the procedure and advantages of 'Dhanurasana'.**
- Q 16. Explain the procedure of Katichakrasana.**

Long Answer Type Questions

- Q 17. Briefly explain the administration of Shalabhasana along with its benefits and contraindications.**
- Q 18. What is diabetes? Draw stick diagrams of any two asanas recommended to control diabetes along with its benefits and contraindications.**

Scan the QR Code

To get Answers of this Chapter Test





Physical Education and Sports for CWSN

(Children With Special Needs-Divyang)

FAST TRACK REVISION

- ▶ **Disability:** The term disability means physical, cognitive, developmental, sensory or mental impairment that can hamper or reduce a person's ability to carry out his day-to-day activities and interaction with the world around them. Disabilities can affect people in different ways, even when one person has the same type of disability as another person. A disability may be present from birth or may occur during a person's lifetime.
- ▶ **Organisations Promoting Disability Sports**
 - ▶ International Federation of Adapted Physical Activity (IFAPA), encourages international cooperation in the field of physical activity for the benefit of individuals of all abilities, to promote, stimulate and support research in the field of adapted physical activity throughout the world. It assists and guides the Paralympics, Special Olympics, Deaflympics and other organisations and agencies which work under it.
- ▶ **Special Olympics**
 - ▶ Special Olympics were started by Eunice Kennedy Shriver, sister of former President of the United States of America, John F Kennedy. The idea was born out of Shriver's experience of witnessing the social exclusion of people with intellectual disabilities who were routinely placed in custodial institutions. Shriver believed that with equal opportunities and experiences as everyone else, people with intellectual disabilities could accomplish far more than ever thought possible. She was convinced that children with intellectual disabilities could be exceptional athletes and that through sports they can realise their potential for growth.
 - ▶ In 1962, Shriver founded Camp Shriver, a camp for children with special needs that was held on her Maryland farm. Camp Shriver later evolved into the Special Olympics. Shriver founded the Special Olympics in 1968.
 - ▶ Special Olympics is the world's largest sports organisation for children and adults with intellectual disabilities and physical disabilities, providing year-round training and activities to 5 million participants and Unified Sports partners in 172 countries.
 - ▶ The Special Olympics World Games is a major event put on by the Special Olympics Committee. The World Games alternate between summer and winter games, in two-year cycles, recurring every fourth year. The first games were held on July 20, 1968, in Chicago, Illinois, with about 1000 athletes from the U.S. and Canada. The most recent World Summer Games were held in Abu Dhabi, United Arab Emirates, from March 14 to March 21, 2019. The next World Summer Games will be held in Berlin, Germany, between June 16 to June 25, 2023.
- ▶ The first World Winter Games were held in 1977 in Steamboat Springs, Colorado, US. The most recent Special Olympics World Winter Games were held in Graz, Schladming and Ramsau, Austria, from March 14, 2017 to March 25, 2017.
- ▶ **Logo and Oath**
 - ▶ The Special Olympics logo is based on the sculpture 'Joy and Happiness to all the Children of the World' by Zurab Tsereteli. The logo is a symbol of growth, confidence and joy among children and adults with disabilities who are learning coordination, mastering skills, participating in competitions and preparing themselves for richer, more productive lives. The Special Olympics athlete's oath, which was first introduced by Eunice Kennedy Shriver at the inaugural Special Olympics international games in Chicago in 1968, is 'Let me win. But if I cannot win, let me be brave in the attempt.'
- ▶ **Programmes Run by Special Olympics Around the World**
 - ▶ **Young Athletes Programme:** For young people with and without intellectual disabilities between the ages of 2–7, Special Olympics has a Young Athletes Programme — an inclusive sport and play programme with a focus on activities that are important to mental and physical growth. Children engage in games and activities that develop motor skills and hand eye coordination.
 - ▶ **Unified Sports Programme:** In recent years, Special Olympics has pioneered the concept of Unified Sports, bringing together athletes with and without intellectual disabilities as team-mates. The basic concept is that training together and playing together can create a path to friendship and understanding. The programme has expanded beyond the U.S. and North America. More than 1.4 million peoples worldwide now take part in Special Olympics Unified Sports. The goal is to break down stereotypes about people with intellectual disabilities and promote unity.

- **Healthy Athletes Programme:** This programme offers health screenings to athletes in need. In 1997, Special Olympics began an initiative called Healthy Athletes that currently offers health screenings in seven areas: Fit Feet (podiatry), FUN Fitness (physical therapy), Health Promotion (better health and well-being), Healthy Hearing (audiology), MedFest (sports physical exam), Opening Eyes (vision) and SpecialSmiles (dentistry). Screenings educate athletes on health issues and also identify the problems that may need additional follow-up.
- **Special Olympic Sports Rules/Guidelines**
 - Athletes shall be divided into competition division based upon their ability, age and sex. Competition divisions are structured so that an athlete competes against another athlete of similar ability.
 - Special Olympics has more than 30 Olympic-types individual and team sports that provide meaningful training and competition opportunities for people with intellectual disabilities.
 - At competitions, medals are awarded to the first, second and third-place winners in each event, and ribbons are awarded to athletes who finish in fourth through eighth place.
 - To participate in Special Olympics, a person must be at least 8 years old and identified by an agency or professional as having one of the following conditions: intellectual disabilities, cognitive delays as measured by formal assessment, or significant learning or vocational problems due to cognitive delay that requires or has required specially designed instruction.
- **Special Olympics Bharat**
 - Special Olympics Bharat is a National Sports Federation, registered under the Indian Trust Act 1882, in 2001 and is accredited by Special Olympics International to conduct Special Olympics Programmes in India. It is recognised by the Ministry of Youth Affairs and Sports, Government of India as a National Sports Federation in the priority category, for development of sports for persons with intellectual disabilities. It was founded in 1987 as Special Olympics India, and from 2001 it became as Special Olympics Bharat.
- **Mission of Special Olympics Bharat**
 - The mission of Special Olympics Bharat is to provide year-round sports training and athletic competition in 25 Olympic-style individual and team sports for children and adults with intellectual disabilities, giving them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community.
 - Special Olympics Bharat organise training and competitions at local, district, state, national and international levels.
- **Objective of Special Olympics Bharat**
 - Focus on holistic development and training that goes beyond the classrooms into the playing fields, cultural and community centres, to motivate children with disabilities to join and remain in school.
 - Create role models who will inspire the children and also motivate parents into sending their children to school and to participate in sports and other extra-curricular activities.
 - Train teachers to sensitize them to needs of special children, and create a cadre of physical education teachers from among the disabled who can work with schools and community centres.
 - Ensure maximum involvement of community for greater public understanding and acceptance of people with intellectual disabilities.
- **Paralympics**
 - The Paralympic Games or Paralympics is a periodic series of international multi-sport events involving athletes with a range of physical disabilities, including limb deficiency, leg length difference, short stature, vision impairment and intellectual impairment. All Paralympic Games are governed by the International Paralympic Committee (IPC).
 - In 1948, Jewish-German born Dr. Ludwig Guttman of Stoke Mandeville Hospital, Great Britain hosted a sports competition for British World War II veteran patients with spinal cord injuries. The first games were called the 1948 International Wheelchair Games. Guttman's aim was to create an elite sports competition for people with disabilities that would be equivalent to the Olympic Games.
 - The first official Paralympic Games was held in Rome, Italy in 1960. Since 1960, the Paralympic Games have taken place in the same year as the Olympic Games. The Games were initially open only to athletes in wheelchairs; at the 1976 Summer Games, athletes with different disabilities were included for the first time at a Summer Paralympics.
 - 'Spirit in Motion' is the motto for the Paralympics. The symbol for the Paralympics contains three colours, (red, blue, and green) which are the colours most widely represented in the flags of nations.
- **International Paralympic Committee**
 - The International Paralympic Committee is the global governing body of the Paralympic Movement. The president of the IPC is Andrew Parsons. The IPC's international headquarters are in Bonn, Germany. The IPC is responsible for organising the Summer and Winter Paralympic Games. It also serves as the International Federation for nine sports, supervising and coordinating the World Championships and other competitions for each of the nine sports it regulates. The vision of the IPC is, "to enable Paralympic athletes to achieve sporting excellence and to inspire and excite the world." The Paralympic anthem is 'Hymne de l'Avenir' or 'Anthem of the Future'. It was composed by Thierry Darnis and adopted as the official anthem in March 1996.

► Concept of Classification and Divisioning in Sports

The concept of classification and divisioning is a process used in disability sports for providing even and fair competition for athletes with disability through grouping of athletes.

Classification process adopted by paralympics assigns categories to athletes based on different types of disabilities, on the other hand, divisioning process of special olympics is a performance based system of grouping athletes based on their skill level.

- **Classification in Paralympics:** Paralympic games, through the International Paralympic Committee (IPC), has developed classification process which can contribute to sporting excellence for all athletes and sports in the paralympic movement and providing equitable competition. According to IPC, the classification process serves two roles. The first is to determine who is eligible and the second is to group sports people for the purpose of competition.

► Classification in Paralympics (Eligible Impairment)

- **Physical Impairment:** There are eight different types of physical impairment:
 - **Impaired Muscle Power:** With impairments in this category, the force generated by muscles, such as the muscles of one limb, one side of the body or the lower half of the body is reduced. For example, spinal cord injury, spina bifida, post-polio syndrome.
 - **Impaired Passive Range of Movement:** Range of movement in one or more joints is reduced in a systematic way. Acute conditions such as arthritis are not included in this category.
 - **Loss of Limb or Limb Deficiency:** A total or partial absence of bones or joints from partial or total loss due to illness, trauma, or congenital limb deficiency. *e.g.*, amputation, dysmelia.
 - **Leg-length Difference:** Significant bone shortening occurs in one leg due to congenital deficiency or trauma.
 - **Short Stature:** Standing height is reduced due to shortened legs, arms and trunk, which are due to a musculoskeletal deficit of bone or cartilage structures. *e.g.*, achondroplasia, growth hormone deficiency, osteogenesis imperfecta.
 - **Hypertonia:** Hypertonia is marked by an abnormal increase in muscle tension and reduced ability of a muscle to stretch. Hypertonia may result from injury, disease, or conditions which involve damage to the central nervous system. *e.g.*, cerebral palsy.
 - **Ataxia:** Ataxia is an impairment that consists of a lack of coordination of muscle movements. *e.g.*, cerebral palsy, Friedreich's ataxia, multiple sclerosis.
 - **Athetosis:** Athetosis is generally characterised by unbalanced, involuntary movements and a difficulty maintaining a symmetrical posture (*e.g.* cerebral palsy, choreoathetosis).
- **Visual Impairment:** Athletes with visual impairment ranging from partial vision, sufficient to be judged legally blind, to total blindness. This includes

impairment of one or more component of the visual system – eye structure, receptors, optic nerve pathway, and visual cortex.

- **Intellectual Disability:** Athletes with a significant impairment in intellectual functioning and associated limitations in adaptive behaviour fall under the category of intellectual disability. The IPC primarily serves athletes with physical disabilities, but the Intellectual Disability group has been added to some Paralympic Games. This includes only athletes with exceptional athletic ability who have intellectual disabilities diagnosed before the age of 18. However, the IOC recognised Special Olympics World Games are open to all people with intellectual disabilities.

► Divisioning in Sports by Special Olympics

Special olympics uses a competitive-level matching or grouping referred to as divisioning which is a fundamental rule at special olympics. Athletes in competitions are matched with others of the same gender, about the same age and most importantly, of about the same competitive ability.

- **Process of Divisioning:** In the process of divisioning, athletes are firstly categorised as per their age group which is different for individual and team sports followed by gender and lastly by their ability.

• Age

Team Sports	Individual Sports
15 yrs and under	8-11 yrs
16-21 yrs	12-15 yrs
22 yrs and above	16-21 yrs
	22-29 yrs
	30 yrs and above

- **Gender:** In the second step, athletes are grouped as per gender, in some circumstances gender can be combined too.
- **Ability:** Finally athletes in Special Olympics are grouped according to their skill abilities scores which are recorded by committee through preliminary and on-site events.

- **Maximum Effort Rule:** To achieve the intentions of fairness, there is a 'maximum effort rule', wherein athletes are expected to give their maximum effort during divisioning process and coaches are expected to motivate all athletes towards giving their best. Special Olympics Athletes who do not participate honestly and do not adhere to the maximum effort rule in all preliminary trials or final rounds violate the true spirit of competition and may even be disqualified from competition.

► Paralympic Committee of India

- The Paralympic Committee of India (PCI) is the body responsible for selecting athletes to represent India at the Paralympic Games and other international athletic meets and for managing the Indian teams at the events.

- In India “Physically Handicapped Sports Federation of India” was the first organisation that was formed in 1992 by Mr. M. Mahadeva, an Arjuna Awardee and Paralympian. Later the name was changed to the Paralympic Committee of India (PCI) which is now the Governing Body of Paralympic Sports in India. It is recognised by both, IPC and the Ministry of Youth Affairs and Sports, Govt. of India. The Head Office of PCI is located in Delhi while the Registered Office is in Bengaluru.
- **Aims and Objectives of Paralympic Committee**
 - To promote and contribute to the development of sport opportunities and competitions from the start to elite level.
 - To develop opportunities for athletes with a severe disability in sport at all levels and in all structures.
 - To promote the self-governance of each Paralympic Sports Federation as an integral part of the National sport movement, whilst at all times safeguarding and preserving its own identity.
 - To ensure the spirit of fair play prevails, the health risk of the athletes is managed and fundamental ethical principles are upheld.
 - To identify disabled athletes throughout India, imparting necessary training to them and preparing them to take part in State, National and International Sports meets.
- **Deaflympics**
 - The Deaflympics are a periodic series of multi-sport events sanctioned by the International Olympic Committee (IOC) at which Deaf athletes compete at an elite level. Unlike the athletes in other IOC-sanctioned events (the Olympics, the Paralympics, and the Special Olympics), athletes cannot be guided by sounds (such as starting pistols, bullhorn commands or referee whistles). The games have been organised by the Comité International des Sports des Sourds (CISS, “The International Committee of Sports for the Deaf”) since the first event in Paris in 1924.
 - Officially, the games were originally called the ‘International Games for the Deaf’ from 1924 to 1965. From 1966 to 1999 they were called the ‘World Games for the Deaf’. From 2001, the games have been known by their current name Deaflympics (often mistakenly called the Deaf Olympics).
 - Twenty three (23) Summer Games, have been held consistently at 4-year intervals since the initial Paris games. The only exceptions were the cancellation of 1943 and 1947 Games because of World War II, and an additional event, the Deaflympic Winter Games, was added in 1949.
- **Inclusion**
 - Inclusion is a vast concept that implies including everyone in education without being judgemental about the abilities, appearance, economic condition, etc., of the participants. Inclusion plays a big role in creating a safe, comfortable and emotionally secure environment in any educational institution.
- **Need for Inclusive Education**
 - It helps students to build self-esteem, and build and maintain friendships.
 - It improves social and communication skills.
 - In an inclusive classroom, students with or without special needs understand and appreciate the strengths and weaknesses of their education.
 - Inclusive education leads to better academic performance than is exclusive education.
- **Implementation of Inclusive Education**

India should emphasize on the measures for effective implementation of inclusive education. Some of these measures are as follows:

 - Ensuring effective implementation of the Right to Education in all states so that no child is left out of the ambit of education so that we are able to take care of the needs of CWSN.
 - Encouraging a flexible approach towards curriculum transaction whereby teachers and students are able to diagnose and resolve the problems that they face during the teaching learning process.
 - Involving parents as partners and as a resource in the decision-making process for enhancing their child’s learning so that a collaborative effort results in effective inclusive education.
 - Providing students related materials like uniforms, books, stationery, transport allowance, stipend for girls, boarding and lodging facilities, therapeutic services, teaching and learning materials, assistive devices, etc., to CWSN from the school.
- **Advantages of Physical Activities for Children with Special Needs**
 - **Physical Benefits:** Regular involvement in physical education and sport can help children with intellectual disabilities to develop their gross motor and fine motor skills which may improve their overall performance. When encouraged to participate in a regular fitness routine, many CWSN show improvement in hand-eye coordination and flexibility, muscle strength, endurance and even cardiovascular efficiency.
 - **Mode of Recreation and Fun:** CWSN frequently miss out on social activities, recreation and fun. Participation in extracurricular and sports activities can help them overcome this obstacle, providing them with the ability to engage in social interactions, make friends and initiate social skills.
 - **Improved Emotional Health:** CWSN often tend to have more emotional problems like depression. Participating in regular exercise can be a life-changing benefit by improving mental health and well-being. Physical activity can also improve general mood and wellness, which aid in empowering the lives of children with special needs.
 - **Psychological Benefits:** Physical activity improves general mood and wellness in CWSN by improving their self-esteem, social awareness, and self-confidence, all of which factors are essential for empowering their lives. On the one hand; the physical outlet provided by sports and physical activity reduces anxiety, stress and depression, and on the

other hand interaction and involvement with other students gives children a sense of accomplishment and confidence.

- **Healthy Lifestyle:** Physical activities are beneficial for CWSN because these activities reduce or decrease the risk of various health complications like high blood pressure, diabetes and at the same time improve appetite and sleeping disorder.
- **Behavioural Benefits:** Sports and Games help the child learn to practice self-regulation and enhance their decision-making skills. In addition, CWSN can learn to focus on specific goals, and work on their verbal communication by interacting with peers on the sports field. Sports and physical education teach children a range of skills that including teamwork, problem solving abilities, increased attention span, and focus on task-based behaviour.
- **Increased Independence:** For a person with a disability, an increase in physical activity can lead to more independence and freedom. Increased physical strength and energy that come from regular exercise allows persons with disability to do more daily tasks without assistance.

➤ Strategies to Make Physical Activities Accessible for CWSN

- Participation in physical activity is beneficial for all children, including those with disabilities. In fact, participation of children with disabilities in sports and recreational activities promotes inclusion, minimises deconditioning, optimises physical functioning, and enhances overall well-being. Despite these benefits, children with disabilities are more restricted in their participation, have lower levels of fitness, and have higher levels of obesity than their peers without disabilities.

Following strategies should be taken into consideration to make physical activities accessible for CWSN:

- **Communication:** Advance information about activity, space, resource person or any change in activity should be communicated clearly. A variety of different instructional strategies such as verbal, visual and peer teaching should be used for performing various types of physical activities so that children get opportunity to participate in physical activity. The teacher could use visuals or social story about the activity. Give positive, corrective or specific feedback. As per the ability of the child, specific instruction must be

provided in simple words and sentences. The tone should be low and one instruction should be given at a time. If necessary, a communication board or communication book could be used.

- **Space:** Space should be approachable for people having physical disability. Space for activities should be disturbance free (noise, heat, cold, texture of floor, audience etc.). Boundaries should be demarked clearly as starting point, finishing point, sitting area.
- **Equipment:** A lack of appropriate equipment, coupled with a lack of professionals trained to support physical activity among children and youth with different ability levels, discourages participation. In recent years several modified devices are on offer for adapted sports. There are many examples of simple and sophisticated equipment, including computerised devices like wheelchairs for recreation and sport activities.
- **Social Strategies:** Allow the child to choose a sport she/he enjoys. It's easier for children to be motivated when they enjoy the activity. At first, encourage the child with special needs to watch others. Let the child see people having fun as they play. Then, start with individual training, transfer to small group with supervision and reminder. Be a mediator to interact with other members of group. Keep individual check on each person participation and motivate them with reminder whenever they get distraction.
- **Psychological Strategies:** Because of previous exclusion or limited access, children with disabilities need a lot of motivation to participate in physical activity. Changing attitudes is the key to increasing participation. These barriers include attitudes, opinions and perceptions preventing participation in sport. Once children see improvements in muscle strength, coordination, and flexibility and experience better balance, motor skills and body awareness, they will have positive changes towards sports.
- **Graded Activities:** During initial stage activities should be simple and the activity should be based on a single action. There should be a gradual move from non-locomotor to locomotor (such as running, jumping, hopping, and sliding) to manipulated activities (such as throwing, catching, kicking, overhand throw, and underhand roll). The activity must be practised with progressive count, or even performed dramatically with rhymes or songs with voice modulation so they enjoy the activities.



Practice Exercise



Multiple Choice Questions ↓

Q 1. IFAPA stands for:

- a. International Federation of Adapted Physical Activity
- b. International Federation of Adapted Physical Academy
- c. International Federal of Adaptive Physical Activity
- d. International Fraternity of Adapted Physical Authority

Q 2. The founder of Special Olympics was:

- a. Eunice Kennedy Shriver
- b. John F. Kennedy
- c. Lyndon B. Johnson
- d. Zurab Tsereteli

Q 3. The first Special Olympics Games were held in:

- a. New York
- b. Paris
- c. Chicago
- d. Washington D.C.

Q 4. The first World Winter Special Olympics Games were held in:

- a. 1962 b. 1987 c. 1960 d. 1977

Q 5. Which of the following programme(s) is run by Special Olympics?

- a. Unified Sports Programme
b. Healthy Athletes Programme
c. Young Athletes Programme
d. All of the above

Q 6. Choose the incorrect statement from the following:

- a. Special Olympics has more than 30 Olympic-type individual and team sports.
b. At competitions, ribbons are awarded to athletes who finish in fourth through eighth place.
c. To participate in Special Olympics, a person must be at least 18 years old.
d. In Special Olympics, athletes are divided into competition division based upon their ability, age and sex.

Q 7. Special Olympics Bharat was founded in 1987 as:

- a. National Special Olympics
b. Special Olympics India
c. National Sports Olympics
d. Special Olympics Hindustan

Q 8. The reason Paralympic Games got their name was because:

- a. they were meant for athletes suffering from paraplegia.
b. they run alongside or parallel to the Olympic Games.
c. the athletes are paragons of their sports.
d. they are attended by a large number of paramedics.

Q 9. Paralympic Games was a 1948 sporting competition held at Stoke Mandeville hospital in:

- a. England b. United States of America
c. Germany d. Greece

Q 10. International Paralympic Committee was formed in

(CBSE 2024)

- a. 1985 b. 2003 c. 1989 d. 2001

Q 11. The first official Paralympic Games was held in:

- a. Rome b. Schlading
c. Bonn d. Illinois

Q 12. The motto of the Paralympics is:

- a. together for a shared future
b. spirit in motion
c. faster, higher, stronger
d. touch the sky with glory

Q 13. The Paralympic anthem was composed by:

- a. Spyridon Samaras b. Thierry Darnis
c. Brande Aristortle d. Andrew Parsons

Q 14. Grouping process associated with paralympics is referred as:

- a. divisioning b. classification
c. grouping d. categorisation

Q 15. Which is the main governing body responsible for the organisation of Deaflympics?

(CBSE 2024)

- a. World Deaf Champions Committee
b. National Sports Federation
c. International Co-ordinating Committee for Disabled Sports.
d. International Committee of Sports for the Deaf

Q 16. Physically Handicapped Sports Federation of India was formed by:

- a. Murlikant Petkar
b. M. Mahadeva
c. Joginder Singh Bedi
d. R. Rahelu

Q 17. In which year, first Deaflympics were organised?

(CBSE 2023)

- a. In 1949 b. In 1924
c. In 1992 d. In 1987

Q 18. Right to education provides free education for all children within the age group of:

- a. 5-10 yrs b. 6-14 yrs
c. 10-18 yrs d. 2-7 yrs

Q 19. School management needs to recognise the essential place of physical activity in the education of children with special needs.

Which of these is not one of the results of physical activities in children with special needs?

(CBSE SQP 2023-24)

- a. Improvement in confidence
b. Improvement in endurance
c. Increase in depression
d. Better hand-eye coordination

Q 20. Watching others play and enjoy which in turn motivates the child with special need to participate is a part of which kind of strategy?

(CBSE SQP 2022-23)

- a. Mental b. Physical
c. Psychological d. Social



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 21-24): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 21. Assertion (A): Special Olympics is the world's largest sports organisation for children and adults with intellectual disabilities and physical disabilities.

Reason(R): The Special Olympics oath is: "Let me win. But if I cannot win, let be brave in the attempt."

Q 22. Assertion (A): The mission of Special Olympics Bharat is to provide year-round sports training and athletic competition in 30 Olympic-style individual and team sports for children and adults with intellectual disabilities.

Reason(R): Special Olympics Bharat is a National Sports Federation, registered under the Indian Trust Act 1882, in 2001 to conduct Special Olympics Programmes in India.

- Q 23. Assertion (A): The Paralympic Committee of India is responsible for organising the Summer and Winter Paralympic Games.
Reason(R): Its main aim is to identify disabled athletes, imparting necessary training to them and preparing them to take part in State, National and International Sports meets.
- Q 24. Assertion (A): CWSN often tend to have more emotional problems like depression.
Reason(R): Sports and Games help CWSN to reduce anxiety, stress and depression.

Answers

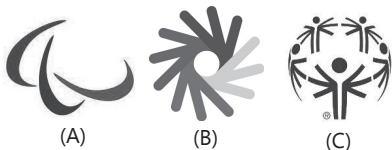
- (a) International Federation of Adapted Physical Activity
- (a) Eunice Kennedy Shriver
- (c) Chicago
- (d) 1977
- (d) All of the above
- (c) To participate in Special Olympics, a person must be at least 18 years old.
- (b) Special Olympics India
- (b) they run alongside or parallel to the Olympic Games.
- (a) England
- (c) 1989
- (a) Rome
- (b) spirit in motion
- (b) Thierry Darnis
- (b) classification
- (d) International Committee of Sports for the Deaf
- (b) M. Mahadeva
- (b) In 1924
- (b) 6-14 yrs
- (c) Increase in depression
- (d) Social
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- (d) Assertion (A) is false, but Reason (R) is true.
- (d) Assertion (A) is false, but Reason (R) is true.
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).



Case Study Based Questions ↓

Case Study 1

In relation to the pictures, answer the following question. (CBSE 2023)



- Q 1. Logo shown in picture refers to Special Olympic.
- Q 2. Who was the founder of Special Olympics?

- Q 3. According to figure 'B', the hand shapes of 'OK', 'Good' and 'Great' that overlap each other in a circle, represent the original sign for
- Q 4. How many countries participated in the first Paralympic Games in Rome (Italy) in 1960?

! Answers



EXPERT'S Answer

- (C)
- Eunice Kennedy Shriver
- Deaflympics
- 23 countries

Case Study 2

In relation to the pictures, answer the following question. (CBSE SQP 2022-23)



- Q 1. What is the mission of the first organisation?
- Q 2. What is the motto of the first organisation?
- Q 3. Until 1965 the games in the second picture were known as
- Q 4. Second picture games are conducted after every years.

! Answers

- The mission of Special Olympics is to provide year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities, giving them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in events.
- Let me win. But if I cannot win, let me be brave in the attempt.
- International Games for the Deaf.
- 4

Case Study 3

Read the following passage and answer the following questions. (CBSE 2024)

A survey in an inclusive school setup found the discrepancies between the participation of normal and special child during annual sports meet. Study the table given below carefully:

S. No.	Event	Normal Child (150)	Special Child (10)
1.	100 Mtr.	40	5
2.	400 Mtr.	25	2
3.	Long Jump	20	0
4.	High Jump	15	1
5.	Relay Race	8	4

- Q 1. As per the given table, in event, there is no participation of Special Child.
- Q 2. Participation of students with disabilities in regular physical education classes is known as
- Q 3. Enlist any two strategies to make physical activities accessible for children with special needs.
- Q 4. Motto of Special Olympic is
Or The motto of Paralympic is

! Answers

1. long jump
2. inclusion
3. (i) Space (ii) Equipment
4. Let me win. But if I cannot win, let me be brave in the attempt.
Or Spirit in motion

Case Study 4

Read the following passage and answer the following questions.

School management needs to recognise the essential place of physical activity in the education of children with special needs. In order to develop life-long habits for fitness and to provide them with many opportunities of socialisation, schools need to understand that physical education is not a secondary subject but it is just as important as other skills.



(CBSE SQP 2023-24)

- Q 1. Development of Gross Motor and Fine Motor skills are benefits which are part of
- Q 2. Graded activities as strategy for effective inclusive physical education programme includes
- Q 3. for activities should be disturbance free (noise, heat, cold, texture of floor, audience, etc.).
- Q 4. The activities that include running, jumping, hopping, galloping, rolling, leaping and dodging, horizontal jump, side

! Answers

1. physical benefits
2. space
3. Simple to complex
4. locomotor activity



Very Short Answer Type Questions ↓

Q 1. When and where did Special Olympics start?

Ans. The first Special Olympics games were held on July 20, 1968, in Chicago, Illinois, with about 1000 athletes from the U.S. and Canada.

Q 2. List the programmes run by Special Olympics around the world.

Ans. The programmes run by Special Olympics around the world are as follows:

- (i) Young Athletes Programme
- (ii) Unified Sports Programme
- (iii) Healthy Athletes Programme

Q 3. State any one objective of Special Olympics Bharat.

Ans. Its objective is to train teachers to sensitise them to needs of special children, and create a cadre of physical education teachers from among the disabled who can work with schools and community centres.

Q 4. What is the anthem of the Paralympics?

Ans. The Paralympic anthem is 'Hymne de l'Avenir' or 'Anthem of the Future'. It was composed by Thierry Darnis and adopted as the official anthem in March 1996.

Q 5. What is the vision of the International Paralympic Committee?

Ans. The vision of the IPC is, "To enable Paralympic athletes to achieve sporting excellence and to inspire and excite the world."

Q 6. What do you understand by the term hypertonia?

Ans. Hypertonia is marked by an abnormal increase in muscle tension and reduced ability of a muscle to stretch. Hypertonia may result from injury, disease, or conditions which involve damage to the central nervous system. e.g., cerebral palsy.

Q 7. Write a short note on Deaflympics.

Ans. The Deaflympics are a periodic series of multi-sport events sanctioned by the International Olympic Committee (IOC) at which Deaf athletes compete at an elite level.



Short Answer Type-I Questions ↓

Q 1. Define disability and list down any two types of disability. (CBSE 2022 Term-2)

Ans. The term disability means physical, cognitive, developmental, sensory or mental impairment that can hamper or reduce a person's ability to carry out his day-to-day activities. Physical disabilities and intellectual disabilities are the two types of disabilities.

Q 2. What is the mission of the Special Olympics Bharat?

Ans. The mission of Special Olympics Bharat is to provide year-round sports training and athletic competition in 25 Olympic-style individual and team sports for children and adults with intellectual disabilities, giving them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community.

Q 3. What do you know about Paralympics?

Ans. The Paralympic Games or Paralympics is a periodic series of international multi-sport events involving athletes with a range of physical disabilities, including limb deficiency, leg length difference, short stature, vision impairment and intellectual impairment.

Q 4. Write a short note on International Paralympic Committee.

Ans. The International Paralympic Committee is the global governing body of the Paralympic Movement. The IPC is responsible for organising the Summer and Winter Paralympic Games. It also serves as the International Federation for nine sports, supervising and coordinating the World Championships and other competitions for each of the nine sports it regulates.

Q 5. What is the purpose of criteria of Paralympic athletes?

Ans. The purpose of criteria are as follows:

- Defining the impairment group in which an athlete can compete in the various sports.
- Grouping athletes in classes defined by the degree of activity-limitation related to the impairment and/or specific to the task in the sport.

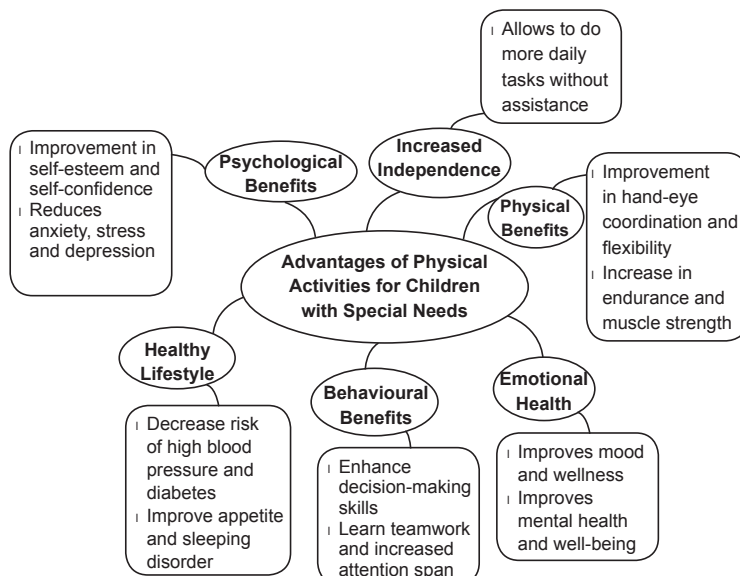
Q 6. List down any two strategies to make physical activities accessible for CWSN. (CBSE SQP 2021 Term-1)

Ans. Following strategies should be taken into consideration to make physical activities accessible for CWSN:

- Space:** Space should be approachable for people having physical disability. Space for activities should be disturbance free (noise, heat, cold, texture of floor, audience, etc.). Boundaries should be demarked clearly as starting point, finishing point, sitting area.
- Equipment:** The equipments related to physical activities should be according to the need of CWSN. These equipments should vary in shape, size, colour and weight. These equipments should be according to the capability and level of CWSN.

Q 2. Create a mind map including any six advantages of physical activities for children with special needs.

(CBSE SQP 2022-23)

Ans.**Q 7. Write any two advantages of physical activities for Children with Special Needs (CWSN). (CBSE 2024)**

Ans. Two advantages of physical activities for Children with Special Needs are as follows:

(i) Psychological Benefits: Physical activities reduces anxiety, stress and depression, and on the other hand improves mood and wellness in CWSN by improving their self-esteem, social awareness and self-confidence.

(ii) Physical Benefits: Regular involvement in physical activities help CWSN in developing gross motor and fine motor skills. This also lead to improvement in hand-eye coordination, flexibility and endurance.

**Short Answer Type-II Questions ↓****Q 1. What is the goal of Special Olympics? Also, state the eligibility criteria for participation of athletes in Special Olympics.**

Ans. Goal of Special Olympics: The ultimate goal of Special Olympics is to help persons with intellectual disabilities participate as productive and respected members of society at large, by offering them a fair opportunity to develop and demonstrate their skills and talents through sports training and competition, and by increasing the public's awareness of their capabilities and needs.

Eligibility for Participation in Special Olympics:

- There is no maximum age limitation for participation in Special Olympics. The minimum age requirement for participation in Special Olympics competition is eight years of age.
- The person has been identified by an agency or professional as having an intellectual disability, cognitive delay as determined by standardised measures such as intelligent quotient or 'IQ' testing, or having functional limitations in both general learning (such as IQ) and in adaptive skills (such as in recreation, work, independent living, self-direction, or self-care).

Q 3. Write in detail the aims and objectives of Paralympic Committee.

Ans. The aims and objectives of Paralympic Committee are as follows:

- (i) To promote and contribute to the development of sport opportunities and competitions, from the start to elite level.
- (ii) To develop opportunities for athletes with a severe disability in sport at all levels and in all structures.
- (iii) To promote the self-governance of each Paralympic sport federation as an integral part of the national sport movement, whilst at all times safeguarding and preserving its own identity.
- (iv) To ensure the spirit of fair play prevails, the health risk of the athletes is managed and fundamental ethical principles are upheld.
- (v) To identify disabled athletes throughout India, imparting necessary training to them and preparing them to take part in State, National and International Sports meets.

Q 4. "Participation in physical activities is advantageous for children with special need." Briefly explain any six advantages. (CBSE 2023)



EXPERT'S Answer

Ans. Following are the advantages of physical activities for children with special needs:

- (i) **Physical Benefits:** Involvement in physical activities help children with disabilities to develop gross motor and fine motor skills. These activities enhance hand-eye coordination, flexibility, muscle strength and endurance.
- (ii) **Reduce the Level of Anxiety:** Physical activities helps in reducing the level of anxiety, stress and depression among children with disabilities.
- (iii) **Improved Social Interaction:** Participation in sports activities help CWSN engage in social interactions, make friends and develop social skills.
- (iv) **Reduce Risk of Health Complications:** Physical activity reduces the risk of various health complications like high blood pressure and at the same time improve appetite and quality of sleep.
- (v) **Behavioural Benefits:** Sports and physical education teach CWSN a range of skills that include teamwork, problem solving abilities, increased attention span, and focus on task-based behaviour.
- (vi) **Increased Independence:** For a person with a disability, an increase in physical activity can lead to more independence and freedom. Increased physical strength and energy that come from regular exercise allows persons with disability to do more daily tasks without assistance.

Q 5. How should a teacher communicate with a child suffering from cognitive disability?

Ans. Following things should be taken into consideration while communicating with a child suffering from cognitive disability:

- (i) Advance information about activity, space, resource person or any change in activity should be communicated clearly.
- (ii) A variety of different instructional strategies such as verbal, visual and peer teaching should be used for performing various types of physical activities so that children get opportunity to participate in physical activity. The teacher could also use visuals or social story about the activity.
- (iii) The tone should be low and one instruction should be given at a time.
- (iv) Positive, corrective or specific feedback should be given.
- (v) As per the ability of the child, specific instruction must be provided in simple words and sentences.

Q 6. Explain any three strategies to Make Physical Activities Accessible for CWSN. (CBSE SQP 2023-24)

Ans. There are three strategies to Make Physical Activities Accessible for CWSN are as follows:

- (i) **Equipment:** A lack of appropriate equipment, coupled with a lack of professionals trained to support physical activity among children and youth with different ability levels, discourages participation. In recent years several modified devices are on offer for adapted sports. There are many examples of simple and sophisticated equipment, including computerised devices like wheelchairs for recreation and sport activities.
- (ii) **Social Strategies:** Allow the child to choose a sport she/he enjoys. It's easier for children to be motivated when they enjoy the activity. At first, encourage the child with special needs to watch others. Let the child see people having fun as they play. Then, start with individual training, transfer to small group with supervision and reminder. Be a mediator to interact with other members of group. Keep individual check on each person participation and motivate them with reminder whenever they get distraction.
- (iii) **Psychological Strategies:** Because of previous exclusion or limited access, children with disabilities need a lot of motivation to participate in physical activity. Changing attitudes is the key to increasing participation. These barriers include attitudes, opinions and perceptions preventing participation in sport. Once children see improvements in muscle strength, coordination, and flexibility and experience better balance, motor skills and body awareness, they will have positive changes towards sports.



Long Answer Type Questions ↓

Q 1. Write a short note on Special Olympics. Mention the different programmes run by Special Olympics around the world.

Ans. Special Olympics were started by Eunice Kennedy Shriver, sister of former President of the United States of America, John F Kennedy in 1968. The idea was born out of Shriver's experience of witnessing the social exclusion of people with intellectual disabilities who were routinely placed in custodial institutions. She was convinced that children with intellectual disabilities could be exceptional athletes and that through sports they can realise their potential for growth. Special Olympics is now the world's largest sports organisation for children and adults with intellectual disabilities and physical disabilities, providing year-round training and activities to 5 million participants and Unified Sports partners in 172 countries. The Special Olympics logo is based on the sculpture 'Joy and Happiness to all the Children of the World' by Zurab Tsereteli. The logo is a symbol of growth, confidence and joy among children and adults with disabilities who are learning coordination, mastering skills, participating in competitions and preparing themselves for richer, more productive lives.

Programmes Run by Special Olympics around the World

(i) **Young Athletes Programme:** For young people with and without intellectual disabilities between the ages of 2–7, Special Olympics has a Young Athletes Programme, an inclusive sport and play programme with a focus on activities that are important to mental and physical growth. Children engage in games and activities that develop motor skills and hand eye coordination.

(ii) **Unified Sports Programme:** In recent years, Special Olympics has pioneered the concept of Unified Sports, bringing together athletes with and without intellectual disabilities as teammates. The basic concept is that training together and playing together can create a path to friendship and understanding.

(iii) **Healthy Athletes Programme:** In 1997, Special Olympics began an initiative called Healthy Athletes that currently offers health screenings in seven areas: FUN fitness (physical therapy), Health Promotion (better health and well-being), Healthy Hearing (audiology), Opening Eyes (vision) and Special Smiles (dentistry). Screenings educate athletes on health issues and also identify problems that may need additional follow-up.

Q 2. Mention any five founding principles of Special Olympics.

Ans. The principles on which Special Olympics was founded, and which must continue to guide the operation and expansion of the global Special Olympics Movement, include the following:

(i) People with intellectual disabilities can, with proper instruction and encouragement, enjoy, learn and benefit from participation in individual and team sports, adapted as necessary to meet the needs of those with special mental and physical limitations.

(ii) Consistent training under the guidance of qualified coaches, with emphasis on physical conditioning, is essential to the development of sports skills, and competition among those of equal abilities is the most appropriate means of testing these skills, measuring progress and providing incentives for personal growth.

(iii) Through sports training and competition, people with intellectual disabilities benefit physically, mentally and socially and spiritually. Families are strengthened, and the community at large, both through participation and observation, is united with people with intellectual disabilities in an environment of equality, respect and acceptance.

(iv) Special Olympics must transcend all boundaries of race, gender, religion, national origin, geography, and political philosophy, and offer sports training and competition opportunities to all eligible persons with intellectual disabilities in accordance with uniform worldwide standards.

(v) Special Olympics celebrate and strive to promote the spirit of sportsmanship and a love of participation in sports for its own sake. Special Olympics aims to provide every athlete with an opportunity to participate in training and competition events which challenge that athlete to his or her fullest potential, regardless of the athlete's level of ability.

(vi) Special Olympics encourages sports training and competition opportunities at the local area and community level (including schools) as a means of reaching the greatest number of eligible athletes.

Q 3. How physical activities are helpful for children with special need? Explain strategies to make physical activities assessable for them. (CBSE 2020)

Ans. There are a number of advantages of physical activities for children with special needs. Some of them are as follows:

(i) **Physical Benefits:** When encouraged to participate in a regular fitness routine, many CWSN show improvement in hand-eye coordination and flexibility, muscle strength, endurance, and even cardiovascular efficiency.

(ii) **Psychological Benefits:** Physical activity reduces anxiety, stress and depression, and improves self-esteem, social awareness, and self-confidence of children with special needs.

(iii) **Healthy Lifestyle:** Physical activities are beneficial for CWSN because these activities reduce or decrease the risk of various health complications like high blood pressure, diabetes and at the same time improve appetite and quality of sleep.

(iv) **Increased Independence:** For a person with a disability, an increase in physical activity can lead to more independence and freedom. Increased physical strength and energy that come from regular exercise allows persons with disability to do more daily tasks without assistance. Strategies to make physical activities accessible for children with special needs are as follows:

(a) Specific Environment Should be Provided:

The area of physical activities should be limited as movement capabilities of

children with special needs are limited. Light and sound are also vital for making good environment for such children.

(b) A Variety of Different Instructional Strategies Should be Used: For performing various types of physical activities, a variety of different instructional strategies such as verbal, visual and peer teaching should be used. Pictorial books are also vital in terms of instructions regarding physical activities.

(c) Rules Should be Modified According to the Needs of Children with Disabilities: In the beginning, rules of the physical activities should be simple but later on these rules

can be modified according to the needs of the children. They can be provided extra attempt or time to perform a physical activity. They can also be given additional resting time before doing the next physical activity.

(d) Children's Previous Experience Must be Taken into Consideration: For making physical activities more accessible for children with special needs, the concerned teacher of physical education should have comprehensive understanding and knowledge of children's previous experience about physical activities.



Chapter Test

Multiple Choice Questions

Q 1. IOC stands for:

- International Olympic Consortium
- International Olympic Committee
- International Olympic Coalition
- International Olympic Council

Q 2. Deaflympics were called the "World Games for the Deaf" from:

- 1966 to 1999
- 1924 to 1965
- 2001 onwards
- 1924 to 1945

Q 3. Physical education teach CWSN a range of skills like:

- teamwork
- problem solving abilities
- Both a. and b.
- jealousy

Q 4. Where is the permanent headquarter of IPC located?

- In Lausanne, Switzerland
- In Bonn, Germany
- In Colorado, US
- In Rome, Italy

Q 5. When was Paralympic Committee of India formed?

- 1982
- 1988
- 1996
- 1992

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true, but Reason (R) is false.
- Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Special Olympics world Games are held in the same year or in conjunction with the Olympic Games.

Reason (R): Special Olympics is recognised by the IOC.

Q 7. Assertion (A): CWSN are about twice as likely to be overweight or obese as other children.

Reason (R): Because of their disability, their level of participation in sports and physical activity is much lower than their peers.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

In June 1962, Eunice Kennedy Shriver started a day camp called Camp Shriver for children with intellectual and physical disabilities at her home in Potomac, Maryland. The camp sought to address the concern that children with special needs had very little opportunity to participate in organised athletic events. Camp Shriver later evolved into the Special Olympics. The first games were held on July 20, 1968 in Chicago, Illinois. In 2003, the first Special Olympics Summer Games held outside the United States were in Dublin, Ireland with 7000 athletes from 150 countries. The World Games alternate between Summer and Winter Games, in two-year cycles, recurring every fourth year.

(i) What does the Special Olympics logo signify?

(ii) Who is eligible to participate in Special Olympics?

(iii) When are Special Olympic World Games held?

Very Short Answer Type Questions

Q 9. Define the term limb deficiency.

Q 10. What do you mean by disability?

Short Answer Type-I Questions

Q 11. When and where did the most recent world summer games and first world winter games held?

Q 12. Write a short note on special Olympics Bharat.

Q 13. Write down any two advantages of physical activities for children with special needs.

Short Answer Type-II Questions

Q 14. Differentiate between Special Olympics and Paralympics.

Q 15. Write a short note on Deaflympics.

Q 16. Explain three strategies to make physical activities accessible for children with special needs.

Long Answer Type Questions

Q 17. What was the major challenge faced by the organisers of para-sports? Briefly explain the disability categories established by IPC.

Q 18. Write a short note on Paralympic Committee of India.

Scan the QR Code

To get Answers of this Chapter Test





Sports and Nutrition

FAST TRACK REVISION

- **Balanced Diet:** A diet which consists of all the essential food ingredients, viz., protein, carbohydrates, fats, vitamins, minerals and water in correct proportion is called **balanced diet**. It refers to the intake of edibles which can provide all the essential nutrients necessary for growth and maintenance of the body in definite amount.
- **Nutrition:** 'Nutrition' is the science of food which deals with the dynamic process in which the food consumed is digested, nutrients are absorbed and distributed to the tissues for utilisation and wastes are disposed-off by the body.

Nutrients are the basic components of food that are essential for human beings to stay away from diseases and live a healthy and energetic life. There are basically two types of nutrients: Macronutrients and Micronutrients.

- **Macronutrients:** Macronutrients are the structural and energy-giving caloric components of our food that include carbohydrates, fats, proteins and water. They constitute majority of an individual's diet and need to be taken in surplus amount.

Macronutrients: Functions and Sources

Nutrients	Functions	Sources
Carbohydrates	Carbohydrates provide energy needed by the body and the nervous system, brain and red blood cells; spare proteins for their important functions (if enough carbohydrates are not available, proteins are used for energy-giving); enable proper utilisation of fat by providing substrates for fat metabolism.	Fruits, cereal grains, milk, sugar, rice, vegetables, pasta, breads.
Proteins	Proteins build and repair body cells; form part of various enzymes, hormones, and antibodies; Provide energy (4 kcal/ gm).	Milk and milk products, vegetables, grains, fish, eggs, poultry, meat, legumes.
Fats	Fats provide energy (9 kcal/g); carry fat-soluble vitamins; are part of cell membranes, membranes around nerves, hormones, bile (for fat digestion).	Meat, poultry, fish, milk and milk products, nuts and seeds, vegetable oils, desi ghee, vanaspati ghee, butter, margarine, cheese.
Water	Water helps in the transportation of nutrients to cells of the body. It is also important for the excretion of waste products. It also regulates body temperature. It also acts as a lubricant.	Water, beverages like tea, coffee, etc., milk, vegetables, fruits, cereals, etc.

- **Micronutrients:** Micronutrients are the vitamins and minerals. They are required in small quantities, but possess great significance for proper functioning of our body.

Water-soluble Vitamins: Functions and Sources

Nutrients	Functions	Sources
Thiamine (Vitamin B ₁)	Works as coenzyme: (Thiamine pyrophosphate-TPP) needed for energy metabolism; important for nerve function; needed for DNA and RNA synthesis.	Whole-grain cereals, pulses, peanuts and seeds, mushrooms, green peas, beans, egg yolk and meat.
Riboflavin (Vitamin B ₂)	Act as two coenzymes: Flavin Mononucleotide (FMN) and Flavin Adenine Dinucleotide (FAD) needed for energy metabolism; important for normal vision and skin health.	Milk and milk products; animal products like eggs, liver, kidney; green leafy vegetables, e.g., broccoli; whole-grain cereals; legumes.

Niacin (Vitamin B ₃)	Part of an coenzymes: Nicotinamide Adenine Dinucleotide (NAD) and Nicotinamide Adenine Dinucleotide Phosphate (NADP) needed for energy metabolism; important for nervous system, digestive system, and skin.	Whole-grain cereals, pulses, meat, poultry, fish, vegetables (especially mushrooms, asparagus, and green leafy vegetables), peanuts and peanut butter. Eggs and milk and milk products lack niacin but are rich sources of EAA-tryptophan which can be converted to niacin in the body when required. 60 mg of tryptophan can be converted to provide 1 mg niacin.
Vitamin B ₆ (Pyridoxal, pyridoxine and pyridoxamine)	Part of coenzyme pyridoxal phosphate needed for protein and amino acid metabolism and also involved in activity of many enzymes required for carbohydrate, fat and protein metabolism. It also helps in making white blood cells and heme in haemoglobin.	Meat, poultry, fish, nuts, sunflower seeds, pulses, whole grains, spinach, bananas, potatoes.
Biotin (Vitamin B ₇)	Functions as coenzyme in metabolic reactions.	Widespread in foods like organ meats, such as liver or kidney; egg yolk; nuts, such as almonds, peanuts, and walnuts; soybeans and other legumes; whole grains; bananas; cauliflower, mushrooms; also produced in intestinal tract by bacteria.
Pantothenic acid (Vitamin B ₅)	Part of Coenzyme A (CoA) needed for energy metabolism.	Widespread in foods: milk, meat, peanuts, eggs.
Folic acid (Vitamin B ₉)	Part of an enzyme needed for making DNA and new cells, especially red blood cells, formation of neurotransmitters, needed for maintenance of normal blood pressure and reducing risk of cancer.	Green leafy vegetables particularly spinach, pulses, oranges and orange juice, and liver. Other vegetables like cabbage, cauliflower, broccoli are also good sources.
Cobalamin (Vitamin B ₁₂)	Part of two coenzymes methyl cobalamin and 5-deoxy adenosyl cobalamin, needed for making new cells; important to nerve function.	Meat, poultry, fish, seafood, eggs, milk and milk products; not found in plant foods.
Ascorbic acid (Vitamin C)	Antioxidant, role in collagen formation hence in wound healing, part of an enzyme needed for protein metabolism; important for immune system, helps in iron absorption.	Found in fruits and vegetables, especially citrus fruits, fresh vegetables in the cabbage family, sprouts, amla and guava.

Fat-soluble Vitamins: Functions and Sources

Nutrients	Functions	Sources
Vitamin A (Retinol and its precursor*, beta carotene) *A precursor is converted by the body to the vitamin.	Needed for vision in dim light, healthy skin and mucous membranes, growth of skeletal and soft tissues, immune system health.	Vitamin A from animal sources (retinol); milk, cheese, cream, butter, egg yolk, liver Beta-carotene (from plant sources);, dark green leafy vegetables; red and yellow fruits and vegetables (carrots, pumpkin, mangoes, papaya).
Vitamin D	Needed for proper absorption of calcium and phosphorus; deposition of calcium and phosphorus in bones.	Egg yolks, liver, fatty fish, fortified foods. When exposed to sunlight, the skin can make vitamin D.
Vitamin E	Antioxidant; protects cell walls.	Polyunsaturated plant oils (soybean, corn, cottonseed, safflower); green leafy vegetables; wheat germ; whole grain products; liver; egg yolks; nuts and seeds.
Vitamin K	Needed for proper blood clotting.	Green leafy vegetables and cabbage; milk; also produced in intestinal tract by bacteria.

Macro-minerals: Functions and Sources

Minerals	Functions	Sources
Sodium	Needed for proper fluid balance, regulating alkalinity and acidity of body fluids, nerve transmission, and muscle contraction	Table salt, soya sauce; large amounts in processed foods; small amounts in milk, breads, green leafy vegetables, and unprocessed meats
Chloride	Needed for proper fluid balance, stomach acid	Table salt, soya sauce; large amounts in processed foods; small amounts in milk, meats, breads, and vegetables
Potassium	Needed for proper fluid balance, nerve transmission, and muscle contraction	Meats, milk, fresh fruits and vegetables, whole grains, pulses
Calcium	Important for healthy bones and teeth; helps muscles relax and contract; important in nerve functioning, blood clotting, blood pressure regulation, immune system health	Milk and milk products; fish with bones (e.g., sardines); fortified soya milk; greens (broccoli, mustard leaves); pulses
Phosphorus	Important for healthy bones and teeth; found in every cell; part of the system that maintains acid-base balance	Meat, fish, poultry, eggs, milk, processed foods
Magnesium	Found in bones; needed for making protein, muscle contraction, nerve transmission, immune system health	Nuts and seeds; pulses; leafy, green vegetables; seafood; chocolate
Sulphur	Found in protein molecules	Occurs in foods as part of protein in meats, poultry, fish, eggs, milk, pulses, nuts

Micro-minerals: Functions and Sources

Minerals	Functions	Sources
Iron	Iron is a mineral found in every cell of the body. Iron is considered an essential mineral because it is found in red blood cells as part of haemoglobin that carries oxygen to every cell in the body; part of myoglobin needed for muscle contraction, needed for energy metabolism, hence crucial in helping perform physical work	Organ meats; red meats; fish; poultry; egg yolks; whole pulses and whole grain cereals; dried fruits; dark green leafy vegetables (mustard greens, bathua); iron-enriched breads and cereals; and fortified cereals
Zinc	Part of many enzymes needed for synthesizing protein and genetic material; has a function in taste perception, wound healing, normal foetal development, production of sperm, normal growth and sexual maturation, important for immune system	Meats, fish, poultry, whole grains, vegetables
Iodine	Found in thyroid hormone, which helps to regulate growth, development, and metabolism	Seafood, foods grown in iodine-rich soil, iodized salt, bread, dairy products
Selenium	Antioxidant	Meats, seafood, grains
Copper	Part of many enzymes; needed for iron metabolism	Pulses, nuts and seeds, whole grains, organ meats, drinking water
Manganese	Part of many enzymes	Widespread in foods, especially plant foods
Fluorine	Involved in formation of bones and teeth; helps to prevent tooth decay	Drinking water (either fluoridated or naturally containing fluoride), fish, and most teas
Chromium	Works closely with insulin to regulate blood sugar (glucose) levels	Organ meats especially liver, whole grains, nuts, cheese
Molybdenum	Part of some enzymes	Pulses, breads and grains; green leafy vegetables, milk; liver

► **Nutritive Components of Diet:** Nutritive components of diet are those components which contribute to provide energy or calories. There are various nutritive components of diet which are described below:

- **Proteins:** Proteins provides the body with amino acids, which are the building blocks for muscle and other important structures such as the brain, blood, skin and hair. Proteins form new tissues and repair the broken tissues.
- **Carbohydrates:** Carbohydrate is also a compound which is formed by the chemical composition of carbon, hydrogen and oxygen. Carbohydrates act like a fuel in our body. They provide energy and are responsible for various digestive operations in our body.
- **Fats:** Fats are stored in body and used as emergency sources of energy. They also helps in regulation of body temperature and play a vital role in protecting our vital internal organs.
- **Vitamins:** Vitamin is also an important nutritive component of food just like proteins, carbohydrates and fats. Vitamins are very vital for healthy life. Vitamins protect us from various types of diseases. In fact, vitamins increase immunity power of our body against diseases. They also give their important contribution for the general development of body. Vitamins are of two types—fat-soluble vitamins (A, D, E and K) and water-soluble vitamins (B and C).
- **Minerals:** Our body contains more than 19 minerals which must be derived from food. However, they are required in small quantities. Main mineral salts found in the body are calcium, phosphorus, iron, magnesium, potassium and iodine. Calcium and phosphorus help in the proper development of teeth and bones. Iron contributes to the formation of haemoglobin content of red blood corpuscles. Iodine helps in the prevention of certain diseases caused by Thyroid action deficiency.

► **Non-nutritive Components of Diet:** Non-nutritive components are those components of food, which don't give energy or calories. They do not have nutritional value and are added to food and beverage products. They are designed to make the food smell better, taste better, last longer and look better. Following are the non-nutritive components of diet:

- **Fiber or Roughage:** It is undigested part of food which improves intestinal function by adding bulk to food. It is present in fruits, vegetables etc.
- **Water:** The nutrients are transported to various cells of the body with the help of water. It also regulates the body temperature and is significant in the excretion of waste products.
- **Colour Compounds:** The food is made more appetising and attractive to see by colour compounds.
- **Flavour Compounds:** These develops better taste and odours to the food.
- **Plant Compounds:** These components are present in plants and have been associated with protection or treatment of diseases such as cancer, diabetes, etc.
- Food groups can also be classified according to their functions:

► **Group 1. Energy Giving Foods:** This category includes foods rich in carbohydrates and fats.

- Cereals and roots and tubers
- Sugar and jaggery
- Fats and oils

► **Group 2. Body Building Group:** This category includes foods rich in protein.

- Milk and milk products
- Meat and meat products, fish, egg or poultry
- Pulses
- Nuts and oilseeds

► **Group 3. Protective or Regulatory Foods:** This group include foods providing vitamins and minerals.

► **Fruits**

- Yellow and orange fruits (mango, papaya)
- Citrus fruits (lemon, orange, mausambi)
- Others (apple, banana, etc.)

► **Vegetables**

- Green leafy vegetables (spinach, mustard, fenu-greek, etc.)
- Yellow and orange vegetables (carrot, pumpkin)
- Others (beans, okra, cauliflower, etc.)

► **Healthy Weight:** A healthy weight is that weight which lowers that risk of various health problems such as heart diseases, stroke, high blood pressure, diabetes, etc., and leads to a healthy life.

► **Body Mass Index (BMI):** It is a measure of body fat calculated on the basis of height and weight. It is applicable to both adult men and women.

► **Method to Calculate BMI:** If you want to know your body mass index, then divide your body weight in kg by the square of your height in metre, i.e.,

$$\text{Body Mass Index} = \frac{\text{Weight in kg}}{(\text{Height in m})^2}$$

The WHO criteria for underweight, healthy or normal weight, overweight and obesity of BMI are:

Category	BMI
Underweight	<18.5
Normal weight	18.5-24.9
Overweight	25-29.9
Obesity Class I	30-34.9
Obesity Class II	35-39.9
Obesity Class III	>40

► **The Pitfalls of Dieting:** The major pitfalls of dieting are given below:

- Extreme reduction of calories
- Restriction on some nutrients
- Skipping meals
- Intake of calories through beverages
- Under-estimating the calories
- Intake of labelled food
- Not performing exercises

► **Food Intolerance:** Food intolerance is a term used widely for varied physiological responses associated with a particular food. In simple words, food intolerance means the individual elements of certain foods that cannot be properly processed and absorbed by our digestive system.

► **Food Myths:** Food myths are beliefs about food that have no scientific base. They are circulated with the intention of promoting good health and healthy living. Though it is not possible to mention all the food myths present all over the world, some of these have been mentioned here:

- Potatoes make us obese
- Drinking water along with food makes us fat
- Skipping meals reduces fat
- Fat-free eatables help lose weight
- Consuming milk over fish is injurious to health.

► **Importance of Diet in Sports**

Some importance of diet in sports are as follows:

- The body needs nutrition to repair and recover. Sports persons have greater demands on their body. If these are not met through proper diet, outcome will suffer and post training recovery process will be affected.
- For different games, there are different body composition requirements which can be manipulated to certain extent by nutrient composition of diet besides training, thus helping in achieving body composition goals.
- Dehydration can impair athletic performance. Therefore, sufficient intake of fluids and electrolytes ensures maximum hydration before, during and after exercise.
- Adequate diet enhances physiological adaptations during training.

► **Pre-exercise or Pre-competition Requirements (meal)**

In pre-competition requirement or meal, our main consideration should be as follows:

- A meal comprising high-carbohydrate, moderate protein and low fibre and low-fat foods providing 500-1000 kcal should be consumed. Examples of good pre-event meal would be banana milk shake or pasta and fruits with curd or potato sandwich with fruit juice.

- High sugar foods must be avoided to prevent insulin rush that results in early fatigue, cramping, dehydration, nausea and diarrhoea.
- Meals should be taken about 2-4 hours before exercise or competition.
- Foods heavy on stomach like fried foods or high fibre foods should be avoided on the day prior to competition.
- Too much of protein intake should also be avoided as it increases water excretion leading to a state of dehydration. Moreover, proteins are digested slower.
- Take sufficient liquids or a small snack on hour (or less) before exercise.

► **Requirements or Meal during Competition**

The main aim during competition and training should be to maintain water balance, control body temperature, sustain normal blood sugar levels and delay fatigue. During small breaks in the events like in tennis, boxing, etc., the consumption of adequate carbohydrate and fluids may be taken care of. In shorter breaks, carbohydrate rich foods like banana, juices, carbohydrate-based drinks (less than 2% concentration) or simply water may be taken. Carbonated beverages, fizzy drinks and drinks that contain caffeine are not recommended.

If exercising for more than 60 minutes, carbohydrate-electrolyte beverages like diluted fruit juices containing 5 percent to 8 percent carbohydrates can be ingested.

► **Post-competition Requirements**

Post training or sports competition, recovery of the best body state is required to play or to train the next day to the maximum potential and reduce the chances of injury. The main emphasis during recovery phase must be on the following:

- To replace fluids lost during exercise.
- To refill carbohydrate stores (muscle and liver glycogen).
- To replace electrolytes (sodium, potassium, chloride).



Practice Exercise



Multiple Choice Questions ↓

Q 1. A diet contains all the essential food constituents necessary for growth and maintenance of our body.

- a. strict
- b. balanced
- c. prescribed
- d. consistent

Q 2. **Balanced diet is related to:** (CBSE 2021 Term-1)

- a. consuming right amount of vitamins
- b. consuming correct ratio of carbohydrates and fats
- c. consuming all the nutrients in right amount
- d. consuming excess of protein and minerals

Q 3. **During the morning assembly in the school, Anu fell unconscious. She was taken to nearby doctor. The doctor declared her malnourished and advised her to take balanced diet everyday.**

Balance diet consists: (CBSE 2021 Term-1)

- a. macro nutrients
- b. micro nutrients
- c. nutritive and non-nutritive components
- d. nutritive components

Q 4. **Carbohydrates, which are soluble in water and crystalline in structure.** (CBSE SQP 2022-23)

- a. Simple
- b. Complex
- c. Compound
- d. Complicated

Q 5. **One gram of carbohydrate contains calories.** (CBSE SQP 2023-24)

- a. 2
- b. 3
- c. 4
- d. 5

Q 6. **The food component present in sugar is:** (CBSE 2020)

- a. fat
- b. protein
- c. vitamin
- d. carbohydrate

Q 7. **The body building nutrient is:**

- a. fat
- b. vitamin
- c. protein
- d. mineral

Q 8. Jatin is a weightlifter in the 96 kg category. He has to participate in a weightlifting competition next week for which he is taking good care of his practice and diet. He has included all the essential nutrients in his diet. Based on this case, answer the following questions.

What do you think would be the most important component of Jatin's diet? (CBSE SQP 2021 Term-1)

- a. Proteins b. Carbohydrates
c. Vitamins d. Minerals

Q 9. Which statement is not true about protein?

(CBSE SQP 2021 Term-1)

- a. Protein forms new tissues
b. Protein regulates the balance of water and acids
c. Protein helps in production of hormones
d. Protein makes antibodies

Q 10. Following are energy giving food except:

(CBSE 2021 Term-1)

- a. Cereals b. Sugar and Jaggery
c. Fats and Oil d. Yellow and Orange fruits

Q 11. What is the ratio of carbon, hydrogen and oxygen in carbohydrates? (CBSE SQP 2021 Term-1)

- a. 1:2:1 b. 2:2:1 c. 2:1:1 d. 1:2:2

Q 12. Which amongst these is not a micro mineral?

(CBSE SQP 2022-23)

- a. Iodine b. Magnesium
c. Iron d. Copper

Q 13. Which amongst these is not a macro mineral?

(CBSE SQP 2021 Term-1)

- a. Calcium b. Potassium
c. Phosphorus d. Iodine

Q 14. Who discovered Vitamin A? (CBSE SQP 2021 Term-1)

- a. Dr. McCollum b. Dr. Coubertin
c. Dr. J.B.Nash d. Dr. Harvard

Q 15. Role of water in human body is to (CBSE 2023)

- a. regulate body temperature
b. give energy
c. repair cell
d. protect from disease

Q 16. Which of the following are water soluble vitamins?

(CBSE 2023)

- a. Vitamin D and K b. Vitamin B and C
c. Vitamin A and E d. Vitamin A and C

Q 17. The main source of Vitamin C is: (CBSE 2020)

- a. guava b. egg
c. milk d. banana

Q 18. Match List-I with List-II and select the correct answer from the codes given below:

List-I (Vitamins)	List-II (Sources)
A. Vitamin A	(i) Spinach, Cabbage
B. Vitamin K	(ii) Sunlight, Cod liver oil
C. Vitamin C	(iii) Papaya, Carrot
D. Vitamin D	(iv) Lemon, Orange

- | | | | |
|----------|-------|------|-------|
| A | B | C | D |
| a. (iii) | (i) | (ii) | (iv) |
| b. (i) | (ii) | (iv) | (iii) |
| c. (iv) | (iii) | (i) | (ii) |
| d. (iii) | (i) | (iv) | (ii) |

Q 19. Match the following vitamins with their functions:

List-I	List-II
A. Vitamin K	(i) Need for blood clotting
B. Vitamin D	(ii) For protection of cell wall
C. Vitamin E	(iii) For vision in dim light
D. Vitamin A	(iv) For absorption of calcium and phosphorus

(CBSE 2021 Term-1)

- | | | | |
|---------|------|-------|-------|
| A | B | C | D |
| a. (i) | (iv) | (iii) | (ii) |
| b. (i) | (ii) | (iii) | (iv) |
| c. (ii) | (iv) | (iii) | (i) |
| d. (i) | (iv) | (ii) | (iii) |

Q 20. What is the other name for vitamin B₂?

(CBSE SQP 2021 Term-1)

- a. Niacin b. Thiamine
c. Folic Acid d. Riboflavin

Q 21. Match the following vitamin with the disease caused due to their deficiency: (CBSE SQP 2021 Term-1)

List-I (Vitamins)	List-II (Sources)
a. Vitamin A	(i) Rickets
b. Vitamin B	(ii) Night blindness
c. Vitamin C	(iii) Beri-beri
d. Vitamin D	(iv) Scurvy

- | | | | | | | | |
|----------|-------|------|-----|----------|------|------|-------|
| A | B | C | D | A | B | C | D |
| a. (iv) | (iii) | (ii) | (i) | b. (iv) | (i) | (ii) | (iii) |
| c. (iii) | (ii) | (iv) | (i) | d. (iii) | (iv) | (i) | (ii) |

Q 22. Match the following minerals with their functions:

List-I	List-II
A. Iron	(i) Found in red blood cell
B. Calcium	(ii) Found in thyroid hormone
C. Sodium	(iii) Needed for muscle contraction
D. Iodine	(iv) For healthy bone and teeth

Select the correct answer: (CBSE 2021 Term-1)

- | | | | | | | | |
|--------|------|-------|------|--------|------|------|-------|
| A | B | C | D | A | B | C | D |
| a. (i) | (iv) | (iii) | (ii) | b. (i) | (iv) | (ii) | (iii) |
| c. (i) | (ii) | (iii) | (iv) | d. (i) | (ii) | (iv) | (iii) |

Q 23. Carrot and orange come under: (CBSE 2021 Term-1)

- a. energy giving foods
b. body building foods
c. protective or regulatory foods
d. normal foods

Q 24. Which vitamins were consumed the most during Covid? (CBSE 2021 Term-1)

- a. Vitamin C and D b. Vitamin B and C
c. Vitamin A and B d. Vitamin B and D

Q 25. Match the following:

List-I	List-II
A. Vitamin B ₁₂	(i) Thiamine
B. Vitamin B ₃	(ii) Biotin
C. Vitamin B ₇	(iii) Cobalamin
D. Vitamin B ₁	(iv) Niacin

(CBSE SQP 2021 Term-1)

- | | | | | | | | |
|---------|-------|-------|------|----------|-------|------|-----|
| A | B | C | D | A | B | C | D |
| a. (iv) | (iii) | (i) | (ii) | b. (ii) | (iii) | (iv) | (i) |
| c. (i) | (ii) | (iii) | (iv) | d. (iii) | (iv) | (ii) | (i) |

Q 26. helps in smooth elimination of stool or faeces. (CBSE 2021 Term-1)

- a. Carbohydrates b. Roughage
c. Minerals d. Vitamins

Q 27. Body Mass Index is one of the common way of assessing healthy body weight. Which of the following BMI range is considered for healthy weight? (CBSE 2024)

- a. 25.0 - 29.0 b. 30.0 - 34.9
c. 18.5 - 24.9 d. 35.0 - 39.9

Q 28. Which of the following is not the cause of Food Intolerance? (CBSE 2024)

- a. Toxins formation due to food poisoning
b. Absence of an enzyme
c. Roughage
d. Gluten



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 29-34): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 29. Assertion (A): Micronutrients are required in very small amounts.

Reason (R): Micronutrients are extremely significant for normal functioning of the body.

Q 30. Assertion (A): Scurvy is caused due to the deficiency of vitamin C.

Reason (R): The disease sets in when the diet does not include fresh vegetables and fruits for a long time. (CBSE SQP 2023-24)

Q 31. Assertion (A): UNICEF says that water is not included in macronutrients but USDA includes it as part of macronutrients. (CBSE SQP 2021 Term-1)

Reason (R): Water must be taken in large quantities therefore it can be considered a macronutrient.

Q 32. Assertion (A): Water helps in the transportation of nutrients and excretion of waste products.

Reason (R): Water is a compound which consists of hydrogen and oxygen in the ratio 2 : 1.

Q 33. Assertion (A): Anaemia is caused due to the deficiency of iodine.

Reason (R): Iodine is essential for the production of hormones in the thyroid gland.

Q 34. Assertion (A): Sodium maintains the balance of acid and base.

Reason (R): It is found in sea food and chocolate.

Answers

1. (b) balanced
2. (c) consuming all the nutrients in right amount
3. (c) nutritive and non-nutritive components
4. (a) Simple
5. (c) 4
6. (d) carbohydrate
7. (c) protein
8. (a) Proteins
9. (c) Protein helps in production of hormones
10. (d) Yellow and Orange fruits
11. (a) 1 : 2 : 1
12. (b) Magnesium
13. (d) Iodine
14. (a) Dr. McCollum
15. (a) regulate body temperature
16. (b) Vitamin B and C
17. (a) guava
18. (d) A-(iii) B-(i) C-(iv) D-(ii)
19. (d) A-(i) B-(iv) C-(ii) D-(iii)
20. (d) Riboflavin
21. (b) A-(iv) B-(i) C-(ii) D-(iii)
22. (a) A-(i) B-(iv) C-(iii) D-(ii)
23. (c) protective or regulatory foods
24. (a) Vitamin C and D
25. (a) A-(iv) B-(iii) C-(i) D-(ii)
26. (b) Roughage
27. (c) 18.5 - 24.9
28. (c) Roughage
29. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
30. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
31. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
32. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
33. (d) Assertion (A) is false, but Reason (R) is true.
34. (c) Assertion (A) is true, but Reason (R) is false.



Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Gopichand, a student of class XII, has recently joined a gym near his house to get a toned and muscular body. He consults his gym trainer regarding his diet and is advised to increase the intake of protein in his diet.

Q 1. Proteins are also known as:

- a. nitrogenous food
- b. body building food
- c. Both a. and b.
- d. fatty food

Q 2. Which of the following diseases is caused by protein deficiency?

- a. Rickets
- b. Marasmus
- c. Scurvy
- d. Xerophthalmia

Q 3. Which of the following statements is true about proteins?

- a. Proteins are made up of amino acids.
- b. Protein is the only nutrient that can build, repair and maintain body tissues.
- c. Protein helps in antibodies formation
- d. All of the above

! Answers

1. (c) 2. (b) 3. (d)

Case Study 2

Read the following passage and answer the following questions.

On a scheduled health check-up, Parag a student of class VII was diagnosed with beri-beri disease. His parents are very concerned about his health and asked the doctor more about this disease.

Q 1. According to the doctor, this disease is caused due to deficiency of:

- a. Vitamin B₂
- b. Vitamin B₅
- c. Vitamin B₁
- d. Vitamin B₁₂

Q 2. This Vitamin is also called:

- a. Thiamine
- b. Niacin
- c. Riboflavin
- d. Biotin

Q 3. Symptoms of beri-beri are:

- a. shortness of breath
- b. swelling in the feet
- c. loss of appetite
- d. All of the above

! Answers

1. (c) 2. (a) 3. (d)

Case Study 3

Below given is the details of different types of vitamins required for our body:



Q 1. The vitamins and minerals are collectively known as foods:

- a. body building
- b. protective
- c. energy giving
- d. facilitating

Q 2. Fat soluble vitamins are:

- a. Vitamin A and D
- b. Vitamin A and K
- c. Vitamin E and D
- d. Vitamin A, D, E and K

Q 3. Which of the following statement is false about Vitamin C?

- a. It helps in healing the wounds.
- b. It is also known as ascorbic acid.
- c. It is found in meat, milk products and seafood.
- d. It is a highly effective antioxidant.

! Answers

1. (b) 2. (d) 3. (c)



Very Short Answer Type Questions ↓

Q 1. What is meant by a balanced diet?

Ans. A diet which consists of all the essential food ingredients viz., proteins, carbohydrates, fats, vitamins, minerals and water in correct proportion is called a balanced diet.

Q 2. Write briefly about 'Micronutrients'. (CBSE 2019)

Ans. Micronutrients are vitamins and minerals which are required in very small quantities, but possess great significance for normal growth and functioning of the body.

Q 3. Fats are derived from two sources. Name them. (CBSE 2017)

Ans. There are two sources of fats:

(i) **Animals:** Ghee, butter, curd, eggs, milk and meat.

(ii) **Vegetables:** Coconut, soybean, mustard and groundnut.

Q 4. Enlist two sources for calcium and iron separately. (CBSE 2015)

Ans. There are two sources for calcium and iron:

Sources of Calcium: Milk, cheese, green vegetables, etc.

Sources of Iron: Meat, dry fruits, egg etc.

Q 5. Enlist two non-nutritive components of diet.

Ans. Fibre (roughage), water, plant compounds, flavour compounds and colours are the non-nutritive components of diet.



Short Answer Type-I Questions ↓

Q 1. What do you mean by nutritive and non-nutritive components of diet?

Ans. Nutritive components of diet are those components which contribute to provide energy (calories). Non-nutritive components are those components which don't give energy, but are added to make the food smell better, taste better and look better.

Q 2. What should be the basic nutrient in a weightlifter's diet and why? (CBSE SQP 2022-23)

Ans. Proteins should be the basic nutrient in a weightlifter's diet because of the following reasons:

- (i) Protein build and repair body cells.
- (ii) Proteins form part of various enzymes, hormones and antibodies.
- (iii) Proteins also provide energy (4 Kcal/g).

Q 3. Differentiate between macro and micronutrients. (CBSE 2023)



EXPERT'S Answer

Ans. Difference between macro and micronutrients are as follows:

Macronutrients are the structural and energy-giving calorific components of our food that include carbohydrates, fats, proteins and water. They are taken in large quantities:

Micronutrients, on the other hand, are vitamins and minerals which are required in small quantities but possess great significance for proper functioning of our body.

Q 4. What do you mean by vitamin? Explain about fat-soluble and water-soluble vitamins.

Ans. Vitamins are protective food constituents which protect us from different diseases and revitalise our body by strengthening our immune system.

The vitamins which are soluble in fats are called fat-soluble vitamins (vitamin A, D, E and K)

The vitamins which are soluble in water are called water-soluble vitamins (vitamin B and C).

Q 5. Enlist the forms of vitamin B complex and explain any one of them in brief.

Ans. The forms of vitamin B complex are as follows:

- | | |
|------------------------------|--------------------------------|
| (i) Vitamin B ₁ | (ii) Vitamin B ₂ |
| (iii) Vitamin B ₃ | (iv) Vitamin B ₅ |
| (v) Vitamin B ₆ | (vi) Vitamin B ₇ |
| (vii) Vitamin B ₉ | (viii) Vitamin B ₁₂ |

Vitamin B₁: It plays a vital role in maintaining a healthy nervous system. Beri-beri is caused due to its deficiency. Various sources of vitamin B₁ include wheat, groundnuts, orange and green peas.

Q 6. What is roughage? Explain in brief.

Ans. The undigested part of food or which cannot be digested by the human intestinal tract is known as roughage. Its majority consists of water and improves intestinal function by adding bulk to the food. The various sources of roughage are fresh fruits, vegetables, oats etc.

Q 7. Explain the importance of fluid intake during a competition. (CBSE SQP 2023-24)

Ans. Importance of fluid intake during a competition are as follows:

- (i) To maintain water balance.
- (ii) Help to transport nutrients throughout the body.
- (iii) Help to remove waste from the body.
- (iv) Maintain blood sugar level and to delay fatigue.

Q 8. What is BMI? Calculate BMI of a child whose weight is 72 kg and height 1.68 mts. (CBSE 2023)



EXPERT'S Answer

Ans. Body Mass Index (BMI) is a measure of body fat, based on height and weight of a person.

Given : weight = 72 kg

and height = 1.68 mts.

$$BMI = \frac{\text{weight in kg}}{\text{Height} \times \text{Height}}$$

$$= \frac{72}{1.68 \times 1.68}$$

$$= 25.51$$

Q 9. Write importance of diet in sports.

Ans. Some importance of diet in sports are:

- (i) The body needs nutrition to repair and recover. Sports persons have greater demands on their body. If these are not met through proper diet, outcome will suffer and post training recovery process will be affected.
- (ii) For different games, there are different body composition requirements which can be manipulated to certain extent by nutrient composition of diet besides training, thus helping in achieving body composition goals.
- (iii) Dehydration can impair athletic performance. Therefore, sufficient intake of fluids and electrolytes ensures maximum hydration before, during and after exercise.
- (iv) Adequate diet enhances physiological adaptations during training.



Short Answer Type-II Questions ↓

Q 1. Define balanced diet. Explain any four micronutrients. (CBSE 2020)

Ans. A diet which comprises adequate amounts of necessary nutrients i.e. proteins, carbohydrates, fats, vitamins, minerals and water required for growth and development of our body is called a balanced diet.

Vitamins (A, B, C, D, E and K) and minerals (calcium, phosphorus, iodine, iron, etc.), are classified as micronutrients.

- (i) **Vitamin A:** It is important for the maintenance of the immune system and strengthening of vision, especially in dim low light.
- (ii) **Vitamin C:** It helps in healing wounds and is also a highly effective antioxidant.
- (iii) **Calcium:** It is necessary for the development of strong bones and teeth. It also helps in the normal functioning of heart, nerves and muscles.
- (iv) **Iron:** It is important for formation of haemoglobin, which is crucial for transporting oxygen to various tissues and organs.

Q 2. What are carbohydrates? Differentiate between its types. (CBSE SQP 2022-23)

Ans. Carbohydrates are organic compounds made up of carbon, hydrogen and oxygen. Carbohydrates are a major source of energy.

There are three types of carbohydrates, namely:

Monosaccharides, disaccharides and polysaccharides.

- (i) Monosaccharides are simple single units of sugars like glucose, fructose and galactose.
- (ii) Disaccharides are when two monosaccharides are combined together like maltose (glucose + glucose), lactose (glucose + galactose) and sucrose (glucose + fructose).
- (iii) Simple sugars (mono and disaccharides) are found in fruits (sucrose, glucose and fructose) and milk (lactose).
- (iv) Polysaccharides are more than two units of monosaccharides joined together. These are starches and fibre (cellulose). These are also called complex sugars and are found in whole grain cereals, rice, oats, potatoes, bread, legumes, corn and flour.

Q 3. Write briefly about protein as an essential component of diet. (CBSE 2016)

Ans. Proteins is a compound which contains the elements namely carbon, hydrogen, oxygen, nitrogen and sulphur. They are known as the building blocks of the body as they are needed for growth, development and repair of tissues. They are the main constituent of antibodies that protect our body against pathogens, thus preventing infections.

The sources of protein include grains, legumes, pulses, soybeans whereas we can also get proteins from the animal sources such as meat, eggs, milk etc.

Q 4. Describe fats. What are the different sources of fats? List two important functions of fats.

Ans. Fat is an essential nutritive component of food. It is made up of carbon, hydrogen and oxygen. They serve both as energy sources and storage for excess energy, when the body needs them immediately.

Sources of Fat:

- (i) **Animal Sources:** Animals are good source of fats as they provide various products such as ghee, butter, milk, meat and eggs.

- (ii) **Vegetable Sources:** Fats are obtained from many vegetables such as coconut, soybean, dry fruits, mustard oil etc.

Functions:

- (i) They play a vital role in protecting our vital internal organs against shock.
- (ii) They are essential for the absorption of fat-soluble vitamins (A, D, E and K) in our body.

Q 5. What are vitamins? Briefly explain the sources of fat-soluble vitamins.

Ans. Vitamins are an essential micronutrient which an organism needs in small quantities for proper functioning and general development of body. Vitamins increases immunity in our body and thus, protects us from diseases.

Sources of fat-soluble vitamins are as follows:

- (i) **Sources of Vitamin A:** It is mainly found in ghee, milk, curd, egg yolk, papaya, carrot etc.
- (ii) **Sources of Vitamin D:** It is mainly supplied by sunlight and is found in milk, cream, cod liver oil, tomato etc.
- (iii) **Sources of Vitamin E:** Food items rich in vitamin E are kidney, liver, green vegetables, sprouted seeds, dry fruits etc.
- (iv) **Sources of Vitamin K:** The richest sources of vitamin K are spinach, cabbage, cauliflower, potato etc.

Q 6. Write the functions of vitamin D and vitamin K and mention their sources. (CBSE 2023)



EXPERT'S Answer

Ans.	Nutrient	Functions	Sources
	Vitamin D	Needed for proper absorption of calcium and phosphorus; deposition of calcium and phosphorus in bones.	Egg yolks, liver, fatty fish, fortified foods. When exposed to sunlight, the skin can make vitamin D.
	Vitamin K	Needed for proper blood clotting.	Green leafy vegetables and cabbage; milk; also produced in intestinal tract by bacteria.

Q 7. What are the pitfalls of dieting? (CBSE 2020)

Ans. The important pitfalls of dieting are as follows:

- (i) **Extreme Weight Loss:** Due to intensive diet schedule and insufficient intake of calories, the individuals suffer imbalance in their health, calorie loss, thereby turning into a major weight loss, which is considered dangerous for them as it affects the metabolism and efficiency of their bodies.

- (ii) **Insufficient Intake of Nutrients:** The insufficient and limited intake of nutrients like carbohydrate, fats and proteins, adversely affects the human body and results in improper functioning.
- (iii) **Skipping of Meals:** It has been proved scientifically that if we skip a meal, we intake more than required in our next meal. So, skipping a meal works in the opposite direction for us and disrupts our weight loss strategy.
- (iv) **Excess Intake of Liquids:** Some people think that eating less and consuming more through liquids will help them reduce extra weight. In fact, consuming more beverages, sweetened juices, sodas and coffee with cream contribute on a large scale towards gaining of weight.
- (v) **Underestimating Physical Exercise:** Dieting without performing any physical activity or exercise is insufficient to lose weight. If an individual really wants the desired outcomes, he should follow proper diet as well as exercise schedule which is very beneficial in reducing weight. (Any three)



Long Answer Type Questions ↓

Q 1. Explain macronutrients and their role in our diet.

(CBSE 2019)

Ans. Macronutrients are the structural and energy-giving caloric components of food that are required in surplus amount and includes carbohydrates, fats, proteins and water. Each of these macronutrient plays an important role in our diet, as given below:

- (i) **Carbohydrates:** Carbohydrates provide the body with fuel. These are known as the energy-giving nutrients and are responsible for various digestive operations in our body.
- (ii) **Fats:** Fats serve both as energy sources and storage of excess energy, when the body needs them immediately. Fats keep us warm and play a vital role in protecting our vital internal organs.
- (iii) **Proteins:** Proteins provides the body with amino acids, which are the building blocks for muscle and other important structures such as the brain, blood, skin and hair. Proteins form new tissues, repair the broken tissues, regulate balance of water and acids and transport oxygen and nutrients.
- (iv) **Water:** Its main function is to supply essential nutrients to different cells of our body. It also helps in excretion of wastes products. It is recommended to drink 6-8 glasses of water to maintain proper hydration in our body. It also regulates the body temperature.

Common ERROR!

Generally students get confused between macronutrients and nutritive components of diet.

Q 2. What are the nutritive and non-nutritive components of diet? Explain. (CBSE 2017)

Ans. Nutritive components of diet are those compounds which provide energy or calories. The various nutritive components of diet are as follows:

- (i) **Carbohydrates:** They act like a fuel and provides energy to the body. Various sources of carbohydrates are rice, pulses, bajra etc.
- (ii) **Proteins:** They are necessary for growth and development, and repair of various tissues. Proteins are found in eggs, milk products, soybean etc.
- (iii) **Fats:** They are stored in body and used as emergency sources of energy. They also helps in the regulation of body temperature and give protection to vital organs like heart etc. Fats are found in ghee, butter, coconut etc.
- (iv) **Vitamins:** These are protective food constituents which protect us from different diseases and revitalise our body by strengthening our immune system.
- (v) **Minerals:** These are those essential nutrients in our body which are responsible for formation of teeth, blood clotting, proper physical growth and maintaining water balance.

Non-nutritive components of diet are those compounds that do not provide energy or calories. The various non-nutritive components of diet are as follows:

- (i) **Fiber of Roughage:** It is undigested part of food which improves intestinal function by adding bulk to food. It is present in fruits, vegetables etc.
- (ii) **Water:** The nutrients are transported to various cells of the body with the help of water. It also regulates the body temperature and is significant in the excretion of waste products.
- (iii) **Colour Compounds:** The food is made more appetizing and attractive to see by colour compounds.
- (iv) **Flavour Compounds:** These develops better taste and odour to the food.
- (v) **Plant Compounds:** These components are present in plants and have been associated with protection or treatment of diseases such as cancer, diabetes etc.

Q 3. Vitamins are very essential for working of the body and are divided into two groups. Explain about them.

Ans. Vitamins are of two types:

(i) Fat-soluble Vitamins: These vitamins are vitamin A, vitamin D, vitamin E and vitamin K.

(a) Vitamin A: The major functions of vitamin A are growth and development of the human body, and strengthening of vision and immune system. Its deficiency leads to night blindness and xerophthalmia.

(b) Vitamin D: This vitamin is very helpful in the formation of teeth and strengthening of bones with the help of calcium and phosphorus attained from food. Its deficiency may cause rickets and osteoporosis.

(c) Vitamin E: This vitamin is responsible for increasing fertility among men and women and maintaining proper functioning of the adrenal and sex glands.

(d) Vitamin K: It is useful in clotting of blood in our body. The deficiency of this vitamin causes anaemia.

(ii) Water-soluble Vitamins: Vitamin B and Vitamin C are water-soluble vitamins.

(a) Vitamin B Complex: Vitamin B consists of eight soluble vitamins that play vital roles

in certain functions of our body including helping our body to make energy from the food we eat and forming red blood cells.

(b) Vitamin C: In humans, vitamin C is essential as a highly effective antioxidant, maintains the health of connecting tissues and formation bones.

Q 4. What is Balanced Diet? What is the significance of pre and post competition meals for an athlete? Explain. (CBSE 2024)

Ans. A diet which consists of all the essential food constituents, viz., proteins, carbohydrates, fats, vitamins and minerals in correct proportion is called a balanced diet.

The primary objectives of a pre-competition meal are to replenish glycogen stores for energy and ensure proper hydration. This helps in controlling hunger, fatigue, weakness and light-headedness, which could otherwise affect sports performance. Additionally, it promotes a comfortable gastrointestinal state which is crucial for facilitating optimal performance during sports activities.

The post competition meal is essential for facilitating the recovery of the body, enabling it to perform optimally during training or playing the following day, while also minimising the risk of injury.



Chapter Test

Multiple Choice Questions

Q 1. The main sources of protein are:

- fish, eggs and meat
- rice, breads and pasta
- desi ghee, butter and nuts
- green leafy vegetables and oranges

Q 2. Which of the following is not an element of carbohydrate?

- Carbon
- Oxygen
- Nitrogen
- Hydrogen

Q 3. Folic acid is the scientific name of which vitamin?

- Vitamin B7
- Vitamin B9
- Vitamin B6
- Vitamin B5

Q 4. What is the main function of fluorine mineral?

- Regulate growth, development and metabolism
- Helps in formation of bones and teeth
- Regulate blood sugar levels
- Helps in muscle contraction

Q 5. Which one of the following is not an example of macro mineral?

- Iron
- Chromium
- Iodine
- Calcium

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true, but Reason (R) is false.
- Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Nutrients include carbohydrates, proteins, fats, vitamins, minerals, water and fibre. Reason (R): Water does not provide energy but is required in large quantity for functioning of metabolic processes in the body.

Q 7. Assertion (A): Vitamins are compounds of carbon which are essential for the normal growth and working of the body.

Reason (R): Vitamin D is essential for normal growth of the body. Deficiency of Vitamin A leads to night blindness and also affects kidneys, nervous system and digestive system.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

A balanced diet refers to the intake of food constituting the necessary nutrients. Ram shares his knowledge of food and nutrition with neighbours while visiting his grandparents in a village. Ram notices that few people living in the village are suffering with goitre and severe anaemia.

(i) Minerals are placed under nutrient category on the basis of required quantity.

- | | |
|-------------|------------------|
| a. micro | b. macro |
| c. roughage | d. non-nutritive |

(ii) Goitre is caused due to deficiency of

- | | |
|-------------|-----------|
| a. calcium | b. iodine |
| c. selenium | d. iron |

(iii) Low levels of which mineral will lead to anaemia?

- | | |
|-----------|------------|
| a. Copper | b. Sodium |
| c. Iron | d. Calcium |

Very Short Answer Type Questions

Q 9. Why does the weightlifter's diet includes lots of protein?

Q 10. What are vitamins?

Short Answer Type-I Questions

Q 11. Define non-nutritive components of food.

Q 12. Briefly explain the functions and sources of two fat soluble vitamins.

Q 13. Mention the uses of any two minerals in our diet.

Short Answer Type-II Questions

Q 14. Write the sources of 3 micro and 3 macro minerals.

Q 15. What is balanced diet? Elaborate the important nutrients of balanced diet.

Q 16. Mention the sources of carbohydrates.

Long Answer Type Questions

Q 17. What are macro-nutrients? Also explain the function and sources of various macro-nutrients.

Q 18. Write a detailed note on water-soluble vitamins.



Scan the QR Code

To get Answers of this Chapter Test



Test and Measurement in Sports

FASTRACK REVISION

► SAI Khelo India Fitness Test

- The fitness programme for children focuses on developing motor skills, knowledge of physical education and sports skills, which is implemented and evaluated in a progressive and developmentally appropriate manner.
- The purpose of **SAI Khelo India Test** is to enable the children to demonstrate individually and in groups (with others), the physical skills, practices and values to enjoy an active healthy lifespan.
- The following Khelo India Battery of Fitness Assessment Tests has been finalised by the Expert Committee of Physical Fitness Assessment.

► Battery of Tests for Age Group 5-8 Years | Class 1 To 3

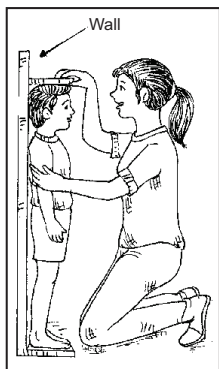
- The following are the abilities of children in class 1-3 which need to be measured and tracked which are important for controlling the body in various situations:
 - Body Composition (BMI)
 - Coordination (Plate Tapping Test)
 - Balance (Flamingo Balance Test)

► Body Composition (Body Mass Index or BMI)

- **Objective:** The test performed is Body Mass Index (BMI), which is calculated from body weight (W) and height (H). $BMI = W / (H \times H)$, where W = body weight in kilograms and H = height in meters. The higher the score usually indicates higher levels of body fat.
- **Equipment Required:** Flat and clean surface, weighing machine and a stadiometer or measuring tape pasted on a wall.

► Procedure

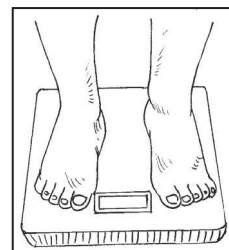
- **Measuring Height:** This test involves measuring the height of a student on flooring that is not carpeted and against a flat surface such as a wall with no moulding. Make sure that, the student stand with feet flat and together, back against the wall, legs straight, arms are at sides, and shoulders are levelled. Also, make sure the participant is looking straight ahead and that the line of sight is parallel with the floor. Remove the student's shoes, bulky clothing, hair ornaments and unbraid hair that interferes with the measurement. Use a flat headpiece to form a right angle with the wall and



lower the headpiece until it firmly touches the crown of the head. Make sure the measurer's eyes are at the same level as the headpiece. Lightly mark where the bottom of the headpiece meets the wall. Then, use a metal tape to measure from the base on the floor to the marked measurement on the wall to get the height measurement.

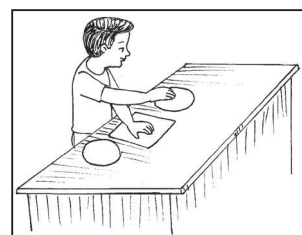
- **Scoring:** Height will be recorded in (cm) and (mm). Accurately, record the height to the nearest 0.1 cm.
- **Measuring Weight:** This test involves measuring the weight of a student using a digital scale and placing it on firm flooring (such as tile or wood) rather than carpet. First of all, shoes and heavy clothing, such as sweaters should be removed. Make sure that the student stand with both feet in the centre of the scale.
- **Scoring:** Weight will be recorded in kilogram (kg) and grams (gms). Record the weight to the nearest decimal fraction.
- Now, BMI can be calculated by using the formula

$$BMI = \frac{\text{Weight (in kg)}}{[\text{Height (in m)}]^2}$$



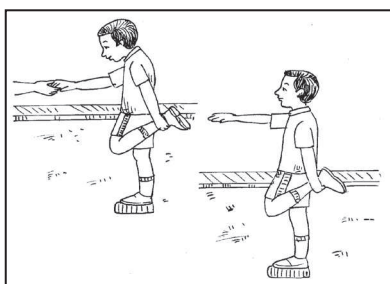
► Coordination (Plate Tapping Test)

- **Objective:** The aim of this test is to measure speed and coordination of limb movement.
- **Equipment Required:** Table (adjustable height), 2 yellow discs (20cm diameter), rectangle (30 x 20 cm) and stopwatch.
- **Procedure:** First of all, adjust the table height so that the student is standing comfortably in front of the discs. The two yellow discs are placed with their centres 60 cm apart on the table. The rectangle is placed equidistant between both discs. The non-preferred hand is placed on the rectangle. The subject moves the preferred hand back and forth between the discs over the hand in the middle as quickly as possible. This action is repeated for 25 full cycles (50 taps).
- **Scoring:** The time taken to complete 25 cycles is recorded.



► Static Balance (Flamingo Balance Test)

- **Objective:** The aim of this test is to assess the strength of the leg, pelvic and trunk muscle as well as static balance.
- **Equipment Required:** Non slippery even surface, stopwatch and a beam or brick.
- **Procedure:** The test is performed on a non-slippery even surface by standing on a beam or brick. First of all, the student stands on the beam with his preferred leg. Keep balance by holding the instructor's hand (if required to start). While balancing on the preferred leg, the free leg is flexed at the knee and the foot of this leg is held close to the buttocks. Try to keep this position for as long as possible. Start the stopwatch as the instructor let go off the student. Pause the stopwatch, each time the student loses balance (either by falling off the beam or letting go off the foot being held). The time starts to run again once the participants have regained



balance. Count the number of falls in 60 seconds of balancing. If there are more than 15 falls in the first 30 seconds, the test is terminated.

- **Scoring:** The total number of falls or loss of balance in 60 seconds of balancing is recorded.

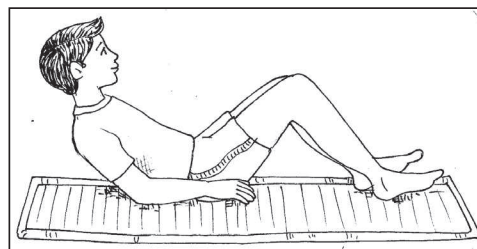
► Battery of Tests for Age Group 9-18+ Years | Class 4 To 12

- The following components are to be considered in Physical Health and Fitness Profile of children in class 4-12:
 - Body Composition (BMI)
 - Muscular Strength and Endurance
 - Abdominal/Core Strength (Partial Curl-up)
 - Muscular Endurance (Push-ups for Boys, Modified Push-ups for Girls)
 - Flexibility (Sit and Reach Test)
 - Cardiovascular Endurance (600 m Run/Walk)
 - Speed (50 m Dash)

► Partial Curl-up

- **Objective:** The partial curl-up test measures abdominal muscular strength and endurance of the abdominals and hip-flexors, which is important in back support and core stability.
- **Equipment Required:** A flat, clean and cushioned surface with two parallel strips (6 inches apart) and a stopwatch.
- **Procedure:** First of all, the student lies on a cushioned, flat, clean surface with knees flexed, usually at 90° angle, with hands straight on the sides (palms facing downwards) closer to the ground, parallel to the body. The student raises the trunk in a smooth motion, keeping the arms in position, curling up the desired amount (at least six inches above the ground towards the parallel strip). The trunk is lowered back

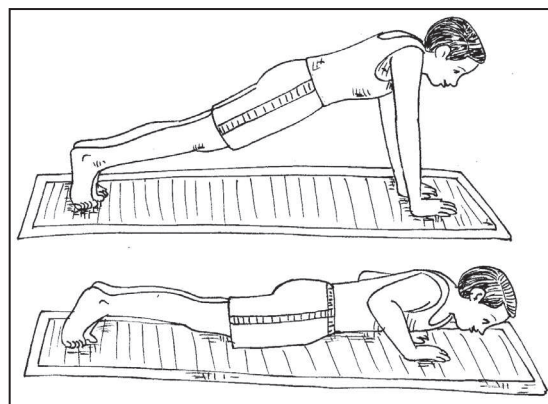
to the floor, so that the shoulder blades or upper back touch the floor.



- **Scoring:** Record the maximum number of partial curl ups in a certain time period such as 30 sec or 1 min.

► Push-ups for Boys

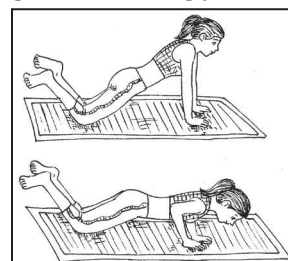
- **Objective:** The aim of this test is to assess the endurance of student's upper body strength and endurance.
- **Equipment Required:** Flat clean cushioned surface/ Gym mat.
- **Procedure:** Begin in a push-up position with the hands and toes touching the floor, the body and legs in a straight line, feet slightly apart, the arms at shoulder width apart, extended and at right angle to the body. While keeping the back and knees straight, the student lowers the body to a predetermined point, to touch some other object, or until there is a 90° angle at the elbows, then returns back to the starting position with the arms extended. This action is repeated, and the test continues until exhaustion, or until they can do no more in rhythm or have reached the target number of push-ups.



- **Scoring:** Record the number of correctly completed push-ups.

► Modified Push-ups for Girls

- **Objective:** To measure the upper body strength and trunk stability.
- **Equipment Required:** Flat clean cushioned surface/ Gym mat.
- **Procedure:** The push-up begins in a kneeling position, with the hands and knees touching the ground. The knees are kept slightly apart, the arms are at shoulder width apart, extended and at right angle to the body. Keeping the back

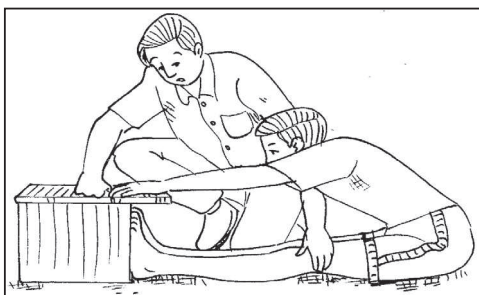


straight and holding the core tight, the student lowers the body until there is a 90° angle at the elbows, then returns to the starting position with the arms extended. The action is repeated until exhaustion or until the time limit is reached.

- **Scoring:** Record the number of correctly completed push-ups.

► Sit and Reach Test

- **Objective:** The sit and reach test is designed to measure the flexibility of the lower back and hamstring muscles.
- **Equipment Required:** Flat clean cushioned surface/ Gym mats, Sit and Reach box with the following dimensions: 12" x 12" (sides) 12" x 10" (front and back) 12" x 21" (top).



- **Procedure:** First of all, shoes should be removed. Then sit down on the floor with legs stretched out straight ahead. The soles of the feet should be kept flat against the Sit and Reach box. Both the knees should be locked and pressed flat to the floor. An assistant may hold the knees down. Palms should be facing downwards. Hands should be on the top of each other or side by side. The student whose flexibility is to be measured, tries to extend his both hands forward along the measuring line on the box as far as he can extend. Ensure that the hands remain at the same level, not one reaching further forward than the other. He should not jerk or bounce to reach at maximum distance. He should hold the full reach position for one-two seconds while the distance is recorded.
- **Scoring:** The score is recorded (difference between initial position and final position) to the nearest cm as the distance reached by the hand.

► 600 m Run/Walk

- **Objective:** The aim of this test is to measure cardiovascular endurance.
- **Equipment Required:** Stopwatch, whistle, marker cone, lime powder, measuring tape and 200 m or 400 m with 1.22 m (minimum 1 m) width preferably on a flat and even playground with a marking of starting and finishing line.
- **Procedure:** The aim of this test is to complete the 600 meter course in fastest possible time. To start, all participants line up behind the starting line. On the command 'go,' the clock will start and they will begin running at their own pace. Cheering or calling out the elapsed time is also permitted to encourage the participants to achieve their best time.

- **Scoring:** The total time taken to run 600 m is recorded in min, sec.

► 50 m Dash

- **Objective:** The aim of this test is to determine the acceleration and speed.
- **Equipment Required:** Measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 60 m.
- **Procedure:** The test involves running a single maximum sprint over 50 meters, with the time recorded. A thorough warm-up should be given, including some practice starts and accelerations. Start from a stationary standing position (hands cannot touch the ground), with one foot in front of the other. The front foot must be behind the starting line. Once the student is ready and motionless, the starter gives the instructions 'set' then 'go.' The tester should provide hints for maximising speed (such as keeping low driving hard with the arms and legs) and the participant should be encouraged do not slow down before crossing the finish line.
- **Scoring:** Time taken to cover 50 m distance is expressed in seconds.

- **Meaning of Cardiovascular Fitness:** Cardiovascular fitness can be defined as the capacity of the cardiovascular system (heart, lungs and vessels) to supply oxygenated blood to the working muscles and the muscles to use the oxygen delivered by the blood supply as a source of energy for movement. In other words, the definition of cardiovascular fitness is how well and efficiently the blood circulates through the body.

- Elements involved in cardiovascular endurance include heart, lungs and major blood vessels in the capillary system and the oxygen nutrient carrying capacity of oxygen.

- **Harvard Step Test:** Harvard Step Test is a cardiovascular fitness test. It is also called Aerobic Fitness Test. It was developed by Brouha and others in 1943. It is used to measure the cardiovascular fitness or aerobic fitness by checking the recovery rate.

- **Equipments Required:** A gym bench or box of 20 inches high for men and 16 inches for women, a stopwatch and cadence tape.

► Procedure

- The athlete stands in front of the bench or box.
- On the command 'Go', the athlete steps up and down on the bench or box at a rate of 30 steps per minute (one second up one second down) for 5 minutes (150 steps).
- Stopwatch is also started simultaneously at the start of the stepping.
- Then, the athlete sits down immediately after completion of the test i.e. after 5 minutes.
- The total number of heart beats are counted between 1 to 1.5 minutes after completion of the last step.

- The heart beats are counted for 30 seconds period. Again the heart beats are noted for 30 seconds after the finishing of the test.
- After that third time the heart beats are noted after 3 minutes of completion of the test for 30 seconds period.
- The same foot must start the step up each time, and an erect posture must be assumed on the bench.

➤ **Calculation of the Score:** The athlete's fitness index score is calculated with the help of following formula:

- Fitness index score (long-term)

$$= \frac{(100 \times \text{test duration in seconds})}{(2 \times \text{sum of heart beats in recovery periods})}$$

- Fitness index score (short-term)

$$= \frac{(100 \times \text{test duration in seconds})}{(5.5 \times \text{pulse count between 1 to 1.5 minutes after exercise})}$$

➤ **Computing Basal Metabolic Rate (BMR)**

- Basal Metabolic Rate is the amount of energy per unit of time that a person needs to keep the body functioning at rest. Some of those processes are breathing, blood circulation, controlling body temperature, cell growth, brain and nerve function, and contraction of muscles. Basal Metabolic Rate affects the rate that a person burns calories and ultimately whether that individual maintains, gains, or loses weight. The Basal Metabolic Rate accounts for about 60% to 75% of the daily calorie expenditure by individuals.

- The Harris-Benedict Equation is often used to estimate BMR. It is as follows:

$$\text{For MEN : BMR} = 88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years})$$

$$\text{For WOMEN : BMR} = 447.593 + (9.247 \times \text{weight in kg}) + (3.098 \times \text{height in cm}) - (4.330 \times \text{age in years})$$

➤ **Rikli and Jones-Senior Citizen Fitness Test**

Dr. Roberta Rikli and Dr. Jessie Jones developed various simple and easy-to-use fitness tests for senior citizens in 2001. They are easy to understand and effective to measure aerobic fitness, strength and flexibility using minimal and inexpensive equipments.

Rikli and Jones Fitness Test includes the following items:

- Chair Stand Test for lower body strength.
- Arm-curl Test for upper body strength.
- Chair Sit and Reach Test for lower body flexibility.
- Back Scratch Test for upper body flexibility.
- Eight Foot up and Go Test for agility.
- Six Minute Walk Test for Aerobic Endurance.

➤ **Chair Stand Test:** The Chair Stand Test is similar to a squat test to measure leg strength.

- **Aim:** This test assesses leg strength and endurance of senior citizens.
- **Equipment Required:** A straight back or folding chair without arm rests (seat of at least 44 cm high), stopwatch.

➤ **Procedure**

- Place the chair against a wall or otherwise stabilise it for safety.
- Sit in the middle of the seat, with feet shoulder width apart, flat on the floor. The arms are to be crossed at the wrists and held close to the chest.
- From the sitting position, stand up completely then completely sit down and repeat this for 30 seconds.
- Count the total number of complete chair stands (up and down equals one stand).
- On completing a full stand from the sitting position when the time is elapsed, the final stand is counted in the total.

➤ **Scoring:** The score is the number of completed chair stands in 30 seconds.

➤ **Arm-curl Test**

➤ **Aim:** This test measures upper body strength and endurance.

➤ **Equipment Required:** A 5 pound weight for women, 8 pound weight for men, a chair without armrests, stopwatch.

➤ **Procedure:** The aim of this test is to do as many arm-curls as possible in 30 seconds. This test is conducted on the dominant arm-side (or stronger side).

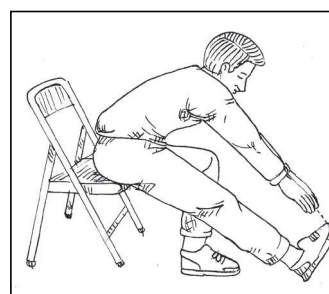
- Sit on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair.
- Brace the upper arm against the body so that only the lower arm is moving (tester may assist to hold the upper arm steady).
- Curl the arm up through a full range of motion, gradually turning the palm up.
- Then the arm is lowered through the full range of motion, gradually returning to the starting position.
- The arm must be fully bent and then fully straightened at the elbow.
- Repeat this action as many times as possible within 30 seconds.



Arm-Curl Test

➤ **Scoring:** The score is the total number of controlled arm-curls performed in 30 seconds.

➤ **Chair Sit and Reach Test**



Chair Sit and Reach Test

- **Aim:** This test measures lower body flexibility.
- **Equipment Required:** Ruler, straight back or folding chair (about 44 cm high).
- **Procedure**

- Sit on the edge of a chair (placed against a wall for safety). One foot must remain flat on the floor. The other leg is extended forward with the knee straight, heel on the floor and ankle bent at 90°.
- Place one hand on top of the other with tips of the middle fingers at same level. Inhale and then as while exhaling, reach forward towards the toes by bending at the hip.
- Keep the back straight and head up. Avoid bouncing or quick movements, and never stretch to the point of pain.
- Keep the knee straight, and hold the reach for 2 seconds. The distance is measured between the tip of the fingertips and the toes. If the fingertips touch the toes then the score is zero. If they do not touch, measure the distance between the fingers and the toes (a negative score), if they overlap, measure by how much (a positive score).
- Perform two trials.

- **Scoring:** The score is recorded to the nearest 1/2 inch or 1 cm as the distance reached, either a negative or positive score.

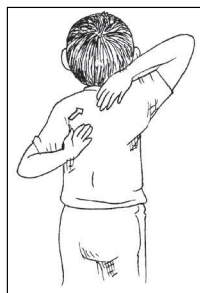
- **Back Scratch Test:** The Back Scratch Test, or simply the Scratch Test, measures how close the hands can be brought together behind the back.

- **Objective:** The Back Scratch Test provides an indication of the participants upper body and shoulder flexibility.

- **Equipment Required:** A ruler or measuring tape.

- **Procedure**

- This test is done in the standing position. Place one hand over the same shoulder with the palm touching the back and reach down the back.
- Place the other hand up, the back from the waist with the palm facing outwards. Reach up the back.
- Point the middle fingers of each of hand towards each other. Try and touch the fingers of each hand in the middle of the back.
- Do not bounce the arms towards each other.
- Do grasp the fingers and pull the hands together.
- Try two warm ups with the arms in opposite positions to determine the preferred side for reaching over the shoulder.

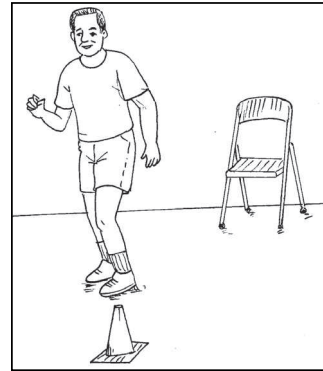


Back Scratch Test

- **Measurement:** Use the measuring tape or ruler to measure the distance between the middle fingers. If the fingers do not overlap the score has a negative value. If the fingers overlap the score has a positive value.

- **Scoring:** Record the best score out of the trials to the nearest centimetres or 1/2 inch.

- **Eight Foot Up and Go Test:** The 'Eight Foot Up and Go' is a coordination and agility test for the elderly.



Eight Foot Up and Go Test

- **Aim:** This test helps to evaluate speed, agility and balance of a person while moving.

- **Equipment Required:** A chair with a straight back which should be kept along the wall to stop the chair sliding backwards, a conical marker placed so the rear of the marker is 2.44 metres (8 feet) from the front of the chair, a stopwatch.

- **Procedure**

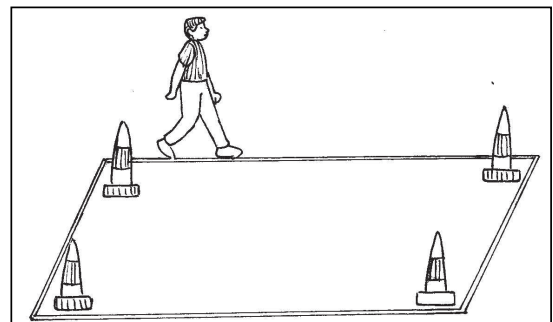
- Sit in the middle of the chair with hands on thighs. One foot can be placed slightly in front of the other but both must be flat on the floor.
- Lean slightly forward. On the instruction to begin, stand up as quickly as possible.
- Walk around the marker, return to the chair and sit down.

- **Measurement:** On the instruction to begin, start the stopwatch. Stop the timing when the participant returns to the chair and sits down. Two trials are given per participant.

- **Scoring:** The best trial is recorded to the nearest 1/10th second.

- **Six Minute Walk Test**

- **Aim:** This test measures aerobic endurance of the senior citizens.



Six Minute Walk Test

- **Equipment Required:** Measuring tape to mark out the track distances, stopwatch, chairs positioned for resting.

- **Procedure**

- The walking course is laid out in a 50 yard rectangular area (dimensions 45 x 5 yards), with cones placed at regular intervals to indicate distance walked.
- The aim of this test is to walk as quickly as possible for six minutes to cover as much ground as possible.

- The individuals set their own pace, and are able to stop for a rest if they desire.
- **Scoring:** The total distance covered in six minutes is recorded to the nearest metre.
- **Johnson-Metheny Test of Motor Education**
 - **Aim:** Johnson-Metheny Test Battery is revised version of Johnson Educability Test which was designed in 1932. The purpose of the Johnson Battery was to measure neuromuscular skill capacity which have ten items. In 1938, Metheny studied the test and eliminated six items. The test battery consists of four motor stunts are given below:
 1. Front Roll
 2. Back Roll
 3. Jumping Half-Turns
 4. Jumping Full-Turns
 Four stunts are to be performed by the boys and three stunts for girls.
 - **Test Area:** Mat area length is 15 feet and it is 2 feet wide. The 15 feet length divided in to ten sections for 18" each. The width of transverse line is $\frac{3}{4}$ " and 3" alternatively. Centre of lines remains 18" apart. Another $\frac{3}{4}$ " wide line is marked lengthwise in the middle of the mat area.
- **Front Roll**
 - **Procedure:** Ignoring the long middle dividing line, the subject is asked to start outside the marked area and perform two front rolls, one up to 7.5' i.e. 3" wide centre line and the second in the other half of 7.5'. The subject is to perform the rolls without touching the limits or over reaching the zones mentioned above.
 - **Scoring:** Each correct roll gets 5 points, hence maximum of 10 points. Two points are deducted for over reaching side line, right or left for each roll; one

point is deducted for over reaching the end limit on each roll and full five points are deducted when the subject fails to perform a true front roll.

➤ Back Roll

- **Procedure:** The test is similar to front roll both in performing and scoring. The subject is to start outside the marked chart area and is to perform two back rolls in the 2 feet lane area, one up to first half and the second back roll in the second half.

➤ Jumping Half Turns

- **Procedure:** The subject is asked to start with feet on first 3" line, jump with both feet to second 3" wide line, executing a half turn either right or left; jump to third 3" line executing half turn in opposite direction to first half-turn and then to 4th and 5th 3" wide lines executing half turns, right or left alternatively.
- **Scoring:** Perfect execution of four jumps is worth ten points. Only 2 points are deducted for each wrong jump when the subject either does not land with both feet on the 3" line or turns the wrong way or both.

➤ Jumping Full Turns

- **Procedure:** The subject is asked to start with the feet outside the marked area at about the centre of the lane. He/She is required to jump with feet together to second rectangular space, executing a full turn with the body either right or left; continue jumping to alternate rectangular spaces across the marked mat executing full turns, rotating body in the same direction, landing on both feet every time.
- **Scoring:** Perfect execution of five jumps is worth ten points. Two points are deducted, if the subject fails to keep balance on landing on both feet; turns too far or oversteps the squares.

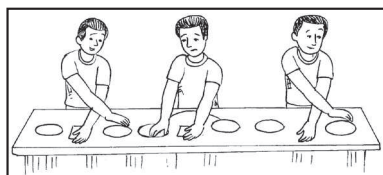


Practice Exercise



Multiple Choice Questions ↓

Q 1. Name the test shown in the picture:



- Flamingo Balance Test
- Sit and Reach
- Plate Tapping Test
- 600 m Run/Walk

Q 2. Calculate the BMI of a girl and identify the category if her weight is 68 kg and height is 161 cm:

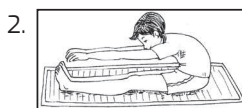
(CBSE SQP 2021 Term-1)

- Underweight
- Normal weight
- Overweight
- Obesity class

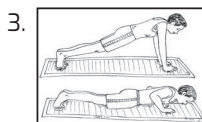
Q 3. Match the following:



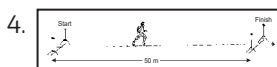
(i) Lower body flexibility



(ii) Upper body strength



(iii) Abdominal strength and endurance



(iv) Speed

(CBSE 2021 Term-1)

- | | 1 | 2 | 3 | 4 |
|----|-------|------|------|------|
| a. | (iii) | (ii) | (i) | (iv) |
| b. | (iii) | (i) | (iv) | (ii) |
| c. | (iii) | (i) | (ii) | (iv) |
| d. | (iii) | (iv) | (i) | (ii) |

Q 4. In partial curl-up test the difference between two parallel lines is (CBSE 2024)

- a. 8 inches b. 4 inches
c. 6 inches d. 10 inches

Q 5. What is the height of the box used by boys in Harvard Step Test? (CBSE SQP 2020-21)

- a. 16 inches b. 18 inches
c. 20 inches d. 22 inches

Q 6. Which test is used to test the functional ability amongst senior citizens? (CBSE SQP 2021 Term-1)

- a. Rockport One Mile Test
b. Harvard Step Test
c. Rikli and Jones Test
d. SAI Khelo India Fitness Test

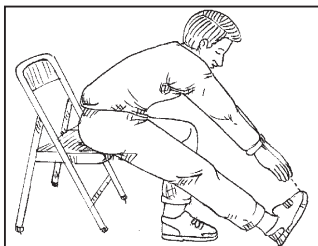
Q 7. Match the following: (CBSE 2023)

List-I	List-II
A. Plate Tapping Test	(i) Upper body strength endurance of boys
B. Push-up	(ii) Speed and coordination of limb movement
C. Partial Curl-up	(iii) Upper body strength endurance of girls
D. Modified Push-up	(iv) Abdominal strength

Choose the correct option from the following:

- | | | | |
|---------|-------|------|-------|
| A | B | C | D |
| a. (ii) | (i) | (iv) | (iii) |
| b. (ii) | (iii) | (i) | (iv) |
| c. (i) | (iii) | (ii) | (iv) |
| d. (ii) | (iii) | (iv) | (i) |

Q 8. Which functional fitness component of senior citizens is determined in the test shown below? (CBSE 2024)

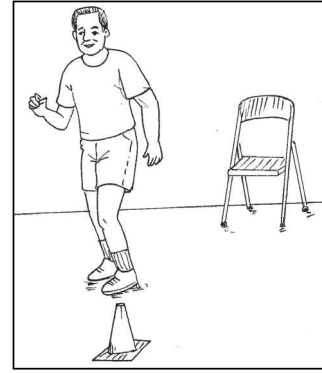


- a. Physical Mobility
b. Upper Body Flexibility
c. Lower Body Flexibility
d. Upper Body Strength

Q 9. What is the test duration for the Arm-curl Test? (CBSE SQP 2021 Term-1)

- a. 1 min
b. 2 min
c. 30 sec
d. Number of repetitions

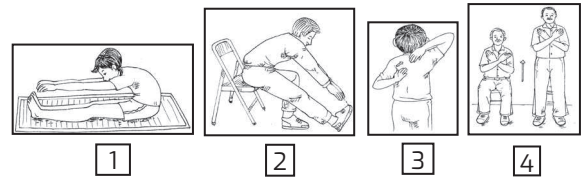
Q 10. What will be the distance between the chair and marker cone, to measure agility and co-ordination of senior citizens shown in the figure? (CBSE 2021 Term-1)



- a. 8 feet b. 12 feet
c. 16 feet d. 18 feet

Q 11. In a residential area, a camp was organised to check the functional fitness level of the senior citizens. During testing, it was found that there was a less range of motion in the joints of upper extremities in most of the elderly people.

Which test is administered to check this functional fitness component? (CBSE 2021 Term-1)



- a. 1 b. 2 c. 3 d. 4

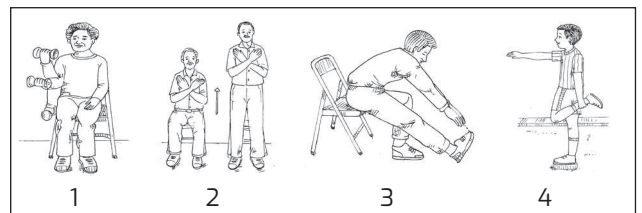
Q 12. Senior Citizen Fitness Test the range of age group is (CBSE SQP 2023-24)

- a. 60-94 b. 55-79
c. 65-95 d. 50-90

Q 13. Which of the following test determines the upper body strength of a senior citizen? (CBSE 2024)

- a. Chair Stand Test b. Back Scratch Test
c. Arm-curl Test d. Chair Sit and Reach Test

Q 14. Identify the odd component of fitness depicted here:

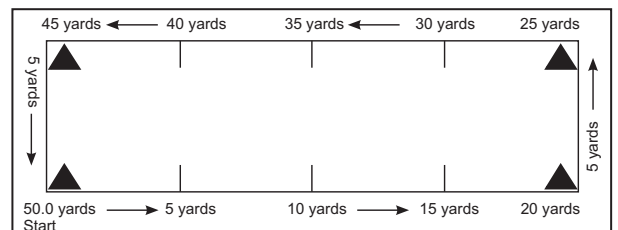


- a. 1 b. 2 c. 3 d. 4

Q 15. In Arm-curl Test, weight of the dumbbell for women is: (CBSE 2021 Term-1)

- a. 2.5 kg b. 2.3 kg
c. 2.8 kg d. 2.1 kg

Q 16.



Identify the test for which this pattern is followed:

(CBSE SQP 2021 Term-1)

- a. 600 metre b. 50 yard dash
c. 400 metre d. 6 min walk

Q 17. Johnson-Metheny Test battery does not consist of motor stunts.

- a. Front Roll
b. Back Roll
c. Side Roll
d. Jumping Full-Turns



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 18-21): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 18. Assertion (A): The Basal Metabolic Rate (BMR) is the number of calories needed to maintain body function at resting condition.

Reason (R): A person who does not engage in any work, still requires energy for the functioning of their internal organs. (CBSE 2024)

Q 19. Assertion (A): Partial curl-up is used to measure endurance and trunk stability.

Reason (R): In partial curl-up, the student lies on his/her back with the knees flexed and feet 12 inches from the buttock in the starting position.

Q 20. Assertion (A): Arm-curl Test is a test to assess upper body strength and endurance which is required for activities involving lifting and carrying things.

Reason (R): A chair without armrests, stopwatch and dumbbells are required to conduct this test.

Q 21. Assertion (A): Aerobic fitness is an essential component for walking distances, stair climbing, etc.

Reason (R): Six Minute Walk Test measures aerobic fitness of the senior citizens.

9. (c) 30 sec
10. (a) 8 feet
11. (c) 3
12. (a) 60-94
13. (c) Arm-curl Test
14. (d) 4
15. (b) 2.3 kg
16. (d) 6 min walk
17. (c) Side Roll

18. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

19. (d) Assertion (A) is false but, Reason (R) is true.

20. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

21. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).



Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Thomas went to an old age home on the occasion of his birthday. At that time, all the inmates in the home were assembled in one place. When he enquired, they replied that they have a physical fitness test.

Q 1. Give any one standard physical fitness test for senior citizens.

- a. Push-ups
b. Standing broad jump
c. Zig-zag run
d. Chair Sit and Reach Test

Q 2. Chair Stand Test is used for measuring the:

- a. lower body strength b. upper body test
c. aerobic fitness d. anaerobic fitness

Q 3. The weight of dumbbells in Arm-curl Test for women is:

- a. 5 pound b. 4 pound
c. 8 pound d. 10 pound



Answers

1. (d) 2. (a) 3. (a)

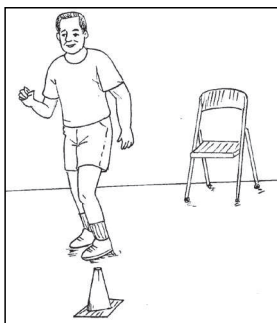
Case Study 2

Read the following passage and answer the following questions.

Mr. Balachandran, aged 65 years worked as a civil engineer in a construction company. He had to walk and climb a lot as part of his job. After retirement, he settled with his son spending time with his grandchildren. Now a days he is experiencing difficulty in doing certain chores which involves physical movement.

Answers

1. (c) Plate Tapping Test
2. (c) Overweight
3. (c) 1-(iii), 2-(i), 3-(ii), 4-(iv)
4. (c) 6 inches
5. (c) 20 inches
6. (c) Rikli and Jones test
7. (a) A-(ii), B-(i), C-(iv), D-(iii)
8. (c) Lower Body Flexibility



Q 1. Which of the following tests would you recommend to check Mr. Balachandran's fitness?

- a. Harvard Step Test b. Rikli and Jones Test
c. AAHPER Test d. Rockport Test

Q 2. How many series of tests are there in the prescribed fitness test for Mr. Balachandran?

- a. 6 b. 8
c. 3 d. 4

Q 3. The 8 Foot Up and Go Test, as shown in the picture is performed to assess:

- a. strength b. endurance
c. flexibility d. agility

! Answers

1. (b) 2. (a) 3. (d)



Very Short Answer Type Questions ↓

Q 1. Name any two SAI Khelo India Fitness Test for age group 5-8 years.

Ans. Flamingo Test and Plate Tapping Test.

Q 2. What do you mean by BMI?

Ans. BMI is a value derived from the mass (weight) and height of a person. It is used to categorise a person as underweight, normal weight, overweight or obese.

Q 3. What is the purpose of the Flamingo Balance Test?

Ans. The purpose of Flamingo Balance Test is to assess the strength of the leg, pelvic and trunk muscles as well as static balance.

Q 4. How is the scoring done for the Sit and Reach Test?

Ans. The score is recorded (distance between the initial position and final position) to the nearest centimetre, as the distance reached by the hand.

Q 5. What test would you suggest to measure upper body strength for aged population? (CBSE 2016)

Ans. The Arm-curl Test is used to measure upper body strength for aged population.

Q 6. What motor quality does a senior citizen lack, who finds difficulty in tying the shoe laces while sitting on a chair? (CBSE 2017)

Ans. The given senior citizen lacks lower body flexibility.



TIP

The task of tying the shoe laces while sitting on a chair is similar to the procedure followed in Chair Sit and Reach Test.

Q 7. Your grandmother feels that she has reduced her upper body flexibility and therefore she wants to test herself. Which test would you suggest to her?

(CBSE 2015, 17)

Ans. I would suggest her Back Scratch Test to improve her upper body flexibility under the Rikli and Jones-senior citizen Fitness Test.

Common ERROR!

Many students confuse between various physical fitness tests prepared by Rikli and Jones for senior citizens.

Q 8. Explain the procedure for Eight Foot Up and Go Test.

(CBSE 2016)

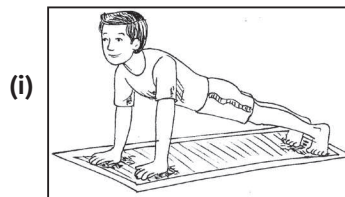
Ans. The procedure for Eight Foot Up and Go Test is as follows:

Keep a chair next to the wall and place the cone marker 8 feet away in front of the chair. The participant starts by fully seated, hand resting on knees and feet flat on the ground. On the command 'Go', stopwatch is started and the participant stands and walks as quickly as possible around the cone marker, return to the chair and sit down. Two trials are given per participant.

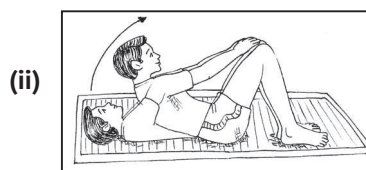


Short Answer Type-I Questions ↓

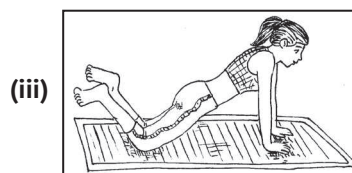
Q 1. Identify the below given tests and write the names:



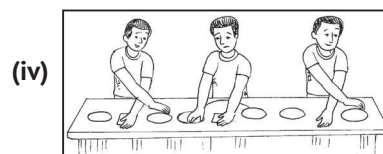
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Ans. (i) Push-ups (ii) Partial curl-up
(iii) Modified push-ups (iv) Plate Tapping Test

Q 2. Explain the procedure for carrying out the Plate Tapping Test in point form.

Ans. The procedure for carrying out the Plate Tapping Test is as follows:

- (i) First of all, adjust the table height so that the student is standing comfortably in front of the discs.

- (ii) The two yellow discs are placed with their centres 60 cm apart on the table.
- (iii) The rectangle is placed equidistant between both discs.
- (iv) The non-preferred hand is placed on the rectangle and the subject moves the preferred hand back and forth between the discs over the hand in the middle as quickly as possible.
- (v) This action is repeated for 25 full cycles (50 taps).

Q 3. Give the names of the test included in SAI Khelo India Fitness Test in school.

Ans. SAI Khelo India Fitness Test in school is made for two age groups:

- (i) Battery of Tests for Age Group 5-8 Years (Class 1 to 3) : It consists of
 - (a) BMI Test for Body Composition
 - (b) Plate Tapping Test
 - (c) Flamingo Balance Test
- (ii) Battery of Tests for Age Group 9-18+ Years (Class 4 to 12): It consists of
 - (a) BMI Test for Body Composition
 - (b) 50 m Dash
 - (c) 600 m Run/Walk
 - (d) Flexibility (Sit and Reach Test)
 - (e) Abdominal/Core Strength (Partial Curl-up)
 - (f) Muscular Strength (Push-ups for Boys, Modified Push-ups for Girls)

Q 4. Explain the procedure and scoring of 600m Run/Walk. (CBSE SQP 2023-24)

Ans. Procedure: The aim of this test is to complete the 600m course in fastest possible time. To start, all participants line up behind the starting line. On the command 'go,' the clock will start, and they will begin running at their own pace. Cheering or calling out the elapsed time is also permitted to encourage the participants to achieve their best time.

Scoring: The total time taken to run 600 m is recorded in min, sec.

Q 5. Enlist four test items of Johnson-Metheny Test of Motor Educability. (CBSE 2024)

Ans. The four test items of Johnson-Metheny Test of Motor Educability are:

- (i) Front Roll
- (ii) Back Roll
- (iii) Jumping Half-turns
- (iv) Jumping Full-turns



Short Answer Type-II Questions ↓

Q 1. Write down the objectives and administration of the Flamingo Test. (CBSE SQP 2022-23)

Ans. Flamingo Balance Test Objective: The aim of this test is to assess the strength of the leg, pelvic and trunk muscle as well as static balance.

Administration: (i) First of all, the student stands on the beam with his preferred leg.

- (ii) While balancing on the preferred leg, the free leg is flexed at the knee and the foot of this leg is held close to the buttocks.
- (iii) Try to keep this position for as long as possible.
- (iv) Start the stopwatch as the instructor let go off the student. Pause the stopwatch, each time the student loses balance (either by falling off the beam or letting go off the foot being held).
- (v) Count the number of falls in 60 seconds of balancing. If there are more than 15 falls in the first 30 seconds, the test is terminated.

Q 2. Describe the method of Sit and Reach Test.

(CBSE SQP 2020-21)

Ans. Procedure:

- (i) Sit on the floor with legs stretched out straight ahead.
- (ii) Feet (shoes off) are placed with the soles flat against the box, shoulder-width apart.
- (iii) Both knees are held flat against the floor by the tester, if required.
- (iv) With hands on top of each other and palms facing down, the participant reaches forward along the measuring line as far as possible.
- (v) After three practice reaches, the fourth reach is held for at least two seconds, while the distance is recorded.
- (vi) Make sure that there are no jerky movements and that the fingertips should remain at the same level.

Q 3. What do you know about Harvard Step Test? Explain its procedure and administration. (CBSE 2017, 19, 20)

Ans. Harvard Step Test: Harvard Step Test is a cardiovascular fitness test. It is also called aerobic fitness test. It was developed by Brouha and others in 1943. It is used to measure the cardiovascular fitness or aerobic fitness by checking the recovery rate.

Procedure:

- (i) The athlete stands in front of the bench or box 20 inches high for men and 16 inches high for women.
- (ii) On the command 'Go,' the athlete steps up and down on the bench or box at a rate of 30 steps per minute (one second up one second down) for 5 minutes (150 steps).
- (iii) Stopwatch is also started simultaneously at the start of the stepping.
- (iv) Then, the athlete sits down immediately after completion of the test i.e. after 5 minutes.
- (v) The total number of heart beats are counted between 1 to 1.5 minutes, 2 to 2.5 minutes and 3 to 3.5 minutes, after completion of the last step.

Calculation of the Score: The athlete's fitness index score is calculated with the help of following formula: Fitness Index Score (long-term)

$$= \frac{(100 \times \text{test duration in seconds})}{(2 \times \text{sum of heart beats in recovery periods})}$$

Q 4. Mr. X performs the Harvard Step Test for 275 seconds and his pulse in 1-1.5 min after exercise was 100. Write the formula of fitness index score for Harvard Step Test and calculate the fitness index score of Mr. X.

Ans. Fitness Index Score

$$= \frac{\text{Duration of the exercise in seconds} \times 100}{5.5 \times \text{Pulse count of 1-1.5 min after exercise}}$$

$$\begin{aligned} \text{Fitness Index Score of Mr. X} &= \frac{275 \times 100}{5.5 \times 100} \\ &= 50 \end{aligned}$$



TiP

Students must thoroughly prepare the procedure of Harvard Step Test and also the formula of fitness index score.

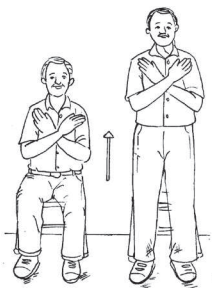
Q 5. List down the test items of Rikli and Jones Fitness Test and explain the procedure of any one.

(CBSE 2020)

Ans. Dr. Roberta Rikli and Dr. Jessie Jones developed various simple and easy-to-use fitness tests for senior citizens in 2001. The Rikli and Jones Fitness Test includes the following tests:

- (i) Chair Stand Test
- (ii) Arm-curl Test
- (iii) Chair Sit and Reach Test
- (iv) Back Scratch Test
- (v) Eight Foot Up and Go Test
- (vi) Six Minute Walk Test

Chair Stand Test: This test is part of the Senior Fitness Test Protocol, and is designed to measure the lower body strength, particularly the strength of legs of the elderly.



Chair Stand Test

Equipment Required: A straight back or folding chair without arm rests (seat of at least 44 cm high), stopwatch.

Procedure:

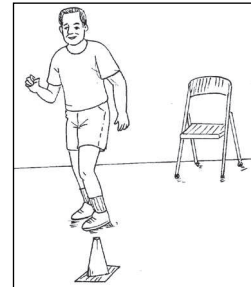
- (i) Place the chair against a wall, or otherwise stabilise it for safety.
- (ii) Sit in the middle of the seat, with feet shoulder width apart, flat on the floor. The arms are to be crossed at the wrists and held close to the chest.
- (iii) From the sitting position, stand up completely, then completely sit down, and repeat this for 30 seconds.

- (iv) Count the total number of complete chair stands (up and down equals one stand).

Q 6. Explain the “Eight Foot Up and Go Test” for measuring agility and dynamic balance. (CBSE 2018)

Ans. Eight Foot Up and Go Test: The 'Eight Foot Up and Go' is a coordination and agility test for the elderly, which is part of the Senior Fitness Test Protocol.

Equipment Required: A chair with a straight back which should be kept along the wall to stop the chair sliding backwards, a conical marker placed so the rear of the marker is 2.44 metres (8 feet) from the front of the chair, a stopwatch.



Eight Foot Up and Go Test

Procedure:

- (i) Sit in the middle of the chair with hands on thighs. One foot can be placed slightly in front of the other but both must be flat on the floor.
- (ii) Lean slightly forward. On the instruction to begin, stand up as quickly as possible.
- (iii) Walk around the marker, return to the chair and sit down. Time is noted as he sit down on the chair.
- (iv) Two trials are given per participants.



TiP

Rikli and Jones: Senior Citizen Fitness Tests are very important from the examination point of view.

Q 7. Explain the procedure of Six Minute Walk Test.

(CBSE SQP 2020)

Ans. This test measures the aerobic endurance of the senior citizens. The participant is asked to walk for six minute around the 50 yard rectangular area, with cones placed at regular intervals to indicate distance covered. The aim of this test is to walk as quickly as possible for six minutes to cover as much ground as possible. Measure the total distance covered in six minutes to the nearest metre.



Long Answer Type Questions ↓

Q 1. Name the test used to measure body composition and explains its procedure.

Ans. The Body Mass Index Test is used to measure body composition.

The equipments required for this test are: Flat and clean surface, weighing machine and a stadiometer or measuring tape pasted on a wall.

Procedure

(i) **Measuring Height:** This test involves measuring the height of a student on flooring that is not carpeted and against a flat surface such as a wall with no molding. Make sure that the student stand with feet flat and together, back against the wall, legs straight, arms are at sides, and shoulders are levelled. Also, make sure the participant is looking straight ahead and that the line of sight is parallel with the floor. Remove the student's shoes, bulky clothing, hair ornaments, and unbraid hair that interferes with the measurement. Use a flat headpiece to form a right angle with the wall and lower the headpiece until it firmly touches the crown of the head. Make sure the measurer's eyes are at the same level as the headpiece. Lightly mark where the bottom of the headpiece meets the wall. Then, use a metal tape to measure from the base on the floor to the marked measurement on the wall to get the height measurement.

(ii) **Measuring Weight:** This test involves measuring the weight of a student using a digital scale and placing it on firm flooring (such as tile or wood) rather than carpet. First of all, shoes and heavy clothing, such as sweaters should be removed. Make sure that, the student stand with both feet in the center of the scale.

Now, BMI can be calculated by using the formula:

$$\text{BMI} = \text{Weight (kg)} / [\text{Height (m)}]^2$$

Q 2. Rakshit is working on a project to collect data for assessing physical fitness amongst boys and girls in his residential complex. He plans to administer test for assessing their arm, shoulder and abdominal strength as well as endurance. List the two tests, he should conduct and also explain in detail the procedure of its administration along with scoring system.

Ans. The tests that Rakshit should conduct are:

(i) **Push-ups for Boys:** Its procedure are as follows:

- Keep the hands and toes touching the floor, the body and legs in a straight line, feet slightly apart and arms at shoulder width apart extended at right angle to the body.
- Keeping the back and knees straight, lower the body until there is a 90° angle at the elbows, then return back to the starting position with the arms extended.
- This action should be repeated, as test continues until exhaustion, or until they can do no more in rhythm or have reached the target number of push-ups.

Scoring: Record the number of correctly completed push-ups.

(ii) **Modified Push-ups for Girls:** Its procedure are as follows:

- The push-up begins in a kneeling position, with the hands and knees touching the ground.

(b) The knees are slightly apart, the arms are shoulder width apart and extended at right angle to the body.

(c) The girl lowers the body until there is a 90° angle at the elbows and then returns to the starting position with the arms extended.

(d) This action is repeated until exhaustion or until the time limit is reached.

Scoring: Record the total number of correctly completed push-ups.

Q 3. Make a table of test items listed under fitness test by SAI (Age group 9-18 years) along with the objectives of conducting them. Explain the administration of any one of them. (CBSE SQP 2022-23)

Ans. Test items listed under Fitness Test by SAI for age group 9-18 years are:

S. No.	Test	Objective
(i)	Body Mass Index or BMI	Body Mass Index is the measure of body fat, which is calculated from body Weight (W) and Height (H). $\text{BMI} = W/(H \times H)$, where W = body weight in kilograms and H = height in meters. The higher the score usually indicates higher levels of body fat.
(ii)	Partial Curl-up	The partial curl-up test measures abdominal muscular strength and endurance of the abdominals and hip-flexors, which is important in back support and core stability.
(iii)	Push-ups for Boys	The objective of this test is to assess the endurance of student's upper body strength and endurance.
(iv)	Modified Push-ups for Girls	To measure the upper body strength and trunk stability.
(v)	Sit and Reach Test	The sit and reach test is designed to measure the flexibility of the lower back and hamstring muscles.
(vi)	600 m Run/Walk	The objective of this test is to measure cardiovascular endurance.
(vii)	50 m Dash	The objective of this test is to determine acceleration and speed.

Administration of Partial Curl-up:

- First of all, the student lies on a cushioned, flat, clean surface with knees flexed, usually at 90° angle, with hands straight on the sides (palms facing downwards) closer to the ground, parallel to the body.
- The student raises the trunk in a smooth motion, keeping the arms in position, curling up the desired amount (at least six inches above the ground towards the parallel strip).

- (iii) The trunk is lowered back to the floor so that the shoulder blades or upper back touch the floor.

Q 4. Make a table of test items listed under fitness test by SAI (Age group 9-18 years). Explain the Procedure and Scoring to 50 MTS Run and Partial Curl-up.

(CBSE SQP 2023-24)

Ans. Age Group 9-18 + years | Class 4 to 12

The following components are to be considered in physical health and fitness profile of children in class 4-12:

- (i) Body Composition (BMI)
- (ii) Muscular Strength and Endurance
 - a. Abdominal/Core Strength (Partial Curl-up)
 - b. Muscular Endurance (Push-ups for Boys, Modified Push-ups for Girls)
- (iii) Flexibility (Sit and Reach Test)
- (iv) Cardiovascular Endurance (600 m Run/Walk)
- (v) Speed (50 m Dash)

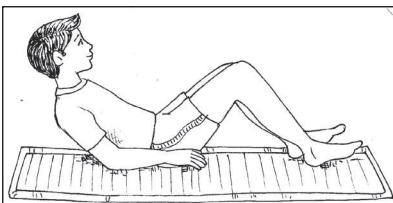
50 m Run:

Procedure: The test involves running a single maximum sprint over 50 m, with the time recorded. A thorough warm-up should be given, including some practice starts and accelerations. Start from a stationary standing position (hands cannot touch the ground), with one foot in front of the other. The front foot must be behind the starting line. Once the student is ready and motionless, the starter gives the instructions 'set' then 'go'. The tester should provide hints for maximising speed (such as keeping low driving hard with the arms and legs) and the participant should be encouraged to not slow down before crossing the finish line.

Scoring: Time taken to cover 50 m distance is expressed in seconds.

Partial Curl-up:

Procedure: First of all, the student lies on a cushioned, flat, clean surface with knees flexed, usually at 90° angle, with hands straight on the sides (palms facing downwards) closer to the ground, parallel to the body. The student raises the trunk in a smooth motion, keeping the arms in position, curling up the desired amount (at least six inches above the ground towards the parallel strip). The trunk is lowered back to the floor, so that the shoulder blades or upper back touch the floor.



Scoring: Record the maximum number of partial curl-ups in a certain time period such as 30 sec or 1 min.

Q 5. What is the purpose of Rikli and Jones fitness test? Explain the procedure of its any two test items in detail
(CBSE 2023)



EXPERT'S Answer

Ans. The purpose of Rikli and Jones fitness test was to evaluate functional ability and monitor the physical fitness status of older people and to identify problems and work on the weakness.

The test includes the following items:

- (i) Chair Stand Test for lower body strength.
- (ii) Arm-curl Test for upper body strength.
- (iii) Chair Sit and Reach Test for lower body flexibility.
- (iv) Back Scratch Test for upper body flexibility.
- (v) Eight Foot Up and Go Test for agility
- (vi) Six Minute Walk Test for Aerobic Endurance.

(i) **Arm-curl Test:** Its procedure is as follows:

- (a) The individual sits on the chair with back straight, feet on the floor, holding dumbbell with dominant hand using handshake grip.
- (b) On the command 'Go' the individual curls the arm with full range of motion and then returns back to its initial position.
- (c) Repeat this action as many times as possible within 30 sec.

Scoring: The score is the total number of correct arm-curls performed in 30 sec.

(ii) **Back Scratch Test:** Its procedure is as follows:

- (a) This test is done in the standing position. Place one hand over the same shoulder with the palm touching the back and reach down the back.
- (b) Place the other hand up the back from the waist with the palm facing outwards. Reach up the back.
- (c) Point the middle fingers of each of hand towards each other. Try and touch the fingers of each hand in the middle of the back.

Scoring: Record the best score out of the trials to the nearest centimetres or 1/2 inch.

Chapter Test

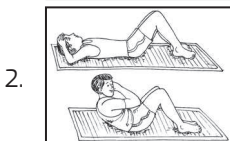
Multiple Choice Questions

Q 1. Match the following:

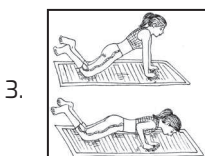
(CBSE SQP 2021 Term-1)



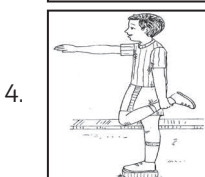
A. Static balance



B. Lower body flexibility



C. Upper body strength



D. Abdominal strength

- | | A | B | C | D |
|----|---|---|---|---|
| a. | 3 | 1 | 4 | 2 |
| b. | 4 | 1 | 3 | 2 |
| c. | 3 | 2 | 4 | 1 |
| d. | 4 | 2 | 3 | 1 |

Q 2. Which SAI Khelo India Fitness Test is used to measure speed and coordination of limb movement?

- a. Partial curl-up b. Push-ups
c. Plate Tapping Test d. Flamingo Balance Test

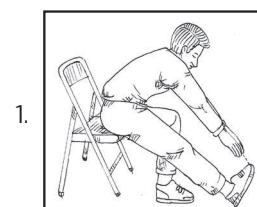
Q 3. 600 m Run/walk aims to measure an athlete's

- a. endurance b. speed
c. abdominal strength d. flexibility

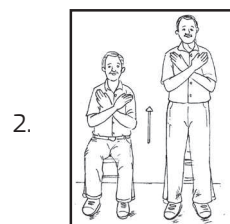
Q 4. Stadiometer is used to measure:

- a. strength b. weight
c. flexibility d. height

Q 5. Match the following:

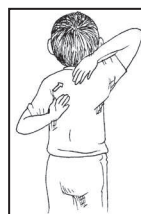


A. Lower Body Strength



B. Upper Body Strength

3.



C. Lower Body Flexibility

4.



D. Upper Body Flexibility

- a. 1-C, 2-D, 3-A, 4-B
b. 1-D, 2-A, 3-C, 4-B
c. 1-D, 2-C, 3-A, 4-B
d. 1-C, 2-A, 3-D, 4-B

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): 600 m Run/walk is a part of SAI Khelo India Fitness Test for age group 5-8 years.

Reason (R): 600 m Run/walk is used to measure cardiovascular endurance.

Q 7. Assertion (A): Chair Stand Test is similar to squat test and used to measure lower body strength.

Reason (R): A chair with a straight back and a seat of at least 44 cm and stopwatch is required to conduct this test.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

Rakshit is working on a project to collect data for assessing physical fitness amongst boys and girls (age group 9-18years) in the residential complex. He plans to administer test for assessing their arm, shoulder and abdominal strength as well as flexibility of hamstring muscles.

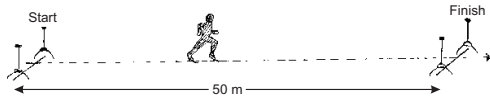
(i) Which of the following test should be conducted for assessing flexibility of hamstring muscles?

- a. 600 m run/walk b. Push-ups
- c. Sit and reach d. Partial Curl-up

(ii) Which of the following test should be conducted for assessing arm, shoulder and abdominal strength of boys and girls?

- a. Push-ups b. Modified push-ups
- c. Both a. and b. d. Flamingo Balance Test

(iii) Identify the following SAI Khelo India Fitness Test.



- a. Eight Foot Up and Go Test
- b. Partial Curl-up
- c. Six Minute Walk Test
- d. 50 m Speed Test

Very Short Answer Type Questions

Q 9. Define Basal Metabolic Rate.

Q 10. Which test would you suggest for your grandmother to test lower body flexibility?

Short Answer Type-I Questions

Q 11. Write down the Harris-Benedict equations used to calculate BMR.

Q 12. Explain in brief the administration of Partial Curl-up Test.

Q 13. Explain the procedure of Eight Foot Up and Go Test.

Short Answer Type-II Questions

Q 14. Discuss the Back Scratch Test for upper body flexibility.

Q 15. Write the aim and procedure of Arm-curl Test.

Q 16. Write a detail note on Plate Tapping Test.

Long Answer Type Questions

Q 17. What are the components of Rikli and Jones Test? Explain the procedure for administering any two test items.

Q 18. Write in detail about the various test items and their administration of the SAI Khelo India Fitness Test in school for age group 9 to 18 years.

Scan the QR Code

To get Answers of this Chapter Test





Physiology and Injuries in Sports

FAST TRACK REVISION

► **Physiological Factors Determining Components of Physical Fitness:** Sports physiology is the study of how exercise alters the function and structure of the body. The components of physical fitness like strength, endurance, speed and flexibility can be determined with the help of various physiological factors.

► **Physiological Factors Determining Strength**

- Muscle size
- Muscle composition
- Age
- Intensity of the nerve impulse
- Gender

► **Physiological Factors Determining Endurance**

- Aerobic capacity (oxygen uptake, oxygen intake, oxygen transport, energy reserves)
- Lactic acid tolerance
- Movement economy
- Muscle composition

► **Physiological Factors Determining Speed**

- Mobility of the nervous system
- Muscle composition
- Explosive strength
- Flexibility
- Bio-chemical reserves and metabolic power

► **Physiological Factors Determining Flexibility**

- Muscle strength
- Structure of joint
- Age and gender
- Stretchability of muscles
- Internal environment
- Previous injury

► **Parts of Cardiorespiratory System**

- **Cardiovascular System:** It consists of three parts: the heart, blood vessels and blood. Its major function is to deliver oxygen and nutrients, remove CO_2 and other metabolic waste products, to transport hormones and other molecules, to support thermoregulation and lastly to regulate immune function.
- **Respiratory System:** The important parts of the respiratory system are the nose, nasal cavity, pharynx, larynx, trachea, bronchi and lungs. Its major functions include, transporting air to the lungs, exchanging gases (O_2 and CO_2) between the air and blood and regulating blood pH.

► **Effects of Exercise on Cardiovascular System**

- **Short-term Effects:** When you do exercise or take part in a strenuous sport, you will notice several changes taking place in your body:

- Increased heart rate
- Increased stroke volume
- Increased cardiac output
- Increased blood flow
- Increased blood circulation
- Blood pressure increase

► **Long-term Effects:** Exercises are good for the overall well-being of a person. The long-term effects of exercise are as follows:

- Increases size and strength of heart
- Blood volume increases
- Low level of accumulation of lactic acid
- Resting heart rate decreases
- Normal blood pressure
- Increase in stroke volume and cardiac output
- Increase in capillaries network

► **Effect of Exercise on Respiratory System**

► **Short-term Effects:**

- Respiratory rate increases
- Tidal volume increases
- Rate of exchange of gas increases

► **Long-term Effects:**

- Increased efficiency of respiratory muscles
- Increased lung volume
- Increased pulmonary diffusion
- Increased residual volume

► **Short-term Effects of Exercises on Muscular System**

- Increased blood supply
- Increased muscle temperature
- Increased muscle flexibility
- Accumulation of lactic acid
- Micro-tears in muscle fibres

► **Long-term Effects of Exercise on Muscular System**

- Increase in muscle size (muscle hypertrophy)
- Increase in strength of ligaments and tendons
- Increase in size and number of mitochondria
- Increase in myoglobin storage
- Increase in lactic acid tolerance

► **Physiological Changes due to Ageing:** The major physiological changes due to ageing are as follows:

- Decrease in muscle size, strength of muscles also decreases.
- Increase in the accumulation of body fat.
- The efficiency of lungs diminishes with age. The uptake and exchange of oxygen reduces.
- The stroke volume, cardiac output and blood flow decrease with increase in age.

- Reaction time and movement time slows down with increasing age.
- The sense of smell, taste, sight, touch and hearing are all diminished overtime.
- Bone density decreases which increases the chances of fractures and dislocations.
- The mass of the kidneys decreases and the chances of urinary infections are increased.
- **Classification of Sports Injuries:** Injury causes damage to any part—external or internal, which affect the health of an individual. Injuries can be classified as:
 - **Soft Tissue Injuries:** It is of two types:
 - **Skin Injuries:** It is an injury over skin like contusion, abrasion, laceration, incision, etc.
 - **Abrasion:** Injury of skin or mucous membrane due to scrapping or rubbing.
 - **Contusion:** Injury to the soft tissue often produced by a blunt force such as kick, fall or blow.
 - **Laceration:** Severe injury of tearing or ripping of the layers of skin and the fatty tissues and muscles below the wound.
 - **Incision:** Injury produced by a sharp edge (knife etc.) and is usually longer than it is deep.
 - **Muscle Injuries:** In this injury, the muscles, tendons and ligaments are affected like sprain, strain etc.
 - **Sprain:** Sudden stretching of ligaments of a joint and is associated with pain and decolouration into tissues.
 - **Strain:** An acute or chronic soft tissue injury which is caused by twisting or pulling of a muscle, tendon or both.
 - **Hard Tissue Injuries:** These injuries involve damage to bones of skeletal system like fracture and dislocation. So, it is of two types:

- **Dislocation:** It means partial or total separation of a joint. Types of dislocation includes:
 - **Dislocation of Shoulder Joint:** It occurs when a strong force pulls the shoulder outward or extreme rotation of the joint pops the ball of the humerus out of the shoulder socket.
 - **Dislocation of Hip Joint:** It occurs when the head of the thigh bone is forced out of its socket in the hip bone.
 - **Dislocation of Lower Jaw:** It occurs when the lower jaw becomes detached from one or both of the TMJs (temporomandibular joints, which connects the lower jaw to the skull).
- **Fractures:** It is a crack or full break in a bone or bones. It can be closed or open. Fractures can be stress fracture, greenstick, comminuted, transverse, oblique and impacted.
 - **Stress Fracture:** Also known as hairline fracture, these are tiny cracks in a bone, caused by repetitive force or overuse.
 - **Greenstick Fracture:** It is an incomplete fracture which involves bending of bone instead of breaking completely.
 - **Comminuted Fracture:** It is a fracture in which the break is in three or more pieces and fragments are present at the fracture site.
 - **Transverse Fracture:** Here, the break is in a straight line across the bone.
 - **Oblique Fracture:** It is a diagonal break across the bone.
 - **Impacted Fracture:** It occurs when the broken ends of the bone are jammed together by the force of the injury.



Practice Exercise



Multiple Choice Questions ↓

- Q 1. Which of the following is not a component of physical fitness?**
- Strength
 - Balance
 - Speed
 - Endurance
- Q 2. The amount of oxygen which can be absorbed and consumed by the working muscles from blood is called (CBSE SQP 2020-21, CBSE 2023)**
- oxygen intake
 - oxygen transport
 - oxygen uptake
 - energy reserve
- Q 3. Which of these is a physiological factor determining flexibility?**
- Internal environment
 - Age
 - Joint structure
 - All of the above

- Q 4. Which of these is not a benefit of exercises related to cardiorespiratory fitness?**

- Decreased resting heart rate
- Increased stroke volume
- Decreased heart size
- Increased cardiac output

- Q 5. Slow twitch fibres are in colour.**

(CBSE SQP 2022-23)

- white
- red
- transparent
- brown

- Q 6. The ability to tolerate higher concentration of can help in improving endurance performance. (CBSE 2023)**

- lactic acid
- acetic acid
- hydrochloric acid
- sulphuric acid

- Q 7. The amount of blood pumped out by each side of the heart in 1 minute is known as: (CBSE SQP 2023-24)**

- blood pressure
- cardiac output
- blood volume
- oxygen intake

Q 8. The resting cardiac output is approximately:

- a. 10 litre/min b. 1 litre/min
c. 5 litre/min d. 15 litre/min

Q 9. Cardiac hypertrophy is:

- a. plateauing of heart rate due to maximal exercise intensity.
b. enlargement of heart due to chronic endurance training.
c. lowering of heart rate due to physical training.
d. increase in ventricular volume because of exercise.

Q 10. Which is not a long-term effect of exercise on muscular system?

- a. Increase in lactic acid tolerance.
b. Increase in muscle size.
c. Increase in myoglobin storage.
d. Increase in muscle temperature.

Q 11. Which of these is not a soft tissue injury?

- a. Abrasion b. Fracture
c. Contusion d. Sprain

Q 12. Overstretching of ligament cause: (CBSE SQP 2020-21)

- a. strain b. sprain
c. contusion d. bruises

Q 13. Which of these is not a type of fracture?

- a. Stress fracture
b. Greenstone fracture
c. Impacted fracture
d. Transverse fracture

Q 14. Match List-I and List-II, selecting the correct option:

List-I	List-II
A. Abrasion	(i) Joint Injury
B. Greenstick Fracture	(ii) Soft Tissue Injury
C. Shoulder Dislocation	(iii) Cause of Sports Injury
D. Lack of Fitness	(iv) Bone Injury

(CBSE 2020)

- | | | | | | | | |
|---------|-------|-----|-------|----------|-------|------|------|
| A | B | C | D | A | B | C | D |
| a. (ii) | (iv) | (i) | (iii) | b. (iii) | (ii) | (iv) | (i) |
| c. (iv) | (iii) | (i) | (ii) | d. (i) | (iii) | (ii) | (iv) |

Q 15. Identify the injury.



- a. Contusion b. Laceration
c. Sprain d. Fracture

Q 16. The irregular tear-like wounds caused by some blunt trauma (CBSE SQP 2023-24)

- a. Laceration b. Contusion
c. Abrasion d. Incision

Q 17. Match the injuries:



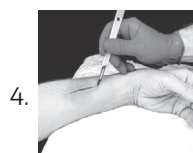
A. Comminuted fracture



B. Incision



C. Greenstick fracture



D. Abrasion

- a. 1-A, 2-C, 3-D, 4-B
b. 1-C, 2-A, 3-D, 4-B
c. 1-C, 2-A, 3-B, 4-D
d. 1-A, 2-C, 3-B, 4-D



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 18-22): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 18. Assertion (A): Slow twitch muscle fibres produce small levels of force for long periods of time without fatigue.

Reason (R): They are best used for cardiovascular (aerobic) activities.

Q 19. Assertion (A): ATP-CP system provides energy for activities which are of very short duration and are very intensive.

Reason (R): It includes activities like 200 m, 400 m races.

Q 20. Assertion (A): Regular exercise increases residual volume.

Reason (R): Residual volume is the volume of air that remains in the lungs after forceful expiration.

Q 21. Assertion (A): Sprain is the stretching or tearing of ligaments.

Reason (R): The most common location for a sprain is in our ankle.

Q 22. Assertion (A): Greenstick fractures are commonly seen in children.

Reason (R): The bones of children are very soft and delicate.

Answers

1. (b) Balance
2. (c) oxygen uptake
3. (d) All of the above
4. (c) Decreased heart size
5. (b) red
6. (a) lactic acid
7. (b) cardiac output
8. (c) 5 litre/min
9. (b) enlargement of heart due to chronic endurance training.
10. (d) Increase in muscle temperature.
11. (b) Fracture
12. (b) sprain
13. (b) Greenstone fracture
14. (a) A-(ii), B-(iv), C-(i), D-(iii)
15. (b) Laceration
16. (a) Laceration
17. (b) 1-C, 2-A, 3-D, 4-B
18. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
19. (c) Assertion (A) is true, but Reason (R) is false.
20. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
21. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
22. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

Case Study Based Questions

Case Study 1

Read the following passage and answer the following questions.

Mr. Patel is a renowned cricket coach. When he started his academy, he selected some players and designed a training programme. During training, he noted that a few players were good but were unable to play up to the last moment due to lack of speed, endurance and flexibility.

Q 1. Age and gender play a very important role in which of these components?

- | | |
|----------------|--------------|
| a. Speed | b. Endurance |
| c. Flexibility | d. Strength |

Q 2. Muscle composition plays a important role in which of these components?

- | | |
|-------------------|----------------|
| a. Speed | b. Endurance |
| c. Both a. and b. | d. Flexibility |

Q 3. Which statement is not true about fast and slow twitch fibres?

- a. Slow twitch fibres are best used for aerobic activities or endurance activities.
- b. Slow twitch fibres are also known as Type I fibres and fast twitch fibres are also known as Type II fibres.
- c. The percentage of fast and slow twitch fibres can be changed through training.
- d. An individual having high percentage of fast twitch fibres than slow twitch fibres will have more speed.

Answers

1. (c) 2. (c) 3. (c)

Case Study 2

Read the following passage and answer the following questions.

Mr. Purno, aged 45 years was advised by his doctor to exercise regularly and take care of his dietary habits. This advice was given keeping in view his advancing age and sedentary working profile. Considering his lifestyle answer the following questions.

Q 1. The most commonly seen change in the cardiovascular system due to regular exercise is:

- | | |
|-------------------|---------------------------|
| a. increase in BP | b. decrease in heart size |
| c. Both a. and b. | d. No change |

Q 2. Mr. Purno's heart beats fewer than 60 times a minute. This condition is known as:

- | | |
|----------------|------------------|
| a. Hypertrophy | b. Stroke volume |
| c. Bradycardia | d. Blood volume |

Q 3. With regular exercise, the tidal volume and vital capacity of lungs:

- | | |
|-----------------|--------------------|
| a. decreases | b. increases |
| c. remains same | d. Either b. or c. |

Answers

1. (a) 2. (c) 3. (b)

Case Study 3

Study the pictures given below and answer the following questions: (CBSE 2024)

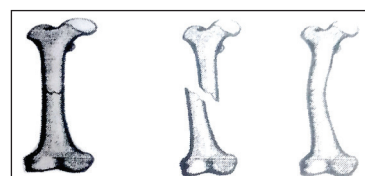


Image -1

Image -2

Image -3

- Q 1. Which type of fracture you see in image-1?
- Q 2. When a bone breaks diagonally as shown in image-2, it is known as
- Q 3. fracture occurs when the broken ends of the bones are jammed together by the force of the injury.
- Q 4. In which type of fracture bone is broken, splinted or crushed into number of pieces?

! Answers

1. Transverse 2. oblique
3. Impacted 4. Comminuted fracture



Very Short Answer Type Questions ↓

Q 1. Name any two physiological factors which determines strength.

Ans. The physiological factors which determine the strength of an individual are:

- (i) Muscle size (ii) Body weight

Q 2. What is oxygen uptake? (CBSE 2017)

Ans. The amount of oxygen which can be absorbed and consumed by the working muscles from the blood is called oxygen uptake.

Q 3. Write down various physiological factors determining speed and flexibility.

Ans. Speed is determined by the following physiological factors:

- (i) Mobility of the nervous system
(ii) Explosive strength

Flexibility is determined by:

- (i) Muscle strength
(ii) Structure of joint

Q 4. What is 'Stroke volume'? (CBSE 2016)

Ans. 'Stroke volume' is the amount of blood ejected per beat from the left ventricle. It is measured in ml/beat.

Q 5. What do you mean by 'Cardiac output'?

(CBSE 2016, 18)

Ans. 'Cardiac output' is the amount of blood pumped by the heart in one minute. It is measured in litre/minute.

Q 6. Explain the term hypertrophy of muscles.

(CBSE 2015, 17)

Ans. Hypertrophy of muscles refers to the increase in muscle size and strength due to regular exercises.

Q 7. Enlist the classification of sports injuries.

Ans. Sports injuries are classified in the following ways:

- (i) Soft tissue injuries (For example, abrasion, sprain, etc.).
(ii) Hard tissue injuries (For example, fractures and dislocation of joints).

Q 8. What do you mean by soft tissue injury?

Ans. A soft tissue injury is an injury that causes damage to the skin, ligament or tendon. It includes abrasion, strain, laceration, etc.

Q 9. What kind of sports injury can be termed as 'Abrasion'? (CBSE 2016)

Ans. It is the injury of skin in which skin is scrapped or rubbed due to friction with certain equipment or a rough surface.

Q 10. What is contusion? (CBSE 2017)

Ans. Contusion is a soft tissue injury which occurs when a direct blow or repeated blows from a blunt object strikes any part of the body, crushing underlying muscle fibres and connective tissues without breaking the skin.

Q 11. What type of sports injury can be termed as 'Laceration' in sports? (CBSE 2018)

Or What is laceration? (CBSE SQP 2022 Term-2)

Ans. Laceration is a soft tissue injury that occurs when the skin is cut open or the flesh is torn or hit by a blunt object or sports equipment.

Q 12. What is incision? (CBSE 2017)

Ans. Incision is a soft tissue injury made by sharp cutting instruments such as knives, razors or broken glass. Blood tends to come out freely from incision.

Q 13. Which type of sports injury is known as 'Strain'? (CBSE 2019)

Ans. A strain is a soft tissue injury that occurs to a muscle or a tendon generally caused by overuse, force or stretching.

Q 14. What type of fracture is known as 'Greenstick fracture'?

Ans. 'Greenstick fracture' is a fracture in which a bone bends and cracks, instead of breaking completely into separate pieces.



Short Answer Type-I Questions ↓

Q 1. Point out physiological factors for strength.

(CBSE SQP 2023-24)

Ans. Muscle Size: The size of the muscle is largely responsible to the strength of the muscle. It is an acknowledged actuality that more force can be produced by bigger and larger muscles. In males and females, the similar size of muscle produces the similar force even though males are found to be stronger in comparison to females for the reason that they have larger and bigger muscles.

Muscle Composition: It can be said that the proportion of the fibres determines the strength. Fundamentally, each muscle consists of two types of muscle fibres i.e., white fibres (fast twitch fibres) and red fibres (slow twitch fibres). The fast twitch fibres produce more force as they can contract faster. On the other hand, the slow twitch fibres are capable to contract for a longer duration as they do not contract faster. The muscles which can produce more strength have more percentage of fast twitch fibres.

Q 2. Briefly explain any two factors determining endurance. (CBSE 2023)

Or Explain any two physiological factors which help in determining endurance. (CBSE 2022 Term-2)

**EXPERT'S Answer**

Ans. The two factors which determine the endurance of our body are as follows:

(i) **Aerobic Capacity:** The ability of an organism to maintain adequate supply of O_2 to the working muscles for energy liberation is important for endurance performance. It depends on oxygen intake, oxygen uptake, oxygen transport and energy reserves.

(ii) **Lactic Acid Tolerance:** The ability to tolerate higher concentration of lactic acid is a significant factor in determining aerobic capacity. As tolerance capacity increases, performance also improves in the endurance activities.

Q 3. How composition of muscle fibres effect speed?

Ans. Composition of muscle fibres effect the speed because two types of muscle fibres, namely fast twitch fibres and slow twitch fibres are present in our body. Muscles with greater percentage of fast twitch fibres contract with more speed in comparison to muscles with slow twitch fibres. Different muscles of the body have different percentage of fast twitch fibres. So, different parts of the body have different speed performances.

Q 4. Write a key point on cardiorespiratory factors determining fitness.

(CBSE SQP 2023-24)

Ans. Cardiovascular System: It consists of three parts: the heart, blood vessels and blood. Its major function is to deliver oxygen and nutrients, remove CO_2 and other metabolic waste products, to transport hormones and other molecules, to support thermoregulation and lastly to regulate immune function.

Respiratory System: The important parts of the respiratory system are: the nose, nasal cavity, pharynx, larynx, trachea, bronchi, and lungs. Its major functions include, transporting air to the lungs, exchanging gases (O_2 and CO_2) between the air and blood and regulating blood pH.

Q 5. List any four changes happening in the muscular system due to exercising.

(CBSE SQP 2022 Term-2, CBSE 2023)

Ans. Effects of exercises on muscular system are as follows:

- (i) Increased blood supply
- (ii) Increased muscle temperature
- (iii) Increased muscle flexibility
- (iv) Increase in size and number of mitochondria

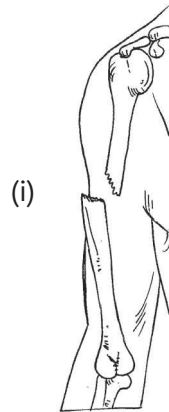
Q 6. Explain any two types of soft tissue injury with the help of examples.

(CBSE SQP 2022-23)

Ans. The two types of soft tissue injury are as follows:

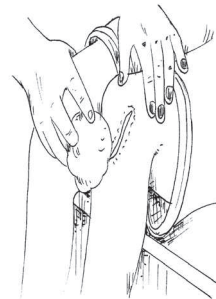
(i) **Contusion:** Contusion is a soft tissue injury which occurs when a direct blow or repeated blows from a blunt object strikes any part of the body, crushing underlying muscle fibres and connective tissues without breaking the skin.

(ii) **Strain:** A strain is a soft tissue injury that occurs to a muscle or a tendon generally caused by overuse, force or stretching. Its causes include running, jumping, throwing, etc.

Q 7. Identify the sports injuries and give their names:

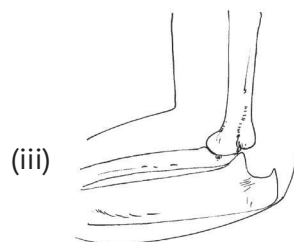
(i)

.....



(ii)

.....



(iii)

.....



(iv)

.....

- Ans. (i) Compound fracture
(ii) Laceration
(iii) Dislocation of joint
(iv) Comminuted fracture

Q 8. What do you mean by dislocation? Name the different types of dislocation.

Ans. Dislocation means partial or total separation of a joint. A joint is formed by the meeting of two or more bones of the skeleton.

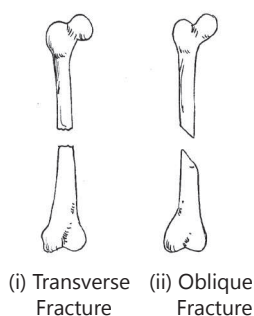
There are the following types of dislocation:

- (i) Dislocation of shoulder joint
(ii) Dislocation of hip joint
(iii) Dislocation of lower jaw

Q 9. Draw diagram of any two types of bone injury.

(CBSE 2022 Term-2)

Ans.



Q 10. Elucidate any four types of fracture. (CBSE 2023)



EXPERT'S Answer

Ans. Four types of fracture are as follows:

- (i) **Impacted fracture** : It occurs when the broken ends of the bones are jammed together by the force of the injury.
- (ii) **Oblique fracture**: It occurs when the bone is broken diagonally to the axis of the bone.
- (iii) **Transverse fracture**: It occurs when there is a straight break right across a bone.
- (iv) **Comminuted fracture**: It occurs when a bone is broken, splinted or crushed into number of pieces.



Short Answer Type-II Questions ↓

Q 1. Elaborate any three physiological factors determining flexibility.

Ans. The physiological factors which determine flexibility are:

- (i) **Structure of Joint**: There are several different types of joint in the human body, some of which

possess intrinsically greater range of motion than the others. For example, the ball and socket joint has the greatest range of motion of all the joints.

- (ii) **Previous Injury**: Injuries to muscles and connective tissues can lead to thickening of the affected area and reduced range of motion which ultimately leads to reduced flexibility.

- (iii) **Age and Gender**: We know that with the increase in age there will be a decrease in flexibility. Gender also affects flexibility, as female tend to be more flexible than male.

Q 2. Discuss any three short-term effects of exercise on cardiovascular system.

Ans. The short-term effects are as follows:

- (i) **Increased Heart Rate**: When an individual starts exercising, his heart rate increases as per the intensity and duration of the exercise.
- (ii) **Increased Stroke Volume**: The stroke volume or the amount of blood pumped per beat from the left ventricle increases proportionally with intensity of the exercise.
- (iii) **Increased Cardiac Output**: The cardiac output or the volume of blood pumped by the heart in one minute increases from 5 litre/minute to 40 litre/minute, during intense exercise.

Q 3. Discuss in detail short-term effects of exercise on respiratory system.

Ans. Short-term effects of exercise in respiratory system are as follows:

- (i) **Respiratory Rate Increases**: Our body requires more oxygen during exercise, and to meet this increased demand, the respiratory rate (breathing rate) increases. The normal respiration rate for an adult at rest is 12 to 20 breaths per minute, but during exercises it increases to 40 breaths per minutes.
- (ii) **Tidal Volume Increases**: The amount of air inhaled and exhaled in one breath is known as tidal volume. Tidal volume increases as a result of exercise to take in more oxygen and remove carbon dioxide from our body.
- (iii) **Rate of Exchange of Gas Increases**: Regular exercise increases the rate of exchange of gas in lungs.

Q 4. Elucidate any six effects of exercise on muscular system. (CBSE 2023)



EXPERT'S Answer

Ans. Effects of exercise on muscular system are as follows:

- (i) **Hypertrophy of Muscle:** Scientific and systematic exercise leads to increase in thickness of muscle fibres that results in increase in muscle size also known as muscle hypertrophy.
- (ii) **Increases in Strength of Ligaments and Tendons:** Regular exercise helps to strengthen bones, ligaments and tendons.
- (iii) **Increase in Size and Number of Mitochondria:** Aerobic exercises leads to increase in size and numbers of mitochondria and which take in more oxygen and produce more ATP and energy.
- (iv) **Increase in Myoglobin Storage:** Long-term effect of aerobic exercise is to increase the storage of myoglobin which transports oxygen to mitochondria. Large amount of myoglobin means large amount of oxygen and large amount of energy.
- (v) **Increase in Lactic Acid Tolerance:** Regular exercises help to tolerate pain and sourness in muscles due to accumulation of lactic acid.
- (vi) **Increase in Glycogen Storage:** Regular exercise helps the body to increase the storage of glycogen which may give continuous energy for 90-120 minutes.

Q 5. Describe any three physiological changes due to ageing. (CBSE 2024)

Ans. Three physiological changes due to ageing are as follows:

- (i) **Changes in Respiratory System:** The efficiency of lungs diminishes with age. There is decreased oxygen uptake and oxygen exchange. The muscles of the ribcage become weak. Hence, the ability to breathe deeply is reduced.
- (ii) **Changes in Cardiovascular System:** With the growing age, the strength and efficiency of cardiac muscle is diminished. As a result, stroke volume, cardiac output and blood flow decrease with increase in age.
- (iii) **Changes in Urinary System:** With ageing, the mass of kidneys decreases. This leads to reduction in capacity of bladder and an increase in residual urine. The chances or urinary

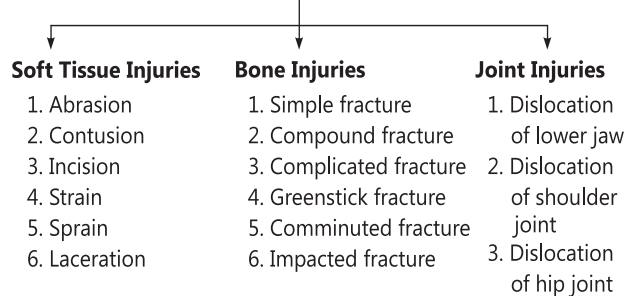
infections are increased and it takes a longer time for kidneys to dispose waste products from the body.

Q 6. Create a flowchart to explain classification of sports injuries. (CBSE SQP 2022 Term-2)

Ans.

Common Sports Injuries:

Sports Injuries



Q 7. Explain any three joint injuries.

Ans. The three joint injuries are as follows:

- (i) **Dislocation of Jaw:** It occurs when the chin strikes any other object forcefully. It may also occur if the mouth is opened excessively.
- (ii) **Dislocation of Shoulder Joint:** It may occur due to sudden jerk or fall on a hard surface. The end of humerus comes out of the shoulder socket.
- (iii) **Dislocation of Hip Joint:** By putting maximum strength spontaneously may cause dislocation of hip joint. The end of femur gets displaced from the socket.



Long Answer Type Questions ↓

Q 1. Describe physiological factors determining components of physical fitness.

Ans. Physiological factors determining components of physical fitness are:

- (i) **Strength:** This is the maximum force or tension a muscle or a muscle group can exert against a resistance. The way to increase strength is to try exercises such as lifting weights (under proper supervision).
- (ii) **Endurance:** This is the ability of a muscle or a muscle group to perform repeated contractions against a resistance/load or to sustain contraction for an extended period of time with less discomfort and more rapid recovery.
- (iii) **Speed:** This is the rapidity with which one can repeat successive movements of the same pattern. It may also be defined as the ability of a person to move quickly through a short distance.
- (iv) **Flexibility:** This is the quality of the muscle ligaments and tendons that enables the joints of the body to move easily through a complete range of movements.

Q 2. Discuss physiological factors determining speed.

Ans. The various physiological factors determining speed are as follows:

- (i) **Mobility of the Nervous System:** To generate more speed, our muscles contract and relax at

maximum possible speed due to which rapid excitation and inhibition occur in the concerned motor centres. This is known as mobility of the nervous system.

(ii) **Flexibility:** Flexibility also determines the speed to a certain extent as it allows our body to move at maximum speed without much internal resistance.

(iii) **ATP and CP Stores:** For maximum speed performance, ATP and CP stores in the muscles should be enough. If ATP and CP store is less, the muscle contractions due to insufficient energy supply become slow after a short time.

(iv) **Muscle Composition:** Muscle with greater percentage of fast twitch fibres contract with more speed in comparison to muscles with lower percentage of fast twitch fibres.

(v) **Explosive Strength:** For every quick and explosive movement, explosive strength is indispensable. It depends on muscle composition, muscle size and muscle coordination.

Q 3. Discuss in detail long-term and short-term effects of exercise on cardiorespiratory system.

(CBSE 2022 Term- 2)

Ans. Cardiorespiratory system consists of cardiovascular system and respiratory system.

Short-term effects of exercise on Cardiovascular system:

- (i) Exercise makes the body work harder and therefore muscles require more oxygen to continue to work effectively. As a result, the heart rate increases.
- (ii) As the heart rate increases, blood circulation increases in the body. As a result, the movement or flow of blood increases to tissues or organs.
- (iii) During exercise, stroke volume increases as more oxygen is required which is accomplished by delivering blood to muscles.

Long-term effects of exercise on Cardiovascular system:

- (i) Continuous aerobic exercises help to increase the strength and the size of heart which helps in better performance.
- (ii) Regular exercises prepares muscles to adjust to working with lower levels of oxygen and the circulatory system develops itself to transport oxygen to different parts of the body, thereby resulting in low levels of lactic acid.

- (iii) Due to the demands placed on different parts of the body during exercise, the capillary density at muscle sites improves. Increased capillary density allows for greater oxygen being transported to the muscles, improving their ability to perform intense exercise.

Short-term effects of exercise in Respiratory system:

- (i) Our body requires more oxygen during exercise, and to meet this increased demand, the respiratory rate (breathing rate) increases.
- (ii) Tidal volume increases as a result of exercise to take in more oxygen and remove carbon dioxide from our body.
- (iii) Regular exercise increases the rate of exchange of gas in lungs.

Long-term effects of exercise in Respiratory system:

- (i) Continuous exercises done for long duration help to increase the capacity and volume of lungs.
- (ii) Regular exercise increases residual volume that helps to exchange the gases in normal limits.
- (iii) Due to regular exercise efficiency of respiratory muscles increases, inhalation and exhalation become fluent.

Q 4. What do you understand by fracture? How can fractures be classified? Explain.

(CBSE 2019,23, CBSE SQP 2023-24)

Ans. A fracture is a break in a bone as a result of high force impact or stress, or a minimal trauma injury as a result of certain medical conditions that weakens the bones, such as osteoporosis etc.

The different types of fractures are discussed below:

- (i) **Greenstick Fracture:** A greenstick fracture involves bending of bones and cracks, instead of breaking completely into separate pieces. It occurs most often during infancy and childhood when bones are soft and more flexible.
- (ii) **Comminuted Fracture:** A fracture in which the bone is broken into more than two pieces and is the result of high velocity injuries, such as car accidents, falls from a height etc.
- (iii) **Stress Fractures:** These are tiny cracks in a bone, most commonly in bones of lower leg and foot. They are caused by repetitive force or overuse (repeatedly jumping up and down or running long distances).

(iv) **Impacted Fracture:** A fracture in which the ends of the cracked bones are driven into each other by the force of the injury.

(v) **Oblique Fracture:** Oblique fractures are slanted fractures that occur when a force is applied at any angle other than right angle to the bone. (Any four)



TiP

Learn and understand the concepts of each type of fracture and make a list of how each one differs from the other one.

Q 5. Explain following sports injuries briefly.

- (i) Abrasion
- (ii) Transverse fracture
- (iii) Sprain



Chapter Test

Multiple Choice Questions

Q 1. Match the following:

List-I (Component of Physical Fitness)	List-II (Physiological Factor)
A. Endurance	(i) Muscle size
B. Flexibility	(ii) Movement economy
C. Speed	(iii) Previous injury
D. Strength	(iv) Bio-chemical reserves and metabolic power

- A B C D
- a. (ii) (iii) (iv) (i)
- b. (ii) (iii) (i) (iv)
- c. (iv) (ii) (i) (iii)
- d. (iv) (iii) (ii) (i)

Q 2. What is the normal respiratory rate for an adult?

- a. 10-12 breaths per minute
- b. 40-60 breaths per minute
- c. 12-20 breaths per minute
- d. 30-40 breaths per minute

Q 3. Which of the following is not a short-term effect of exercise on muscular system?

- a. Micro-tears in muscle fibres
- b. Increased blood supply
- c. Increased muscle flexibility
- d. Increase in size and number of mitochondria

(iv) **Laceration**

(v) **Contusion**

- Ans.** (i) It is the injury of skin in which the skin is scrapped or rubbed due to friction with certain equipment or a rough surface.
- (ii) A fracture in which the break is across the bone at a right angle to the long axis of the bone.
- (iii) Sprain is a ligament injury which occurs due to overstretching or tearing of ligament. Severe pain, swelling, inflammation and tenderness are common symptoms.
- (iv) Laceration is a soft tissue injury that occurs when the skin is cut open or the flesh is torn or hit by a blunt object or sports equipment.
- (v) Contusion is a soft tissue injury which occurs when a direct blow or repeated blows from a blunt object strikes any part of the body, crushing underlying muscle fibres and connective tissues without breaking the skin.

Q 4. Match the following:

List-I (Types of Fracture)	List-II (Definition)
A. Impacted fracture	(i) A crack in a bone.
B. Stress fracture	(ii) Bone is broken, splinted or crushed into number of pieces.
C. Comminuted fracture	(iii) Bone is broken diagonally.
D. Oblique fracture	(iv) Broken ends of the bones are jammed together.

- A B C D
- a. (iv) (i) (ii) (iii)
- b. (iv) (i) (iii) (ii)
- c. (iv) (ii) (iii) (i)
- d. (iv) (ii) (i) (iii)

Q 5. bone comes out of socket in hip dislocation.

- a. Humerus
- b. Femur
- c. Tibia
- d. Fibula

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Sprain is ligament injury.

Reason (R): Strain is a muscle injury.

Q 7. Assertion (A): Oxygen intake is the amount of oxygen which can be absorbed and consumed by the working muscles from the blood.

Reason (R): It depends on the lung size, number of active alveoli, size of chest cavity, etc.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

The Godavari school attended a CBSE Cluster Basketball Tournament. During the semi-final match Varun, one of the players fell down on the hard surface and was injured on the shoulder.

(i) Which joint injury might have happened to Varun?

- Dislocation of lower jaw
- Dislocation of shoulder joint
- Dislocation of hip joint
- Dislocation of wrist

(ii) bone comes out from the socket in the above joint injury.

- | | |
|-----------|------------|
| a. Ulna | b. Femur |
| c. Fibula | d. Humerus |

(iii) Joint injury symptoms include:

- | | |
|-------------|-----------------|
| a. pain | b. swelling |
| c. bruising | d. All of these |

Very Short Answer Type Questions

Q 9. Differentiate between slow twitch fibre and fast twitch fibre.

Q 10. Write briefly about the effect of training on:

- blood flow
- blood volume

Short Answer Type-I Questions

Q 11. How composition of muscle fibres determine the speed of an individual?

Q 12. Differentiate between strain and sprain.

Q 13. What do you understand by dislocation? Name different types of dislocation.

Short Answer Type-II Questions

Q 14. Briefly explain the long-term effects of exercise on respiratory system.

Q 15. What do you mean by oxygen intake and oxygen uptake?

Q 16. Elaborate any three physiological factors determining strength.

Long Answer Type Questions

Q 17. Write in detail about bone injuries and joint injuries.

Q 18. Discuss in detail three long-term and three short-term effects of exercise on muscular system.



Scan the QR Code

To get Answers of this Chapter Test



Biomechanics and Sports

FAST TRACK REVISION

► Newton's Law of Motion

- **First Law of Motion/Law of Inertia:** This law states that a body at rest will remain at rest and a body in motion will continue to remain in motion at a constant speed and in the same direction until any external force is applied on it to change its state.
- **Second Law of Motion/Law of Acceleration:** According to second law of motion, the rate of change in acceleration of an object is directly proportional to the force producing it and inversely proportional to its mass.
- **Third Law of Motion/Law of Reaction:** This law states that to every action, there is an equal and opposite reaction.

► Application of Newton's Law of Motion in Sports

- **First Law: Tennis:** A tennis ball will remain at rest in the court until the unbalanced force of player's hand picks it up and moves it. A tennis ball hit by the player will stay in motion until it hits the unbalanced force of opposing player's racquet.
- **Second Law: Baseball:** A baseball hit with a swinging bat will accelerate more than a baseball that is bunted because the swinging bat has more force. If equal force is applied to the baseball (more mass) and t-ball (less mass), then t-ball will accelerate more.
- **Third Law: Soccer:** When a soccer ball hits a goalie's hand, the action is the ball hitting the goalie's hand and the reaction force is the hand hitting the ball in the opposite direction.

► Lever

A lever is a rigid bar used to overcome resistance when a force is applied.

"A rigid piece transmits and modifies force or motion when forces are applied at two points, and it turns about a third." All lever systems are made up of four components *i.e.*, load, fulcrum, effort and lever.

- **Load/Resistance Arm:** It is the point where the load or resistance is located.
- **Fulcrum:** It is the point at which the lever rotates or turns and identifies the lever class by its position in relation to the other two parts. In human movement, the fulcrum is the joint that dictates the kind of action.
- **Effort/Force:** It is the point at which the force is applied.
- **Types of Levers:**

There are three types/classes of levers:

- (i) **First-class Lever:** A first-class lever has the fulcrum between the force and the resistance.
For example: When throwing a ball. In this example, fulcrum is elbow, effort is triceps and load is arm/ball.

- (ii) **Second-class Lever:** A second-class lever has the load resistance between the fulcrum and the force.

For example: When doing V-sit-up during straight push-ups. In this example, fulcrum is ball of the foot, effort is arm muscle contraction and load is the body weight.

- (iii) **Third-class Lever:** A third-class lever has the force between the fulcrum and the resistance.

For example: When throwing a ball.

In this example, fulcrum is elbow joint, effort is biceps and load is arm/weight.

► Applications of Lever in Sports

A few examples of lever application in sports are:

- **Cricket Bat (2nd class):** The fulcrum is the top of the handle, the load is the bat's body, and the force is closer to the neck of the handle.
- **Kicking-lower limb (3rd class):** The fulcrum at the knee joint, force at tibial tuberosity, (attachment of the quadriceps) load is the foot.
- **Jumping-plantar flexion of the foot (2nd class):** The load is at the toes, the fulcrum is at the heel, and force is your weight which is anterior to your heel.
- **Looking up/down or side-to-side (1st class):** Your head is balanced on your atlanto-occipital joint, which pivots, similarly to a see-saw.

- **Equilibrium:** Equilibrium refers to the state of any object when all forces acting upon it result in zero change of motion for the object. In other words, when the sum of all forces is zero, the object is in a state of equilibrium. Equilibrium provides us balance and stability.

► Types of Equilibrium

S.No	Static Equilibrium	Dynamic Equilibrium
(i)	When the sum of forces acting upon the object and sum of the movement acting upon the body both is equal to zero, then the body is said to be in static equilibrium.	When all the forces acting on an object are balanced, and the body is in motion, then the body is said to be in dynamic equilibrium.
(ii)	Static balance is maintaining equilibrium when stationary.	Dynamic balance is maintaining equilibrium when moving.
(iii)	For <i>e.g.</i> , A gymnast performing 'T' position on the balancing beam, because the gymnast is not making any movement.	For <i>e.g.</i> , A gymnast doing a cartwheel during performance.

► Application of Equilibrium in Sport

- Two people balancing on a see-saw.
- Dynamic equilibrium is required by a tennis player to change her/his position after hitting a shot.
- Boxers can lose balance if they shift their weight on heels because the centre of gravity must fall within the line of base of support for greater stability.

► Principles of Equilibrium

Some of the principles are as follows:

- The lower the centre of gravity is to the base of support, the greater will be the stability.
- The nearer the centre of gravity is to the centre of base of support, the more will be the stability.
- Broader is the base of support, the greater will be the stability.

► Centre of Gravity

- Centre of gravity is a point at which a body balances or the point at which the weight of body is equally distributed. The centre of gravity is the average location of the weight of an object. The position of centre of gravity changes depending upon the position of the body or object.

► Application in Sports

- In sports like wrestling and the athletes maintain stability by lowering the centre of gravity by bending their knees.
- A jumper's centre of gravity must lie on the base of support for greater stability while take-off.

► Friction and Sports

- The force acting along two surfaces in contact, which opposes the motion of one body over the other is called the force of friction. Generally, there are two causes of friction:
 - The irregularity or roughness of the surface.
 - The molecular forces of attraction between two surfaces in contact.

► Types of Friction

There are following two types of friction in general:

- **Static Friction:** The frictional force that comes into play when one body tends to move over the surface of the other body, but the actual motion has yet not started, is known as static friction.
- **Dynamic Friction:** The frictional force that comes into play when one object is actually moving (sliding or rolling) over the surface of the other body, is called dynamic friction. It is further categorised as follows:
 - **Rolling Friction:** The frictional force exerted on an object when it is rolling over some other surface or object is known as rolling friction.
 - **Sliding Friction:** The frictional force exerted on an object when it is sliding over some other surface or object is known as sliding friction.

► Advantages of Friction

- Athletes would not be able to walk on the surface of earth, if there is no necessary frictional force present.
- A weightlifter rubs powder in the hands before holding the rod to increase the amount of friction between the hands and the rod. This helps to have a better grip on the rod.
- Similarly, gymnasts use chalk power to ensure a strong and reliable grip while performing on horizontal bar, uneven bar or roman rings.
- In track events, athletes use spikes so that they can get adequate friction from the surface and run fast.

► Disadvantages of Friction

- In snow skiing, the skis are designed to have minimum friction for better performance.
- In cycling, the sportsperson must not experience any frictional force through the surface, otherwise it may result in wastage of energy.
- In football, cricket, hockey etc., friction is responsible for decreased speed of playing ball on ground.

► Projectile

- An object thrown into the space either horizontally or at an acute angle under the action of gravity is called a projectile.

► Factors Affecting Projectile Trajectory

- **Angle of Projection:** A projectile when released at an angle of 45° makes a parabolic path and covers the maximum distance, as compared to when it is released at any other angle (the initial velocity having been kept constant).
- **Initial Velocity:** The distance traversed by the projectile also depends upon the velocity by which it is thrown. If the velocity is more, it would cover greater distance as compared to when thrown by a lesser velocity.
- **Gravity:** The trajectory of the projectile is also affected by the gravitational pull of the earth. It directly depends upon the weight of the object thrown. The greater the weight of the object, the greater would be the gravitational resistance or pull.
- **Air Resistance:** When a projectile moves through the air, it is slowed down by air resistance. Air resistance decreases the horizontal component of a projectile. There are following factors which are related to the amount of air resistance acting on a projectile:
 - Surface of the object
 - Speed
 - Mass
 - Surface to volume ratio
- **Spin:** The spin also affects the flight of the projectile. The amount and direction of spin acting on a projectile directly affects the distance covered or travelled by a projectile.



Practice Exercise



Multiple Choice Questions ↓

- Q 1. Which law amongst the given ones is known as the first law of motion? (CBSE SQP 2021 Term-1)

Or

Newton's first law of motion is known as:

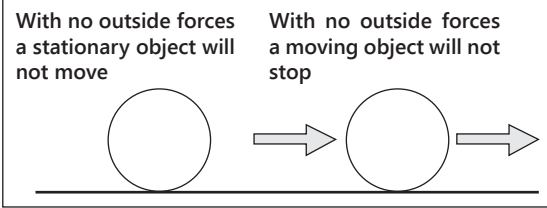
(CBSE SQP 2021 Term-1)

- | | |
|--------------------|------------------------|
| a. Law of inertia | b. Law of acceleration |
| c. Law of reaction | d. Gravitational pull |

Q 2. The law of acceleration is also known as: (CBSE 2020)

- a. Law of inertia
- b. Law of action and reaction
- c. Law of momentum
- d. Boyle's law

Q 3. Identify the given below: (CBSE SQP 2023-24)



- a. First law of motion
- b. Second law of motion
- c. Third law of motion
- d. Law of effects

Q 4. In law of acceleration, acceleration of an object is inversely proportionate to its

(CBSE SQP 2022-23)

- a. force
- b. mass
- c. speed
- d. size

Q 5. Who gave laws of motion? (CBSE SQP 2021 Term-1)

- a. Galileo
- b. Pascal
- c. Newton
- d. Darwin

Q 6. Starting a throwing event in athletics is an example of which law of motion? (CBSE SQP 2021 Term-1)

- a. First law of motion
- b. Second law of motion
- c. Third law of motion
- d. First and Third law of motion

Q 7. Physical education teacher of ABC school was teaching the students about Newton's laws of motion. While explaining he showed the students this picture and tried to explain how there is a difference in the speed of an object due to their weight. Can you name the law?

(CBSE SQP 2021 Term-1)



- a. Newton's first law of motion
- b. Newton's second law of motion
- c. Newton's third law of motion
- d. Action reaction

Q 8. Rishi who was studying in class XII is a science stream student. During his Physical Education class, he got confused how Newton's laws of motion are useful in sports and how they can be applied in sports. But his teacher explained these laws with help of examples from sports which proved to be very helpful for him. Swimming is the best example of which law of motion?

(CBSE SQP 2021 Term-1)

- a. Law of inertia
- b. Law of acceleration
- c. Law of reaction
- d. Both a. and c.

Q 9. Application of Newton's laws of motion is very useful in sports. In this context, acceleration is related to:

(CBSE 2021 Term-1)

- a. Newton's first law of motion
- b. Newton's third law of motion
- c. Newton's second law of motion
- d. Both a. and b.

Q 10. Newton's third law of motion is known as:

(CBSE 2021 Term-1)

- a. Law of action and reaction
- b. Law of inertia
- c. Law of acceleration
- d. Law of gravity.

Q 11. Which Newton's law of motion is depicted through this picture?

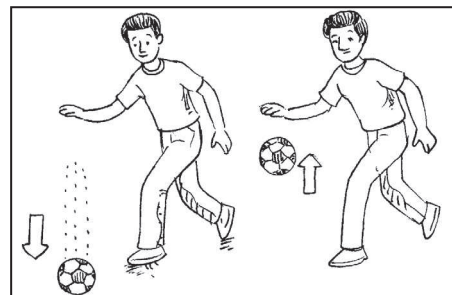
(CBSE 2021 Term-1)



- a. Newton's first law of motion
- b. Newton's second law of motion
- c. Newton's third law of motion
- d. Both a. and b.

Q 12. Which Newton's law of motion is depicted through the picture?

(CBSE 2021 Term-1)



- a. Newton's third law
- b. Newton's second law
- c. Newton's first law
- d. Newton's first and second law

Q 13. Identify the law of motion, shown in the illustration:

(CBSE 2021 Term-1)



- a. Law of inertia
- b. Law of action and reaction
- c. Law of acceleration
- d. Both b. and c.

Q 14. Physical education teacher of XYZ school explained how Newton's law of motion are used in sports. She explained while dribbling in Basket-ball.

How the laws can be helpful?

Which law of motion is shown in this picture?

(CBSE 2021 Term-1)

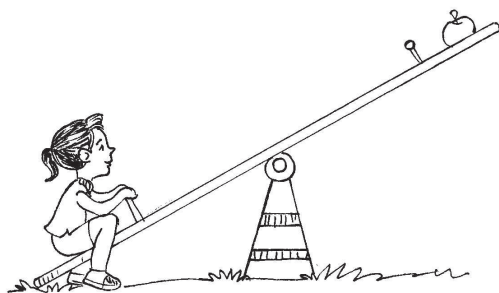


- a. Law of inertia
- b. Law of acceleration
- c. Law of action and reaction
- d. Both a. and b

Q 15. The three basic components of a lever are:

- a. Mass, weight and velocity
- b. Force, fulcrum and load
- c. Fulcrum, resistance and effort
- d. Both b. and c.

Q 16. What type of lever is depicted in the picture?



- a. 1st class lever
- b. 2nd class lever
- c. 3rd class lever
- d. None of these

Q 17. Cartwheel in gymnastics is an example of

(CBSE SQP 2022-23)

- a. static equilibrium
- b. dynamic equilibrium
- c. active equilibrium
- d. passive equilibrium

Q 18. Identify the factor which decreases equilibrium.

(CBSE 2024)

- a. Larger base
- b. Greater weight
- c. Lower centre of gravity
- d. Higher centre of gravity

Q 19. Which type of friction is applicable in sports like cricket, hockey, etc?

- a. Static friction
- b. Sliding friction
- c. Rolling friction
- d. None of these

Q 20. Which of the following is not an example of projectile motion?

- a. A stone thrown in any direction
- b. A stone thrown horizontally from a building
- c. A car moving in a straight line
- d. A bullet fired from a gun.

Q 21. Which of the following is not the factor affecting projectile trajectory?

(CBSE 2023)

- a. Gravity
- b. Angle of release
- c. Buoyant force
- d. Air resistance



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 22-25): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Q 22. Assertion (A): "A change in the acceleration of an object is directly proportional to the force producing it and inversely proportional to its mass."

Reason (R): Lighter mass will travel at a faster speed.

(CBSE SQP 2021 Term-1)

Q 23. Assertion (A): A high jumper can jump higher off a solid surface.

Reason (R): The solid surface opposes his/her body with as much force as he/she is able to generate in contrast to sand or any other unstable surface.

Q 24. Assertion (A): The magnitude of the force of friction depends on the roughness of the surface.

Reason (R): When both the surfaces are smooth, the force of friction reduces to almost zero.

Q 25. Assertion (A): The path followed by a projectile is called trajectory.

Reason (R): The distance covered by an object does not depends on the initial velocity of the projectile.

Answers

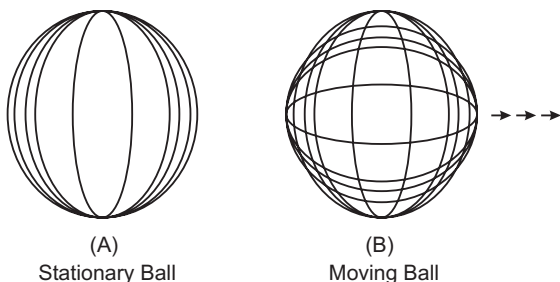
1. (a) Law of inertia
2. (c) Law of momentum
3. (b) Second law of motion
4. (b) mass
5. (c) Newton

6. (a) First law of motion
7. (b) Newton's second law of motion
8. (d) Both a. and c.
9. (c) Newton's second law of motion
10. (a) Law of action and reaction
11. (a) Newton's first law of motion
12. (b) Newton's second law
13. (c) Law of acceleration
14. (c) Law of action and reaction
15. (d) Both b. and c.
16. (a) 1st class lever
17. (b) dynamic equilibrium
18. (d) Higher centre of gravity
19. (c) Rolling friction
20. (c) A car moving in a straight line
21. (c) Buoyant force
22. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
23. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
24. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
25. (c) Assertion (A) is true, but Reason (R) is false.

Case Study Based Questions ↓

Case Study 1

Study the pictures and answer the following questions:



- Q 1. Which law of motion will be applied to initiate motion of the ball as depicted in the illustration (A)?
 - Q 2. In illustration (B) which force is acting upon the ball to slow it down?
 - Q 3. Which law of motion will determine the quality of bounce?
 - Q 4. of an object directly depends upon the mass of the object and net force applied on it.
- Or "When a cricket ball is moving with a certain velocity, the player has to apply retarding force to bring the ball at rest in his hands." Which Newton's law is applied in this illustration? (CBSE 2023)

Answers



EXPERT'S Answer

- Ans.** 1. Law of Inertia/Newton's first law of motion
 2. Friction
 3. Third law—Law of action and reaction
 4. Acceleration
 Or Newton's second law of motion/Law of acceleration

Case Study 2

Read the following passage and answer the following questions.

In Equestrian sport, when the horse suddenly stops, then the rider falls forward. Based on this, answer the following questions.

Q 1. Rider's falling forward can be related to which law of Newton?

- a. First
- b. Third
- c. Second
- d. None of these

Q 2. State the Law of Motion being discussed in the above question.

- a. Body at rest will remain at rest unless acted upon by an external unbalanced force.
- b. For every action, there is opposite reaction.
- c. Less friction is needed for better performance.
- d. Acceleration depends upon force applied and mass of an object.

Q 3. A basketball taking a parabolic path is an example of:

- a. third law of motion
- b. sliding friction
- c. first law of motion
- d. flexion

Answers

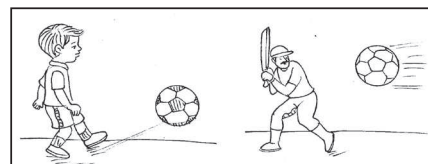
1. (a)
2. (a)
3. (c)

Case Study 3

Read the following passage and answer the following questions.

The teachers as well as coaches always make their best efforts to improve the performance of their students in various competitive games and sports. They can help to improve the performance of students if they have adequate knowledge of biomechanics.

(CBSE SQP 2022-23)



- Q 1. The more force one exerts on the downward bounce, the higher the ball bounces into the air. Which law is this statement being referred to?
- Q 2. Among the above given pictures, Newton's 3rd law is depicted in

- Q 3. Newton's second law is also known as
- Q 4. The study of human body and various forces acting on it is
- Or A high jumper can jump higher off a solid surface because it opposes his or her body with as much force as he or she is able to generate. This example refers to which law of motion?

! Answers

- Ans. 1. Newton's third law of motion
 2. 1st picture
 3. Law of acceleration
 4. Kinesiology
 Or Newton's third law of motion

Case Study 4

Read the following passage and answer the following questions.

During her gymnastics practice, Zoya was finding it difficult to maintain her balance on the balancing beam. Her coach tried to explain to her about basic principles of equilibrium. (CBSE SQP 2023-24)



According to the principles of equilibrium centre of gravity plays a very important role.

- Q 1. The nearer the centre of gravity to the centre of the base of support the more will be the
- Q 2. The position of the centre of gravity changes depending upon the
- Q 3. The sum of all the vertical and horizontal forces acting on the body must be
- Q 4. Centre of gravity is the average location of an object's
- Or When the sum of force acting upon the object and sum of the movement acting upon the body is both equal to zero then the body is said to be in

! Answers

- Ans. 1. stability
 2. position of the body
 3. zero
 4. weight
 Or equilibrium



Very Short Answer Type Questions ↓

- Q 1. State the law of reaction.

Ans. Law of reaction states that for every action, there is an equal and opposite reaction.

- Q 2. What do you understand by equilibrium? Name the types of equilibrium.

Ans. Equilibrium refers to the state of any object when all forces acting upon it result in zero change of motion for the object. The two types of equilibrium are:

- (i) Static equilibrium
- (ii) Dynamic equilibrium

- Q 3. Define friction and name its types. (CBSE 2017)

Ans. Friction is the force resisting the relative motion of two bodies sliding or rolling against each other. The two types of friction are:

- (i) Static friction
- (ii) Dynamic friction

- Q 4. What is 'dynamic friction'? (CBSE 2016)

Ans. The frictional force that comes into play when one object is actually moving (sliding or rolling) over the surface of other body is called dynamic friction.

- Q 5. Define centre of gravity.

Ans. Centre of gravity is a point at which a body balances or the point at which the weight of the body is equally distributed.

- Q 6. An object is thrown into the space either horizontally or at an acute angle under the action of gravity is called a projectile. Name the two forces which act on a projectile. (CBSE 2017)

Ans. Gravitational force and air resistance.

- Q 7. To cover the maximum distance at what angle should a projectile be released?

Ans. Projectile should be released at an angle of 45° for achieving maximum distance.



Short Answer Type-I Questions ↓

- Q 1. Elucidate Newton's law of inertia.

Ans. According to Newton's law of inertia, "A body at rest will remain at rest and a body in motion will remain in motion at the same speed and in the same direction unless acted upon by an external unbalanced force".

Law of Inertia essential makes two important points:

- (i) An object that is not moving will not move until a net force acts upon it, and
- (ii) An object that is in motion will not change its velocity until a net force acts upon it.

- Q 2. Describe the second-class lever with suitable example from sports. (CBSE 2024)

Ans. A second-class lever has the load resistance between the fulcrum and the force. In this class of levers, movement of the fulcrum will increase or decrease both the force arm and the resistance arm.

Example: When taking off in high jump/jumping to throw ball in basketball.

Fulcrum = Ankle joint, Effort = Gastrocnemius and Load = Body.

Q 3. Mention any two types of friction by giving suitable examples from sports.

Ans. (i) Sliding Friction: It occurs when two bodies are in contact and one body moves on the surface of the other body by sliding or rubbing over it.
Example: Skating on ice, skiing, etc.

(ii) Rolling Friction: It occurs when two bodies are in contact and one body rolls over the other.
Example : Roller skates and skateboards.

Q 4. List any two advantages of friction in games and sports.

Ans. The two advantages of friction in games and sports are as follows :

- (i) In hockey, badminton and tennis and grip tapes are used by the player to increase friction.
- (ii) In shot put, javelin throw and gymnastics, magnesium powder is used to increase friction.

Q 5. Explain any two factors that affect a projectile trajectory.

Ans. Factors that affect projectile trajectory are as follows:

- (i) Angle of Projection:** A projectile when released at an angle of 45° makes a parabolic path and covers the maximum distance, as compared to when it is released at any other angle (initial velocity kept constant).
- (ii) Initial Velocity:** The distance traversed by the projectile also depends upon the velocity by which it is thrown. If the velocity is more, it would cover greater distance as compared to when thrown by a lesser velocity.



Short Answer Type-II Questions ↓

Q 1. With suitable examples explain the application of Newton's laws in sports. (CBSE 2020)

Ans. Newton's law of motion are as follows:

(i) Newton's First Law of Motion (Law of Inertia):
According to the first law of motion, a body at rest, remains at rest and a body in uniform motion, remains in motion at a constant speed and in the same direction, until and unless acted upon by an external force. For example, if there is no frictional force acting on a cricket ball hit by a batsman, the ball may not stop forever. As soon as the ball hits the ground, the frictional force is initiated. Slowly, as the ball moves ahead, its speed slows down due to surface friction and after some time, it stops.

(ii) Newton's Second Law of Motion (Law of Acceleration): According to the second law of motion, a change in acceleration of an object is directly proportional to the force producing it and inversely proportional to its mass.
For example, an athlete will require more force and strength to throw a hammer weighing 5 kg., as compared to when he/she will throw a hammer weighing 3 kg. Also, the acceleration produced in the hammer weighing 5 kg. will be greater than that produced in the lighter one.

Similarly, a hockey ball hit by a greater force will accelerate faster, as compared to the one hit with a minimal force.

(iii) Newton's Third Law of Motion (Law of Reaction): According to the third law of motion, for every action, there is an equal and an opposite reaction. For Example, the force, with which the bullet is fired from a shotgun or a rifle, is always equal to the force by which the gun or rifle jerks back.



TIP

The students must learn the correct statement of Newton's law of motion along with their application.

Common ERROR!

Students are able to state the laws but are not able to explain their application in sports.

Q 2. Differentiate between static and dynamic equilibrium.

Ans. Difference between static and dynamic equilibrium is as follows:

S.No	Static Equilibrium	Dynamic Equilibrium
(i)	When the sum of forces acting upon the object and sum of the movement acting upon the body both is equal to zero, then the body is said to be in static equilibrium.	When all the forces acting on an object are balanced, and the body is in motion, then the body is said to be in dynamic equilibrium.
(ii)	Static balance is maintaining equilibrium when stationary.	Dynamic balance is maintaining equilibrium when moving.
(iii)	For e.g., A gymnast performing 'T' position on the balancing beam, because the gymnast is not making any movement.	For e.g., A gymnast doing a cartwheel during performance.

Q 3. What are the three principles of equilibrium? Also, give application of equilibrium in sports.

Ans. The three principles of equilibrium are as follows:

- (i) The lower the centre of gravity is to the base of support, the greater will be the stability.
- (ii) The nearer the centre of gravity is to the centre of base of support, the more will be the stability.
- (iii) Broader is the base of support, the greater will be the stability.

Application of equilibrium in sports:

- (i) Two people balancing on a see-saw.
- (ii) Dynamic equilibrium is required by a tennis player to change her/his position after hitting a shot.
- (iii) Boxers can lose balance if they shift their weight on heels because the centre of gravity must fall within the line of base of support for greater stability.

Q 4. Friction is categorised into how many types? Explain them in brief with example.

Ans. There are generally two types of friction:

(i) **Static Friction:** The actual frictional force that comes into play when one body tends to move over the surface of the other body, but the actual motion has yet not started, is known as static friction.

For example, pushing a wall.

(ii) **Dynamic Friction:** The actual frictional force that comes into play when one object is actually moving (sliding or rolling) over the surface of the other body, is called dynamic friction.

For example, riding a motorcycle, a child sliding down a slide in a park.

Q 5. Explain any three factors which are related to the amount of air resistance acting on a projectile.

Ans. Following factors are related to the amount of air resistance acting on a projectile:

- (i) The amount of air resistance depends on the surface of the object. If the surface of object is rough, the air resistance will be greater.
- (ii) Air resistance depends on the mass of the object. If the mass of the object is smaller, then there will be more air resistance.
- (iii) The larger the surface area, the more air resistance will affect the object.



Long Answer Type Questions ↓

Q 1. With the help of suitable examples, discuss the application of Newton's laws of motion in sports.

(CBSE SQP 2023-24)

Ans. Application of Newton's Laws of Motion in Sports:

(i) **First Law: Tennis:** A tennis ball will remain at rest in the court until the unbalanced force of player's hand picks it up and moves it. A tennis ball hit by the player will stay in motion until it hits the unbalanced force of opposing player's racquet.

(ii) **Second Law: Baseball:** A baseball hit with a swinging bat will accelerate more than a baseball that is bunted because the swinging bat has more force.

If equal force is applied to the baseball (more mass) and t-ball (less mass), then t-ball will accelerate more.

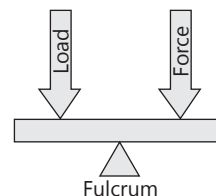
(iii) **Third Law: Soccer:** When a soccer ball hits a goalie's hand, the action is the ball hitting the goalie's hand and the reaction force is the hand hitting the ball in the opposite direction.

Q 2. Describe the types of lever with the help of their diagrams.

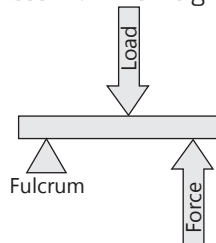
Ans. Types of lever are as follows:

(i) **First-class Lever:** A first-class lever has the fulcrum between the force and the resistance. This class fulcrum may be moved about along the lever, thereby changing the relative lengths

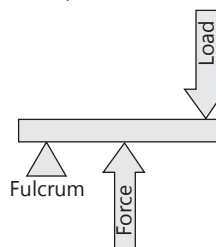
of the force arm and the resistance arm. If the fulcrum is placed close to the resistance, the force arm is length, and hand and less force need to be applied to move the resistance, but force must be applied through a long distance to lift the resistance a short distance. Conversely, a shortened force arm requires more excellent force application, but there is a gain in speed and range of motion at the resistance end.



(ii) **Second-class Lever:** A second-class lever has the load resistance between the fulcrum and the force. In this class of levers, movement of the fulcrum will increase or decrease both the force arm and the resistance arm. The force arm is always the longer of the two, and therefore the force needed to lift resisting weight will always be less than the weight.



(iii) **Third-class Lever:** A third-class lever has the force between the fulcrum and the resistance. In this class of lever, the force arm is always shorter than the resistance arm, and so a large amount of force must be applied, but the resistance is moved through a much longer range of motion than the force application. In the human body, the most common class of lever is the forearm. This is particularly important in the movements of the limbs because the desired results are often those of speed or range of motion, albeit at the expense of force.



Q 3. What are the various types of friction? 'Friction is a necessary evil'. Justify your answer.

Ans. There are following two types of friction in general:

(i) **Static Friction:** The frictional force that comes into play when one body tends to move over the surface of the other body, but the actual motion has yet not started, is known as static friction.

(ii) Dynamic Friction: The frictional force that comes into play when one object is actually moving (sliding or rolling) over the surface of the other body, is called dynamic friction.

Friction is Necessary: It reduces the efficiency of work done. For Example, athletes use spikes and footballers use studs, so that they can get appropriate friction from the surface and run fast.

A weightlifter rubs lime powder on his hands before holding the rod and performing jerk and snatch. In the same way, even the gymnasts do the same before performing on horizontal bar, uneven bar, or roman rings, in order to get friction.

Friction is an Evil: It is an evil because it results in wastage of energy. Also, we have to spend a lot of money to move things due to friction. For example, in cycling there should be minimum friction between road and types of cycles. If there is more friction, it will result in low performance and wastage of energy of the cyclist. Swimmers, also use goggles, cap and swimsuit to reduce the force of friction caused by water.



TiP

Many students are not able to understand the question and explain only the evil effects of friction.

Q 4. What is friction? Write the advantages and disadvantages of friction by giving suitable examples from sports. (CBSE 2023)



EXPERT'S Answer

Ans. Friction: The force acting along two surfaces in contact, which opposes the motion of one body over the other is called the force of friction.

The advantages of friction in various sports are as follows:

- (i) **Athletics:** In athletics, the shoes (spikes) are designed to increase friction so that better speed can be generated.
- (ii) **Gymnastics:** It is due to friction that a gymnast is able to perform actions on the horizontal bar. He also uses lime powder on his hands to increase the friction between his palm and the bar.

(iii) **Badminton:** A good grip in badminton is crucial for perfect shots, as it increases friction with the hand, preventing the racket from slipping and ensuring accurate performance.

(iv) **Cycling:** The friction between the tires and the surface prevents cyclists from slipping and skidding. The friction between the brakes and the wheel help cyclists slow down their bikes.

The disadvantages of friction are as follows:

(i) **Weightlifting and Gymnastics:** In weightlifting and gymnastics, the skin in the palm gets damaged due to friction and the athlete even may slip while performing the lift. Hence, gymnasts and weight lifters are advised to use powder on their palms and wear special shoes to maintain appropriate friction.

(ii) **Pole-vault:** During pole-vault, a vaulter may lose grip on the pole if less friction is there between palms and pole. Hence, pole-vaulters are advised to use adhesive on their palms to increase friction and perform correctly.

Q 5. What do you understand by projectile trajectory? Explain the factors affecting projectile trajectory in sports. (CBSE 2024)

Ans. The path followed by a projectile is known as a trajectory. Factors affecting projectile trajectory.

- (i) **Gravity:** Gravity is the force exerted by the earth on any object towards the centre of the body and is directly proportional to the mass of the body.
- (ii) **Speed of Release:** This refers to how fast the object is released (thrown or hit). Generally, the greater the release rate, the greater the distance gained.
- (iii) **Projection Angle:** This refers to the pitch at which the object is thrown or hit into the air. In sporting situations, the angle of release varies according to the activity.
- (iv) **Height of Release:** This refers to how high above the ground an object is released. For a given speed and projection angle, the greater the height of release, the greater the distance gained.



Chapter Test

Multiple Choice Questions

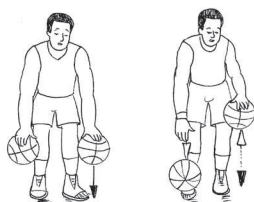
Q 1. Centre of gravity is the average location of the of an object. (CBSE 2023)

- a. weight
- b. force
- c. balance
- d. velocity

Q 2. Friction is a :

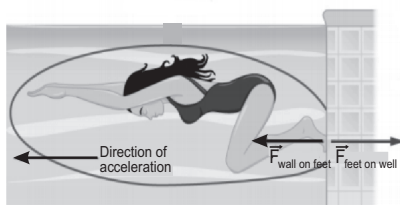
- a. magnetic force
- b. non-contact force
- c. contact force
- d. None of the above

Q 3. Physical education teacher of BP School was teaching the students about Newton's Law of Motion. While explaining he showed students this picture and tried to explain how basketball comes up with different forces from the floor due to different forces exerted on the ball. Can you name the law?



- a. Newton's first law of motion
- b. Newton's second law of motion
- c. Newton's third law of motion
- d. Law of acceleration

Q 4.



During the physical education class, Newton's Laws of Motion and their practical application in sport events was discussed. While discussing, the teacher showed this picture to the students and tried to explain how a swimmer exerts a force on the wall and accelerates in the opposite direction. Can you name the law?

- a. Newton's third law of motion
- b. Newton's first law of motion
- c. Newton's second law of motion
- d. Law of inertia

Q 5. If the horizontal range of a projectile is maximum then the angle of the projectile must be with horizontal.

- a. 90°
- b. 60°
- c. 45°
- d. 30°

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Friction resists the sliding or rolling of one solid object over another.

Reason (R): Friction acts in the direction of the object in motion.

Q 7. Assertion (A): In dynamic equilibrium, all forces acting on an object are balanced and body is at rest.

Reason (R): A fan rotating with uniform speed is an example of dynamic equilibrium.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

During the physical education class Newton's laws of motion were discussed and their practical application in sports events was explained to students. These laws are most relevant in sports as most of the actions in sports are related to these laws.

(i) Newton's first law of motion is also known as:

- a. Law of inertia
- b. Law of momentum
- c. Law of reaction
- d. Law of acceleration

(ii) What is the relationship between mass and force?

- a. Directly proportional
- b. No relationship
- c. Inversely proportional
- d. Both a. and c.

(iii) Newton's second law is also known as:

- a. Law of reaction
- b. Law of inertia
- c. Law of acceleration
- d. None of these

Very Short Answer Type Questions

- Q 9. Define static equilibrium.
- Q 10. Discuss how does initial velocity affect projectile trajectory?
- (i) Blood flow
 - (ii) Blood volume

Short Answer Type-I Questions

- Q 11. How Newton's first and second law of motion be applied in sports?
- Q 12. Define the following terms:
- (i) Centre of gravity
 - (ii) Projectile
- Q 13. What is sliding friction? Explain by giving suitable example.

Short Answer Type-II Questions

- Q 14. Enumerate the laws of motion.
- Q 15. Define equilibrium. What are the applications of equilibrium in games/sports?
- Q 16. Discuss any three factors affecting projectile trajectory.

Long Answer Type Questions

- Q 17. What is friction? Explain its types. How is friction advantageous or disadvantageous in the field of sports? Explain with suitable examples.
- Q 18. Explain the application of law of reaction in different sports.

Scan the **QR Code**
To get Answers of this Chapter Test





Psychology and Sports

FAST TRACK REVISION

- ▶ **Personality:** Personality refers to the patterns of thoughts, feelings and behaviours persistently exhibited overtime that strongly influences one's expectations, self-perceptions, attitudes and values.
- ▶ **Types of Personality:** There are four different types of personality:
 - ▶ **Type 'A' Personality:** Individuals with this type of personality are highly competitive and multitasking. They become impatient or irritated when delayed. Such individuals can be easily aroused to anger, hostility and aggression and are highly focused.
 - ▶ **Type 'B' Personality:** These individuals are self-confident, calm open to social relationships and are not hostile. They are easy going and are able to cope with stress effectively. They are not over-ambitious but are successful in lives.
 - ▶ **Type 'C' Personality:** In this type of personality, individuals are accurate, precise, detail-oriented, conscientious and even-tempered, and incapable of expressing their own feelings.
 - ▶ **Type 'D' Personality:** Individuals with this type of personality have tendency to experience increased negative emotions and tend not to share these emotions with others because of fear of rejection.
- ▶ **Jung's Classification:** Under this, the individuals are classified as:
 - ▶ **Introverts:** These kind of individuals are shy, socially withdrawn and talk less due to which they seem to be self-centered, unable to adjust easily in society. They are sensible and future-oriented.
 - ▶ **Extroverts:** These individuals have a tendency to be friendly, outgoing, talkative and social in nature. They show interest in present rather than future. They are generous, supportive and courageous.
 - ▶ **Ambiverts:** Only few people are pure introverts and extroverts. Ambiverts are the mixture of both extremes in a balanced manner. They are neither too reserved nor too outgoing in nature.
- ▶ **Big Five Personality Theory:** This theory describes the underlying traits that make-up an individual's overall personality. The distinct factors of personality are:
 - ▶ **Agreeableness:** This includes attributes like affection and kindness. People with high agreeableness are more cooperative and people with less agreeableness are selfish, rude and manipulative.
 - ▶ **Neuroticism:** Their attributes include jealousy, moodiness, sadness and emotional instability. People high in this trait experience mood swings, anxiety, worry and sadness. People low in this trait are more stable and feel confident.
 - ▶ **Conscientiousness:** Their characteristics include self-discipline, high-level of thoughtfulness and goal-directed behaviour. People high on this trait are reliable and pursue their goals with determination and forethought.
 - ▶ **Openness:** This includes attributes like imagination and insight. People high on this trait are creative, adventurous and have a broad range of interests.
 - ▶ **Extraversion:** Their attributes include sociableness, talkativeness, being energetic, assertiveness and friendliness.
- ▶ **Motivation:** An individual is said to be motivated when he/she is driven by an inner urge or force to achieve their respective goal.
 - ▶ **Types of Motivation**
 - **Intrinsic (Internal) Motivation:** Motivation that guides an individual to perform better so as to satisfy his own personal feelings. Intrinsic motivation depends on needs like biological needs, psychological needs, personal needs and social needs.
 - **Extrinsic (External) Motivation:** Motivation that depends on environmental factors is known as extrinsic motivation. Extrinsic motivation can be of different types such as reward, punishment, praise, fame, scholarship, cash prize, etc.
 - ▶ **Techniques of Motivation**
 - **Goal Setting:** Athletes should be encouraged to set a few ambitious but 'realistic' long-term goals. They should set goals according to their capabilities and capacities. Goals should be monitored on a regular basis. To keep athletes on track with their long-term goals, they should also set appropriate medium-term, as well as short-term goals.
 - **Using Extrinsic Rewards:** The key aspect in using extrinsic rewards (cash prizes and trophies) effectively is that they reinforce an athlete's sense of competence and self-worth. The reward should be presented to an athlete in front of all potential recipients with some emphasis placed on the prestige associated with it. It motivates the athletes.
 - **Verbal Comments and Appreciation:** The experienced and senior player should pass positive verbal comments on every activity or effort of the beginners or juniors. They should appreciate new players to motivate them and get the most of their abilities on field, but too much appreciation can also destroy the future of the athlete.

- **Motivational Music Play:** A particularly good way to motivate athletes in training and prior to competition is through the use of music they perceive to be inspirational. Research indicates that this approach increases work output, reduces perceived exertion and improves in-take effect—the pleasure experienced during the activity.
- **Chant by Spectators:** If there are a large number of spectators watching and cheering up for an athlete, he/she will feel motivated and would try to give the best performance at that moment.
- **Exercise Adherence:** It refers to the extent to which a person acts in accordance with the advised exercise regime for a prolonged period of time after its adoption.
- **Reasons to Exercise**
 - Helps to maintain a healthy weight.
 - Maintains physical fitness.
 - Increases immunity of body and combat diseases.
 - Improves mood and boost energy.
 - Helps to keep bones strong.
- **Benefits of Exercise**
 - Improves our memory and brain function.
 - Aid in weight management.
 - Reduce feelings of anxiety and depression.
 - Improves our quality of sleep.
 - Help in maintaining strong muscles and bones.
 - Protects against many diseases and improves heart health.
- **Strategies for Enhancing Adherence**
 - **Realistic Plan:** Planning and goal setting should be realistic according to the capability of an individual, so that it works well with the individual's schedule.
 - **Make Exercise Interesting and Enjoyable:** People should make their exercise plan interesting, challenging and enjoyable same exercise plan should not be repeated daily.
 - **Exercise with Others:** Exercise should be scheduled with a partner to improve adherence to exercise and isolated exercise habit should be avoided.
- **Meaning of Aggression:** According to psychology, aggression refers to the intention to cause mental or physical harm to a person which can be done by doing some physical harm, showing unkind behaviour, or abusing, etc.
- **Concept of Aggression in Sports**
 - In sports, aggression is often seen in the field where players play aggressively. There is a desire to excel which leads the players to play with high intensity. So, aggression is positive when players play within the rules of the game with high intensity and without harming other players.
 - However, aggression becomes negative when players have an intention to harm other players, use abusive language or doing other such things which are not within the laws of the game.
- **Types of Aggression in Sports:** Aggression is categorised into two types:
 - **Instrumental Aggression:** In this type of aggression, the main aim is to achieve a goal by using aggression in a positive way.
 - **Hostile Aggression:** In hostile aggression, the main aim is to cause harm to the opponent in order to achieve the goal.
- **Psychological Attributes in Sports**
 - **Self-esteem:** Self-esteem is how we value and perceive ourselves. It is based on our opinions and beliefs about ourselves. Self-esteem is also defined by the degree of worth and competence that we attribute to ourselves. Our self-esteem can affect whether we:
 - like and value our self as a person
 - are able to make decisions
 - recognise our strengths and positives
 - feel able to try new or difficult things
 - show kindness towards our self
 Through sport, we may enhance our self-esteem by having a positive image of our bodies and the physical skills and abilities that we develop. We feel positive self-worth through the recognition that we receive from family and friends and the social relationships that develop as a result of our involvement in sports and physical activity.
 - **Mental Imagery:** Mental imagery involves the athlete imagining themselves in an environment performing a specific activity using their senses (sight, hear, feel and smell). The images could have the athlete performing successfully and feeling satisfied with their performance. Mental imagery can be helpful in:
 - developing self-confidence
 - motivating the athlete
 - reducing negative thoughts
 - developing pre-competition and competition strategies
 - refocusing or concentrating on a particular skill
 - removing stress-related reactions
 - promoting rest, recovery and recuperation
 - **Self-talk:** Self-talk refers to the thoughts and words athletes and performers say to themselves, usually in their minds. Self-talk phrases (or cues) are used to direct attention towards a particular thing in order to improve focus or are used alongside other techniques to facilitate their effectiveness. These uses are typically fit into two categories of self-talk: instructional and motivational. Instructional self-talk refers to cues that an athlete might use to focus and remind oneself of proper technique. For example, a golfer may say "smooth stroke" before putting to stay relaxed. Motivational self-talk signifies cues that might build confidence, maximise effort, or reaffirm one's abilities. For example, Mohammed Ali, the world-famous boxer used to repeat "I am the greatest".
 - **Goal Setting:** Goal setting is the process of systematically planning ways to achieve specific accomplishments within a certain amount of time. Research suggests that goals should be specific, measurable, difficult but attainable, time-based, written down, and a combination of short-term and long-term goals. Each long-term goal should also have a series of short-term goals that progress in difficulty. So, the sportsperson should be encouraged to set few ambitious but achievable long-term goals.



Practice Exercise

 **Multiple Choice Questions ↓**

Q 1. Type.....personality individuals are easy going, patient and do not become angry and hostile.
a. A b. B c. C d. D

Q 2. Type D personality individuals are susceptible to:
a. depression b. hypertension
c. cancer d. Both a. and b.

Q 3. Match the following:

List-I	List-II
A. Personality Type A	(i) Pessimistic and hopeless
B. Personality Type B	(ii) Competitive and Aggressive
C. Personality Type C	(iii) Quiet and not over ambitious
D. Personality Type D	(iv) Fear of rejection

A B C D

a. (iv) (iii) (ii) (i)

A B C D

b. (ii) (iii) (i) (iv)

A B C D

c. (i) (ii) (iii) (iv)

A B C D

d. (iii) (iv) (ii) (i)

Q 4. Who categorised the personality traits as introverts and extroverts?
a. CG Jung b. GW Allport
c. WH Sheldon d. MC Dougall

Q 5. A person having both traits of introvert and extrovert is known as: (CBSE SQP 2020)
a. mesomorph b. extraversion
c. ambivert d. endomorph

Q 6. Identify the characteristic of introvert personality. (CBSE 2024)
a. Meet unknown people easily
b. Self-centered
c. Highly socialized
d. Expressive nature

Q 7. In the ‘Big Five Theory’, five personality traits are described. These traits are the attributes that describe a person. The traits given in Big Five Theory are collectively called as OCEAN.
What does A stands in OCEAN?
a. Amiable b. Adorable
c. Agreeableness d. Aggression

Q 8. Emotionally unstable, anxiety, sadness are attributes of which personality dimension? (CBSE 2020)
a. Extraversion b. Neuroticism
c. Agreeableness d. Openness

Q 9. Match List-I with List-II and select the correct answer from the codes given below: (CBSE SQP 2023-24)

List-I	List-II
A. Extraversion	(i) Enthusiasm
B. Conscientiousness	(ii) Responsible
C. Agreeableness	(iii) Compassionate behavior
D. Neuroticism	(iv) Emotional Stability

A B C D

a. (i) (ii) (iii) (iv)

A B C D

b. (iv) (iii) (ii) (i)

A B C D

c. (iii) (iv) (ii) (i)

A B C D

d. (ii) (iii) (iv) (i)

Q 10. Traits like sadness, mood swings and emotional instability are related with (CBSE 2023)
a. Extraversion
b. Agreeableness
c. Conscientiousness
d. Neuroticism

Q 11. A person who likes to learn new things, new concepts and new experiences are categorised as (CBSE SQP 2022-23)
a. Agreeableness b. Extraversion
c. Conscientiousness d. Openness

Q 12. Which of the following is a personality trait not included in the ‘Big Five Theory’?
a. Neuroticism
b. Aggressiveness
c. Openness
d. Extraversion

Q 13. Aggressive behaviour of a sportsperson is influenced by: (CBSE 2020)
a. emotional identification with the team
b. tactical ability
c. goal orientation
d. All of the above

Q 14. In hostile aggression, the main aim is to using aggression.
a. cause harm to the opponent
b. express your feeling of jealousy
c. achieve a positive goal
d. show your hostility to an opponent

Q 15. Reactive Aggression is also called (CBSE SQP 2023-24)
a. Instrumental Aggression
b. Hostile Aggression
c. Assertive Aggression
d. Both a. and b.

Q 16. Which of the following is an example of assertive behaviour?
a. Sledging in cricket
b. Bowler throwing a bouncer deliberately
c. Rugby player tackling his opponent
d. All of the above

Q 17. Goal setting is a approach, under motivational technique. (CBSE 2024)
a. Cognitive
b. Pedagogical
c. Social
d. Facilitation



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 18-22): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true, but Reason (R) is false.
- Assertion (A) is false, but Reason (R) is true.

Q 18. Assertion (A): Type 'C' personality individuals are introverts.

Reason (R): They are passive, hopeless and pessimistic.

Q 19. Assertion (A): Extroverts may be called happy, go, lucky persons.

Reason(R): Extroverts are friendly, talkative and social in nature.

Q 20. Assertion (A): The big five personality theory is developed by William Herbert Sheldon in the 1940's.

Reason (R): The big five traits of personality are Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism.

Q 21. Assertion (A): Aggression is part of human behaviour and is necessary for an individual to live and struggle for higher achievements.

Reason (R): Aggression is inevitable and inseparable in sport activities. (CBSE 2023)

Q 22. Assertion (A): Motivational self-talk signifies cues that might build confidence, maximise effort or reaffirm one's abilities.

Reason (R): Motivational self-talk signifies cues that an athlete use to focus and remind oneself of proper technique.

Answers

- (b) B
- (d) Both a. and b.
- (b) A-(ii), B-(iii), C-(i), D-(iv)
- (a) CG Jung
- (c) ambivert
- (b) Self-centered
- (c) Agreeableness
- (b) Neuroticism
- (a) A-(i), B-(ii), C-(iii), D-(iv)
- (d) Neuroticism
- (d) Openness
- (b) Aggressiveness
- (d) All of the above
- (a) cause harm to the opponent
- (b) Hostile Aggression
- (a) Sledging in cricket
- (a) Cognitive
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).



Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Carl Gustav Jung, a Swiss psychiatrist and a disciple of Sigmund Freud, published a book Psychology Typen (Psychology Types) in 1921 and presented his own theory of personality by classifying personality based on two important aspects....personality attitude (introvert and extrovert) and personality functions (Sensing, Intuitive, Thinking, Feeling).

Q 1. The bases of Jung's classification of personality is:

- body build
- personality functions
- personality attitude
- mind

Q 2. Extroverts are:

- broad-minded
- optimistic
- highly socialised
- All of these

Q 3. An is a person whose behaviour changes according to the situation she/he is in.

- ambivert
- extrovert
- introvert
- None of these



Answers

- (c)
- (d)
- (a)

Case Study 2

Read the following passage and answer the following questions.

Narayan is a football player of XYZ School. He is famous for his aggressive play in the field. Because of his aggression he scored many goals. At the same time, he was punished for his aggressive behaviour with the opponents. (CBSE Question Bank)

Q 1. What type of aggression is shown by Narayan?

- Assertive
- Hostile
- Instrumental
- Reactive

Q 2. Hostile aggression is also known as aggression.

- reactive
- channelled
- assertive
- instrumental

Q 3. What level of aggression is needed in sports?

- Partial
- Full
- No need
- None of these



Answers

- (c)
- (a)
- (a)



Very Short Answer Type Questions ↓

Q 1. What do you mean by personality?

Ans. Personality refers to the patterns of thoughts, feelings and behaviours persistently exhibited overtime that strongly influences one's expectations, self-perceptions, attitudes and values.

Q 2. What do you mean by introvert?

Ans. Introverts are people who opt to live in their own inner world of feelings and tend to shy away from in public interactions and social connects.

Q 3. Define the term intuition.

Ans. Intuition refers to a preference for perceiving the world through concepts, theories and abstractions. People use their intuition to understand the situation and people around them.

Q 4. Name the big five traits of personality.

Ans. Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism are the big five traits of personality.

Q 5. Define conscientiousness.

Ans. Conscientiousness refers to well-organised, careful, responsible, hardworking and dependable individuals. Individuals high on conscientiousness have been found to perform better in academics as well as in sports.

Q 6. What do you mean by the term 'aggression' in sports?

Ans. Aggression is any interpersonal behaviour intended to cause mental or physical harm to a person which can be done by abusing or showing unkind behaviour, etc.

Q 7. What do you mean by self-esteem?

Ans. Self-esteem is how we value and perceive ourselves. It is based on our opinions and beliefs about ourselves. It is also defined by the degree of worth and competence that we attribute to ourselves.



Short Answer Type-I Questions ↓

Q 1. What are some traits of type A personality?

Ans. Some traits of type A personality are as follows:

- (i) Very competitive
- (ii) Overly ambitious
- (iii) Dislike wasting time
- (iv) Feel impatient or irritated when delayed.
- (v) Associated with hypertension.

Q 2. What do you mean by extroverts and introverts?

Ans. Extroverts are the persons who have a tendency to be friendly, talkative and social in nature. They are generous, supportive and courageous.

On the other hand, introverts are shy, socially withdrawn and talk less. They are sensible and future-oriented.

Q 3. What do you mean by extraversion and conscientiousness?

Ans. Extraversion includes the traits of having enthusiasm, high energy, positive emotions, talkativeness and assertiveness. Conscientiousness refers to well-organised, careful, responsible, hardworking and self-disciplined individuals.

Q 4. Explain briefly the two types of aggression in sports.

Ans. Types of Aggression in Sports: There are two types of aggression in sports:

(i) Hostile or Reactive Aggression: In hostile aggression, the main aim is to cause harm or injury to the opponent. It is usually an unplanned, impulsive reaction towards a player who may have become a threat in achieving the goal.

(ii) Instrumental or Channelled Aggression: In instrumental aggression, the main aim is displaying aggressive behaviour in order to achieve a goal.

Q 5. Why is mental imagery important?

Ans. Mental imagery help athletes to stay confident, focused and motivated. It also helps athletes to regulate the anxiety they experience during competitions. It also helps in promoting rest, recovery and recuperation.

Q 6. What do you understand by 'Goal setting'?

(CBSE 2023)



EXPERT'S Answer

Ans. *Goal setting is a mental training technique that can be used to increase an individual's commitment towards achieving a specific standard of proficiency on a task within a specified time.*



Short Answer Type-II Questions ↓

Q 1. Discuss Jung's classification of personality in brief.

Ans. Jung has classified personality as:

(i) Introverts: People who have characteristics like shyness, social withdrawal and tendency to talk less.

They are sensible and future oriented.

(ii) Extroverts: People who have a tendency to be friendly, outgoing, talkative and social in nature. They are generous, supportive and courageous.

(iii) Ambiverts: People who possess both the qualities of introverts and extroverts in a balanced manner.

They are neither too reserved nor too outgoing in nature.

Q 2. Differentiate between introverts and extroverts.

(CBSE SQP 2023-24)

Ans. Difference between introverts and extroverts are as follows:

S. No.	Introverts	Extroverts
(i)	Interested in their own self	Highly socialised
(ii)	Reserved	Broad-minded
(iii)	Self-aware and introspective	Expressive and enjoy centre of attention
(iv)	Take pleasure in reading, writing	Meet unknown people easily
(v)	Tend to shy away from public	Bold, outgoing and optimistic person
(vi)	Think before acting	Action oriented

Q 3. What is meant by 'motivation'? Explain the different techniques of motivation to achieve high goals in sports.

(CBSE 2017, 20)

Ans. Motivation is an internal force that initiates and maintains goal directed behaviour.

Techniques of motivation for higher achievement in sports are:

(i) Goal Setting: It is one of the most important techniques of motivation. Sportspersons should be encouraged to set a few ambitious but realistic goals according to their capabilities and capacities.

(ii) Cash Prizes, Certificates and Trophies: Rewards in the form of cash prizes, certificates or trophies generate interest and enthusiasm among sportspersons, and proves to be a good source of motivation. Every government offer rewards to the sportspersons, who win the laurels for their countries.

Common ERROR!

Some students get confused between the types of motivation and techniques of motivation.

Q 4. Distinguish between hostile aggression, instrumental aggression and assertive behaviour.

Ans. Difference between hostile aggression, instrumental aggression and assertive behaviour are as follows:

S. No.	Basis of Difference	Hostile Aggression	Instrumental Aggression	Assertive Behaviour
(i)	Intent	Harm or suffering	Harm or suffering	No harm
(ii)	Primary Goal	Harm or injure	Win or advantage	Win or advantage
(iii)	Process	Non-legitimate	Non-legitimate	Legitimate
(iv)	Emotion	Anger	No anger	Unusual effort and energy expenditure

Q 5. How can we enhance the sports performance with the help of self-talk and self-esteem? Explain.

(CBSE 2023)

**EXPERT'S Answer**

Ans. Self-talk enhance the sports performance in the following ways:

(i) It is effective in stimulating thoughts and feelings that lead to the belief that an athlete is competent and able to perform a task efficiently and effectively.

(ii) It is effective in helping an athlete to continue to work hard in order to achieve a worthwhile goal.

(iii) It can boost confidence, reduce anxiety and promote a positive mindset, which leads to improved mood and performance.

Self-esteem enhance the sports performance in the following ways:

(i) High self-esteem helps athletes manage and reduce negative thoughts that can hinder performance.

(ii) It boosts self-confidence and enables athletes to take on challenges and push their limits, ultimately improving their performance.

(iii) It helps athletes regulate their emotions and manage anxiety.

Q 6. Write short note on Goal setting. (CBSE SQP 2023-24)

Ans. Goal setting is the process of systematically planning ways to achieve specific accomplishments within a certain amount of time. Research suggests that goals should be specific, measurable, difficult but attainable, time-based, and written down. Each long-term goal should also have a series of short-term goals that progress in difficulty. So, the sportsperson should be encouraged to set few ambitious but achievable long-term goals.

**Long Answer Type Questions ↓****Q 1. Define personality. Elucidate its types in detail.**

Ans. Personality is an individual's unique and relatively stable pattern of behaviour, thoughts and feelings. It is the integration of those systems and habits that represent an individual's characteristic adjustment to his environment.

Types of Personality: There are four different types of personality:

(i) Type 'A' Personality: Individuals with this type of personality are highly competitive and multi-tasking. They become impatient or irritated when delayed. Such individuals can be easily aroused to anger, hostility and aggression and are highly focused.

- (ii) **Type 'B' Personality:** These individuals are self-confident, calm open to social relationships and are not hostile. They are easy going and are able to cope with stress effectively. They are not over-ambitious but are successful in lives.
- (iii) **Type 'C' Personality:** In this type of personality, individuals are accurate, precise, detail-oriented, conscientious and even-tempered, and incapable of expressing their own feelings.
- (iv) **Type 'D' Personality:** Individuals with this type of personality have tendency to experience increased negative emotions and tend not to share these emotions with others because of fear of rejection.

Q 2. What are the personality traits according to the Big Five theory. (CBSE 2022, Term-2, CBSE SQP 2022-23)

Ans. This theory describes the underlying traits that make-up an individual's overall personality. The distinct factors of personality are:

(i) Openness

- (a) This trait features characteristics such as imagination and insight.
- (b) People who are high in this trait tend to be more adventurous and creative.

(ii) Conscientiousness

- (a) Standard features of this dimension include high levels of thoughtfulness and goal-directed behaviours.
- (b) Highly conscientious people tend to be reliable and pursue their goals with determination.

(iii) Extraversion

- (a) This is characterised by sociability, talkativeness and assertiveness.
- (b) People who are high in this trait are friendly and tend to gain energy in social situations.

(iv) Agreeableness

- (a) This personality dimension includes attributes such as trust, kindness, affection, etc.
- (b) People who are high in agreeableness tend to be more cooperative.
- (c) People who are low in this trait tend to be selfish, rude and manipulative.

(v) Neuroticism

- (a) This trait is characterised by jealousy, moodiness, and emotional instability.
- (b) People who are high in this trait experience mood swings, anxiety, sadness and worry.



TiP

The Big Five Personality Theory can be easily remembered through the acronym OCEAN.

Q 3. Differentiate between intrinsic and extrinsic motivation. Explain in detail goal setting and Reinforcement as techniques of motivation.

(CBSE 2016)

Ans. Difference between intrinsic and extrinsic motivation are as follows:

(i) Intrinsic Motivation

- (a) It is internal.
- (b) It depends upon emotional needs, biological need personal needs and social needs.

(ii) Extrinsic Motivation

- (a) It is external.
- (b) It depends upon rewards, prizes and social recognition.

Goal Setting: If you do not set goals you cannot achieve apex position in your life, so, the sports persons should be encouraged to set few ambitions but they should be achievable long-term goals. They should set goals according to their capabilities and capacities. To keep them on track with their long-term goals as well as short-term goals, they should be monitored on a regular basis.

Reinforcement: As a technique of motivation focuses on internal feeling of an individual when he takes some actions. The reinforcement can be positive as well as negative positive reinforcement refers to a positive response to the positive behaviours of an individual. For example; Reward. Negative reinforcement refers to rewarding an employee by removing negative consequences. Both the positive and negative reinforcement can be used for increasing desirable behaviour.

Q 4. What do you understand by Aggression in sports? Explain any two types of Aggression by giving suitable examples from sports. (CBSE 2024)

Ans. Aggression is a deliberate behaviour to harm or injure and can be either physical or psychological, i.e., hitting, pushing or abusing someone purposely, with an intent to hurt.

Types of Aggression: There are two types of aggression:

(i) Hostile Aggression: Hostile aggression is a type of aggression that is committed in response to a perceived threat or insult. It is unplanned, reactionary, impulsive, and fueled by intense emotion as opposed to desire to achieve a goal. A boxer who punches the opponent below the belt with the primary aim of injuring him because he is losing or an athlete who uses abusive words to mentally harm another player who has angered him with better skills are examples of hostile aggression.

(ii) Instrumental Aggression: Instrumental aggression refers to aggressive behaviour meant or used to attain some non-aggressive goals like winning, getting money, prestige or gaining any other advantage. An instrumental aggression does consist of an aggressive intent to harm an opponent physically or psychologically without necessarily being angry. Elbowing and injuring a player to gain a competitive advantage, or late tackling to stop an opponent from scoring a goal are examples of instrumental aggression.

Q 5. Write a detailed note on psychological attributes in sports.

Ans. Some of the psychological attributes in sports are as follows:

(i) Self-esteem: Self-esteem is how we value and perceive ourselves. It is based on our opinions and beliefs about ourselves. It is also defined by the degree of worth and competence that we attribute to ourselves. Our self-esteem can affect whether we:

- (a) like and value ourself as a person
- (b) are able to make decisions
- (c) recognise our strengths and positives
- (d) feel able to try new or difficult things

Through sport we may enhance our self-esteem by having a positive image of our bodies and the physical skills and abilities that we develop. We feel positive self-worth through the recognition that we receive from family and friends and the social relationships that develop as a result of our involvement in sport and physical activity.

(ii) Mental Imagery: Mental imagery involves the athlete imagining themselves in an environment performing a specific activity using their senses (sight, hear, feel and smell). The images could have the athlete performing successfully and feeling satisfied with their performance. Mental imagery can be helpful in:

- (a) developing self-confidence and motivating the athlete

- (b) reducing negative thoughts and removing stress-related reactions
- (c) developing pre-competition and competition strategies
- (d) refocussing or concentrating on a particular skill
- (e) promoting rest, recovery and recuperation

(iii) Self-talk: Self-talk refers to the thoughts and words athletes and performers say to themselves, usually in their minds. Self-talk phrases (or cues) are used to direct attention towards a particular thing in order to improve focus or are used alongside other techniques to facilitate their effectiveness. These uses are typically fit into two categories of self-talk: instructional and motivational. Instructional self-talk refers to cues that an athlete might use to focus and remind oneself of proper technique. Motivational self-talk signifies cues that might build confidence, maximise effort, or reaffirm one's abilities.

(iv) Goal Setting: Goal setting is the process of systematically planning ways to achieve specific accomplishments within a certain amount of time. Research suggests that goals should be specific, measurable, difficult but attainable, time-based, and written down. Each long-term goal should also have a series of short-term goals that progress in difficulty. So, the sportsperson should be encouraged to set few ambitious but achievable long-term goals.



Chapter Test

Multiple Choice Questions

Q 1. In instrumental aggression, the main aim is to:

- a. cause harm to the opponent
- b. achieve a positive goal
- c. express your feeling of jealousy
- d. show your hostility to the opponent

Q 2. Friendly, cooperative, kind, generous are attributes of which personality dimension?

- a. Extraversion
- b. Conscientiousness
- c. Agreeableness
- d. Neuroticism

Q 3. The word personality is derived from the Latin word:

- a. persona
- b. pereio
- c. peior
- d. perca

Q 4. A boxer punching the opponent below the belt is an example of:

- a. assertive behaviour
- b. hostile aggression
- c. instrumental aggression
- d. None of the above

Q 5. Match the following:

	List-I	List-II
A.	Introvert	1. Highly socialised
B.	Ambivert	2. Shy away from public interactions
C.	Extrovert	3. Behaviour changes according to situation
	A B C	A B C
	a. 2, 1, 3	b. 3, 2, 1
	c. 3, 1, 2	d. 2, 3, 1

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Individuals scoring high on openness are imaginative, humorous, creative and curious.

Reason (R): The Big Five Factor personality model was offered by Paul Costa and Robert McCrae.

Q 7. Assertion (A): A basketball player playing a foul against an opponent with the purpose of scoring a basket is an example of instrumental aggression.

Reason (R): Most of the athletes don't apologise for their behaviour or act of instrumental aggression.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

Prateek and Rishabh both are good kabaddi players. Rishabh is aggressive during the game to achieve his goal but not to hurt any player. On the other hand, Prateek is also aggressive during the game with the aim to harm the other players (through non-legitimate or illegal methods) physically or mentally.

- (i) What type of aggression is shown by Prateek?
- (ii) What type of aggression is shown by Rishabh?
- (iii) Is aggression necessary for good performance in sports competition?

Very Short Answer Type Questions

Q 9. What do you mean by goal setting?

Q 10. What is assertive behaviour?

Short Answer Type-I Questions

Q 11. Give an example of athlete showing hostile and instrumental aggression each.

Q 12. Write a short on self-talk.

Q 13. How can we enhance our self-esteem through sports?

Short Answer Type-II Questions

Q 14. Elaborate the types of personality.

Q 15. Elaborate the traits and types of personality classified by Jung.

Q 16. What do you mean by mental imagery? How is it useful for athletes?

Long Answer Type Questions

Q 17. Elucidate the big five personality theory.

Q 18. What do you mean by aggression? Explain in detail the types of aggression in sports.



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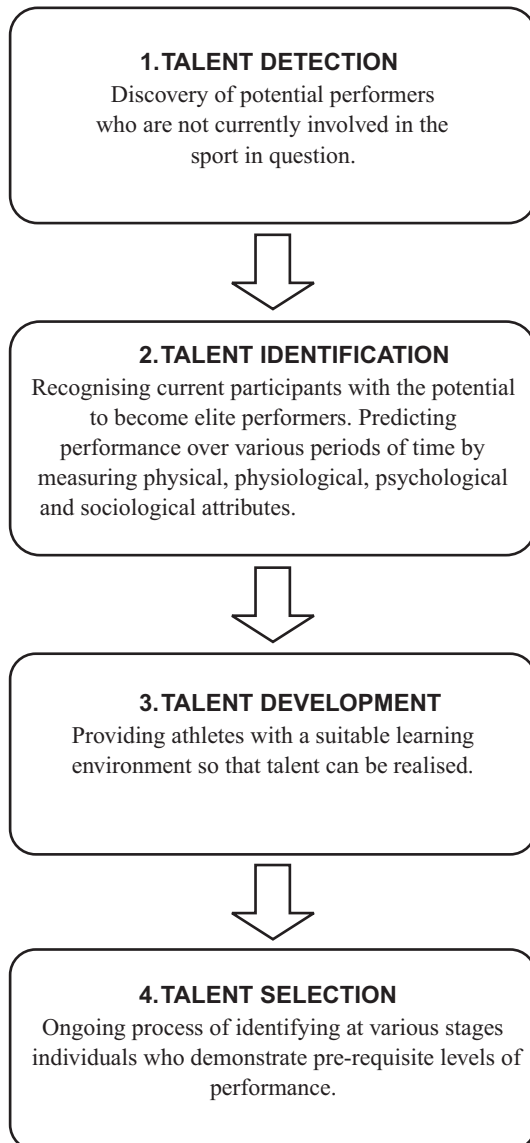
To get Answers of this Chapter Test



Training in Sports

FAST TRACK REVISION

► Talent Identification and Talent Development in Sports



- Talent identification can be defined as the process by which children are encouraged to participate in the sports at which they are most likely to succeed, based on results of testing selected parameters. Talent identification should occur when an athlete is not currently participating in athletics, but is identified as showing potential in an athletic event. It is the first step in the progression from beginner to successful international athlete. Talent identification processes start at a young age to ensure the individual receives the 10 years (or 10,000 hours) of deliberate practice

that is widely recognised as a necessity on the pathway to elitism.

- **Strength:** Strength is the ability of a muscle or a group of muscles to exert a force against a resistance.

► **Components of Talent Identification**

Talent identification is usually based around a number of areas, these being:

- Physical characteristics such as size, weight, height, body structure etc.
- Physiological skills such as speed, strength, flexibility, endurance, agility and fitness.
- Technical skills such as dribbling, passing, control and shooting, along with defensive skills.
- Cognitive skills such as game understanding, desire to learn, maturation level and perception.
- Psycho-behavioural skills such as attitude, desire and effort.

► **Training Cycles**

- **Macro-cycle of Training:** A macro-cycle is an annual plan that works towards peaking for the goal competition of the year. There are three phases in the macro-cycle: preparation, competitive and transition. The entire preparation phase should be around 2/3 to 3/4 of the macro-cycle. The preparation phase is further broken up into general and specific preparation of which general preparation takes over half. An example of general preparation would be building an aerobic base for an endurance athlete. An example of specific preparation would be to work on the proper form to be more efficient and to work more on the final format of the sport.

- **Meso-cycle of Training:** A meso-cycle represents a phase of training with a duration of between 2-6 weeks or micro-cycles, but this can depend on the sporting discipline. A meso-cycle can also be defined as a number of continuous weeks where the training programme emphasise the same type of physical adaptations, for example, muscle mass and anaerobic capacity. During the preparatory phase, a meso-cycle commonly consists of 4-6 micro-cycles, while during the competitive phase it will usually consist of 2-4 micro-cycles depending on the competition's calendar. The goal of the plan is to fit the meso-cycles into the overall plan timeline-wise to make each meso-cycle end on one of the phases and then to determine the workload and type of work of each cycle based on where in the overall plan the given meso-cycle falls.

- **Micro-cycle of Training:** A micro-cycle is typically a week because of the difficulty in developing a training plan that does not align itself with the weekly calendar. Each micro-cycle is planned based on where

it is in the overall macro-cycle. A micro-cycle is also defined as a number of training sessions, built around a given combination of acute program variables, which include progression as well as alternating effort (heavy vs. light days). The length of the micro-cycle should correspond to the number of workouts – normally there are 4-16 workouts. It takes for the athlete or fitness to adapt to the training program. When the athlete or fitness has adapted to the program and no longer makes progress, a change to one or more program variables should be made.

► **Types of Strength:** Various types of strength are:

- **Maximum Strength:** It is the highest external resistance (most weight) an athlete can hold or lift for one rep at one point in time. It is needed by weightlifters and shot put throwers.
- **Explosive Strength:** It is the ability of an individual to overcome resistance by means of high speed. It is a combination of both strength and speed. It is needed by javelin throwers, athletes and pole vaulters.
- **Strength Endurance:** It is the ability of an individual to continue overcoming resistance even after the condition of fatigue. It is mostly seen in long distance races and cycling events.

► **Methods of Improving Strength:** Some of the methods of improving strength are:

- **Isometric Exercises:** No visible movement and length of muscles remains same. For example, balancing on one foot, pressing against a wall, standing erect or maintaining an upright position, etc.
- **Isotonic Exercises:** Visible movement and length of muscles changes. For example, running, jumping, weight lifting, etc.
- **Isokinetic Exercises:** These involve specialised machines or dynamometers to maintain a constant speed of movement. For example, weight training machines (with spring or elastic resistance), etc.

► **Endurance:** Endurance is the ability to perform sports movement with the desired quality and speed under the condition of fatigue.

- **Types of Endurance:** Endurance can be classified according to the nature of the activity and the duration of the activity.
- **According to the Nature of the Activity:** On this basis, endurance can be general, specific and basic.
 - **General Endurance:** It characterises the ability of our whole body to tolerate endurance exercises and diminish fatigue.
 - **Specific Endurance:** It is the ability to tolerate fatigue in sport specific conditions.
 - **Basic Endurance:** It is characterised by low intensity and high volume exercises.
- **According to the Duration of the Activity:** On this basis, endurance can be speed endurance, short-term, middle-term and long-term.
 - **Speed Endurance:** It is used to develop the coordination of muscle contraction.
 - **Short-term Endurance:** It is needed to resist fatigue in sports activities lasting from 45 sec. to 2 min.

- **Middle-term Endurance:** It is needed for sports activities lasting from 2 to 11 minutes.
- **Long-term Endurance:** It is needed in sports activities lasting for more than 11 minutes.

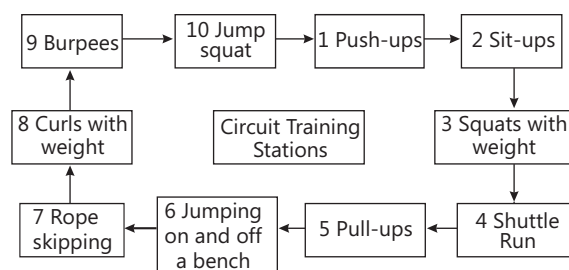
► **Methods to Develop Endurance:** There are various methods of improving endurance:

- **Continuous Training Method:** In this method, the player performs running or any other sports activity for long period without having any rest or breaks in between. It is of three types:
 - Slow Continuous Training Method
 - Fast Continuous Training Method
 - Variable Continuous Training Method
- **Advantages of Continuous Training**
 - Glycogen in muscles and liver increases.
 - Intensity can be increased for better outcome.
 - The number and size of mitochondria increases.
 - The efficiency of heart and lungs improves.
 - Under the condition of fatigue, it makes the individual strong minded and improves the determination and self-confidence.
- **Interval Training Method:** In this method, the principle of effort and recovery is followed. It involves a series of high intensity workouts interspersed with recovery (rest) periods. It is considered as the best for development of endurance.
- **Advantages of Interval Training**
 - Both respiratory and circulatory systems can be improved.
 - The athlete's improvement can be measured without difficulty.
 - Coach can give suggestions regarding any fault during recovery phase to athlete.
 - It helps an athlete to achieve the peak performance in a short time.
 - In short duration, more workouts can be performed.
- **Fartlek Training Method:** It is a combination of continuous and interval training. It involves periods of fast running intermixed with periods of slow running. It was developed by Gosta Holmer of Sweden in 1930s.
- **Advantages of Fartlek Training**
 - Fartlek training allows adding a variety of intervals to the aerobic workouts, which helps to keep one stimulated.
 - Fartlek lets runners to enhance the aerobic and anaerobic training systems equally.
 - Fartlek can be particularly modified and personalised to fit the requirements of diverse types of athletes and games.
 - For people, Fartlek is a grand alternative because the fat burning part makes it an extremely efficient exercise.
 - Implementing Fartlek on a regular basis keeps the body physically powerful as much as necessary to uphold the technicalities of racing.
- **Speed:** Speed is the ability to cover distance in minimum possible time. It enables an athlete to perform an activity with adequate velocity and in appropriate time.
- **Types of Speed:** Some of the major types of speed are:
 - **Movement Speed:** It is the ability to do a movement in minimum time.

- **Locomotor Ability:** It is the ability to maintain the maximum speed for a maximum time or distance.
- **Reaction Ability:** It is the capability to respond to an action or a signal quickly and efficiently.
- **Acceleration Ability:** It is the ability to achieve maximum speed from a stationary position or a low speed phase in a particular and very less amount of time.
- **Methods to Develop Speed:** There are two methods to develop speed:
 - **Acceleration Run:** Acceleration runs are usually practised to develop speed especially in attaining maximum speed from a stationary position.
 - **Pace Run:** Pace run means running the whole distance of a race at a constant speed. In pace run, an athlete runs the race with uniform speed, generally 800 m and above.
- **Flexibility:** Flexibility is the ability to perform a joint action through a range of movements. Flexibility tends to deteriorate with age.
- **Types of Flexibility:** There are two types of flexibility:
 - **Active Flexibility:** It is performed without external help or self-movement of a part of the body to maximum range. Active flexibility is of two types: static and dynamic.
 - **Passive Flexibility:** Ability of joint to move in maximum range with external help. For example, stretching with the help of a partner.
- **Methods to Improve Flexibility:** Various methods of improving flexibility are:
 - **Dynamic Method:** This form prepares the body for physical exertion and sports performance.
 - **Static-stretching Method:** It includes holding a stretch position with just the strength of the muscles.
 - **Ballistic Method:** It involves some form of rapid movement of a limb to force it beyond its normal range of motion.
 - **Proprioceptive Neuromuscular Facilitation Technique:** It involves slow stretching of the muscles through a

joint's full range of motion to the point of resistance and/or discomfort.

- **Coordinative Abilities:** The ability to perform smooth and accurate movements including different parts of the body are called coordinative abilities.
 - **Types of Coordinative Abilities:** Orientation ability, differentiation ability, reaction ability, balance ability and coupling ability are the various types of coordinative abilities.
- **Circuit Training:** Circuit training is a training method to improve mobility, strength and stamina. It comprises of 6 to 10 strength exercises, in which each exercise is performed for a specified numbers of repetitions or for a set time before moving on to the next exercise.
 - A typical circuit training diagram of 10 stations is given below:



- Following points are important to increase load in circuit training:
 - Number of repetitions can be increased per exercise.
 - Frequency can be increased.
 - Additional load can be increased.
 - Interval between exercises can be reduced.
- **Importance of Circuit Training**
 - It can be performed indoors or outdoors.
 - A wide range of exercises to select from which maintains the athlete's enthusiasm.
 - The coach can easily supervise the training.
 - It is an ideal balance between strength and conditioning thus helpful in disease prevention.
 - It is a great way to do a whole body workout in a short period of time.



Practice Exercise



Multiple Choice Questions ↓

- Q 1. The ability of body to overcome resistance is called:**
- endurance
 - strength
 - speed
 - flexibility
- Q 2. Take-off in long jump is an example of strength.** (CBSE SQP 2022-23)
- explosive
 - maximum
 - strength endurance
 - static
- Q 3. If a muscle contracts and changes its length to produce force, the contraction type is:** (CBSE 2020)
- isotonic
 - isometric
 - isokinetic
 - None of these

- Q 4. What do you mean by iso and metric?**

(CBSE SQP 2023-24)

- Iso means constant and metric means length.
- Iso means change and metric means size.
- Iso means constant and metric means velocity.
- Iso means size and metric means constant.

- Q 5. Jumping on the spot is an example of**

(CBSE SQP 2022-23)

- Isometric
- Isotonic
- Isokinetic
- Isokinesthetic

- Q 6. Which of the following is an advantage of doing isokinetic exercise?**
 a. They strengthen the muscles throughout their range of motion.
 b. They can be performed anywhere and require no special equipment.
 c. They are simple to perform and do not require coaching.
 d. They develop both explosive strength and strength endurance.
- Q 7. In which of the following fitness component an athlete gives better performance, if he/she has more slow twitch fibre in comparison to fast twitch fibres?** (CBSE 2024)
 a. Speed b. Strength
 c. Endurance d. Flexibility
- Q 8. Which of these is a type of endurance?**
 a. Static b. Dynamic
 c. Specific d. Relative
- Q 9. Which of these is a type of endurance on the basis of duration of an activity?**
 a. General endurance b. Basic endurance
 c. Speed endurance d. Specific endurance
- Q 10. Interval training method is based on the principle of:**
 a. overload b. effort
 c. effort and recovery d. recovery
- Q 11. Fartlek training was developed in:** (CBSE 2020)
 a. Sweden b. USA
 c. India d. UK
- Q 12. Interval training method is a training of:**
 a. bones b. heart
 c. lungs d. joints
- Q 13. Which of these sports activities is an example of middle term endurance?**
 a. Marathon race b. 800 m race
 c. Steeple chase race d. 5000 m race
- Q 14. Which of the following is a type of speed?**
 a. Reaction ability b. Locomotor ability
 c. Acceleration ability d. All of these
- Q 15. Acceleration runs are used to improve:** (CBSE SQP 2020-21)
 a. strength b. endurance
 c. speed d. flexibility
- Q 16. Jump for smash in volleyball is an example of** (CBSE 2024)
 a. static strength b. maximum strength
 c. explosive strength d. strength endurance
- Q 17. Which of the following factors, does NOT determine flexibility?** (CBSE 2023)
 a. Joint structure b. Previous injury
 c. Efficiency of lungs d. Age and gender
- Q 18. flexibility is the ability to do movements for a longer distance without external help.**
 a. Active b. Reaction
 c. Passive d. Coupling
- Q 19. Which amongst these is not a method to improve flexibility?** (CBSE SQP 2020-21)
 a. Ballistic b. Static stretching
 c. PNF d. Fartlek
- Q 20. Which type of coordinative ability is required in games like judo and wrestling?** (CBSE 2023)
 a. Orientation ability b. Coupling ability
 c. Adaptation ability d. Differentiation ability



Assertion & Reason Type Questions ↓

Directions (Q. Nos. 21-26): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 c. Assertion (A) is true, but Reason (R) is false.
 d. Assertion (A) is false, but Reason (R) is true.

Q 21. Assertion (A): Explosive strength is a combination of strength and speed abilities.

Reason (R): It is used in swimming, long distance races and cycling events.

Q 22. Assertion (A): Work is not done in isometric exercises.
Reason (R): These exercises are performed on specially designed machines.

Q 23. Assertion (A): Long-term endurance is needed in sports activities lasting from 2 to 11 minutes.

Reason (R): Sports activities such as marathon races require such type of endurance.

Q 24. Assertion (A): For improvement of performance in long distance running, continuous training is effective.

Reason (R): Continuous method of training improves basic endurance.

Q 25. Assertion (A): Fartlek training method was developed by Gosta Holmer in 1930's.

Reason (R): Fartlek training method lays emphasis on both aerobic and anaerobic systems.

Q 26. Assertion (A): Circuit training is an excellent way to improve mobility, strength and stamina.

Reason (R): In this method, the player performs an activity for long period with low intensity without having any rest or breaks in between.

Answers

1. (b) strength
2. (a) explosive
3. (a) isotonic
4. (a) Iso means constant and metric means length.
5. (b) Isotonic

6. (d) They develop both explosive strength and strength endurance.
7. (c) Endurance
8. (c) Specific
9. (c) Speed endurance
10. (c) effort and recovery
11. (a) Sweden
12. (b) heart
13. (c) Steeple chase race
14. (d) All of these
15. (c) speed
16. (c) explosive strength
17. (c) Efficiency of lungs
18. (a) Active
19. (d) Fartlek
20. (b) Coupling ability
21. (c) Assertion (A) is true, but Reason (R) is false.
22. (c) Assertion (A) is true, but Reason (R) is false.
23. (d) Assertion (A) is false, but Reason (R) is true.
24. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
25. (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
26. (c) Assertion (A) is true, but Reason (R) is false.



Case Study Based Questions ↓

Case Study 1

Read the following passage and answer the following questions.

Mr Gopichand is a renowned badminton coach. When he started his academy, he selected our school badminton players and designed a training programme. During the training, he noted that few players were good in defense but due to lack of endurance and strength, they were unable to play up to the last moment. He used various methods to enhance their endurance and strength.

Q 1. Isotonic exercise helps in enhancing:

- a. endurance
- b. strength
- c. Both a. and b.
- d. None of the above

Q 2. High pressure over muscles can be seen in exercises.

- a. isometric
- b. isotonic
- c. Both a. and b.
- d. ballistic

Q 3. training method is considered as the best method to develop endurance. (CBSE 2023)

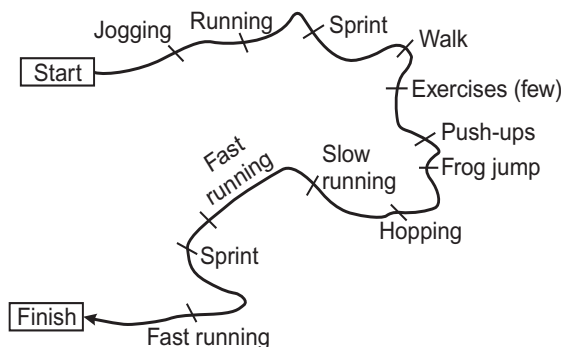
- a. Interval
- b. Continuous
- c. Fartlek
- d. Pace runs



Answers

1. (c)
2. (c)
3. (a)

Case Study 2



Based on the above given fixture, answer the following questions:

Q 1. From the given picture, it is identified as training method.

- a. pace runs
- b. Fartlek
- c. isometric
- d. isotonic

Q 2. This training method was developed by:

- a. Gosta Holmer
- b. Fartlek
- c. Johnson
- d. Morgan

Q 3. The above training method helps in increasing the

- a. strength
- b. speed
- c. endurance
- d. flexibility

Q 4. In the above training method, plays an important role.

- a. support
- b. coach
- c. guidance
- d. self-discipline

Q 5. The Swedish word meaning 'speed play' is

- a. citius
- b. Fartlek
- c. pace
- d. altius



Answers

1. (b)
2. (a)
3. (c)
4. (d)
5. (b)



Very Short Answer Type Questions ↓

Q 1. Define strength.

Ans. Strength is the ability of a muscle or a group of muscles to exert a force against resistance.

Q 2. Define explosive strength. (CBSE SQP 2020)

Ans. Explosive strength is defined as the ability to overcome resistance by means of high speed. It is a combination of both strength and speed.

Q 3. What is strength endurance?

Ans. Strength endurance is defined as the ability to overcome resistance or to act against resistance under conditions of fatigue. It is used in long distance races, swimming and combative sports.

Q 4. Suggest any two isometric exercises for shoulders region. (CBSE 2015)

Ans. Isometric exercises for shoulders are:

- (i) Pushing against the wall.
- (ii) Holding push-up position.

Q 5. What are isotonic exercises?

Ans. Isotonic exercises are those exercises in which movements can be seen directly and work is done. Length of the muscles is increased by isotonic exercises. Running, jumping on the spot and weight training exercises are best examples of isotonic exercises.

Q 6. Define endurance. (CBSE SQP 2020)

Ans. Endurance is the ability to perform sports movement with the desired quality and speed under the condition of fatigue.

Q 7. Which methods will you suggest to develop endurance? (CBSE 2019)

Ans. The methods used to develop endurance are:

- (i) Continuous training method
- (ii) Interval training method
- (iii) Fartlek training method

Q 8. Define general endurance.

Ans. General endurance enables a sportsperson to perform different types of activities for a long duration without getting excessively fatigued. These activities may be aerobic or anaerobic in nature.

Q 9. Define speed endurance in terms of endurance.

Ans. Speed endurance is the ability to resist fatigue in activities lasting up to 45 seconds. For example, 400 m sprint.

Q 10. What is continuous training method?

Ans. In this method of training, an activity is carried out with no break or pause in between for an extensive period with low intensity. Cross country race is the best example of continuous training method.

Q 11. List any two advantages of interval training method.

Ans. Two advantages of interval training method are as follows:

- (i) It helps an athlete to achieve his/her peak performance in short time.
- (ii) More workout can be performed in a short duration.

Q 12. What does the term 'Fartlek' mean and who developed this training method? (CBSE 2017)

Ans. Fartlek is a Swedish term that means 'speed play'. Gosta Holmer developed Fartlek training in 1930s.

Q 13. Define speed.

Ans. Speed is the capacity of an individual to perform successive movements of the same pattern at a fast rate.

Q 14. "Pace race means, running the whole distance of a race at a constant speed". Which are the races included in pace races? (CBSE 2015)

Ans. Longer races such as 800 m and above are included in pace races.

Q 15. What do you mean by locomotor ability?

Ans. Locomotor ability is the ability to maintain maximum speed for maximum distance or time. It is imperative in sports events such as 100 m, 200 m races, hockey, football, etc.

Q 16. What is speed endurance in terms of speed?

Ans. Speed endurance is the ability to perform movements with high speed under conditions of fatigue.

Q 17. Define flexibility.

Ans. Flexibility is the ability to perform a joint action through a range of movements.

Q 18. Name the methods used for developing flexibility.

Ans. Methods for developing flexibility are:

- (i) Dynamic method
- (ii) Static-stretching method
- (iii) Ballistic method
- (iv) Proprioceptive Neuromuscular Facilitation (PNF) technique.

Q 19. What is coordinative ability? (CBSE 2018)

Ans. It is the ability to perform smooth and accurate movements involving different parts of the body efficiently.

Q 20. What is balance ability?

Ans. It is the ability to maintain balance during the complete body movements and to regain balance quickly after the balance-disturbing movements.

**Short Answer Type-I Questions ↓****Q 1. What are the components needed in talent identification?**

Ans. The key components to identify talent are as follows:

- (i) Physical characteristics such as size, height, weight, body structure etc.
- (ii) Physiological skills such as speed, strength, flexibility, endurance, agility and fitness.
- (iii) Cognitive skills such as game understanding, desire to learn, maturation level, perception etc.
- (iv) Technical skills such as dribbling, passing, control and shooting, along with defensive skills.

Q 2. What do you mean by maximum strength and strength endurance?

Ans. **Maximum strength** is the highest external resistance an athlete can hold or lift for one rep at one point in time. It is used in weightlifting, shot-put, javelin throw, etc.

Strength endurance is the ability to work against resistance under conditions of fatigue. It is used in long distance races, road cycling, swimming, etc.

Q 3. What do you mean by basic endurance?

Ans. Basic endurance is the ability to perform movements in which large number of body muscles are involved and the movements are performed at a slow pace for a long duration such as jogging and swimming for more than 30 minutes.

Q 4. What do you mean by short-term and middle-term endurance?

Ans. **Short-term** endurance is needed to resist fatigue in sports activities lasting from about 45 seconds to 2 minutes. For example, 800 m.

Middle-term endurance is needed for sports activities lasting from 2 to 11 minutes. For example, 1500 m race.

Q 5. Differentiate between locomotor ability and acceleration ability.

Ans. The difference between locomotor ability and acceleration ability are as follows:

S. No.	Basis of Difference	Locomotor Ability	Acceleration Ability
(i)	Definition	It is the ability to maintain maximum speed for maximum time or distance.	It is the ability to achieve maximum speed from a stationary position or a low speed phase in a very less amount of time
(ii)	Example	100 m, 200 m, 400 m races etc.	Hockey, Football, etc.

Q 6. Define flexibility and list down its types. (CBSE 2023)



EXPERT'S Answer

Ans. Flexibility is the ability to execute a movement with greater amplitude or range.

Types of Flexibility

Passive Flexibility

Active Flexibility

Static Flexibility

Dynamic Flexibility



Short Answer Type-II Questions ↓

Q 1. Dynamic strength is divided into three parts. Write in brief about each. (CBSE 2015)

Ans. Various types of dynamic strength are:

(i) Maximum Strength: It is the highest external resistance (most weight) an athlete can hold or lift for one rep at one point in time. It is needed by weightlifters and shot put throwers.

(ii) Explosive Strength: It is the ability of an individual to overcome resistance by means of high speed. It is a combination of both strength and speed. It is needed by javelin throwers, athletes and pole vaulters.

(iii) Strength Endurance: It is the ability of an individual to continue overcoming resistance even after the condition of fatigue. It is the combination of strength and endurance. It is needed in long distance races and cycling events.

Q 2. Explain what is strength and write the methods for improving strength. (CBSE 2016, 23)

Ans. Strength is the ability of a muscle or a group of muscles to exert a force against a resistance or to overcome resistance.

Methods for improving strength are:

(i) Isometric Exercises: These are the exercises in which the movement is not visible and length of muscles remain the same.

(ii) Isotonic Exercises: These are the exercises in which movements are visible and length of muscles changes.

(iii) Isokinetic Exercises: These are performed on specialised machines.

Q 3. Differentiate between isometric and isotonic exercises. (CBSE 2016)

Ans. An isometric contraction occurs when there is tension on a muscle without any movement. The length of the muscles remains constant.

Isotonic exercises involve controlled contraction and extension of muscles and mobilisation of the joints around those muscles.

A comparison between their characteristics is given below:

S.No.	Isometric Exercises	Isotonic Exercises
(i)	Less or no equipment required.	Sometimes equipment is required to perform them.
(ii)	It develops static strength.	It develops dynamic strength.
(iii)	It needs less time.	Muscles which are used in this exercise gain most strength.

Q 4. Explain Isokinetic exercise with suitable example. (CBSE SQP 2023-24)

Ans. Isokinetic Exercise: This method was introduced by J.J. Perrine in 1968 and involves a particular type of muscle contraction called isokinetic contraction, generally used in sporting events like rowing and swimming. These exercises are performed on specially designed instruments. In isokinetic contraction, the muscles apply maximal force throughout the range of motion around the joint. The use of isokinetic contraction is minimal. Hence, the contribution of isokinetic contraction in developing strength is yet to be scientifically proved.
Examples: Treadmill, Butterfly stroke in swimming, etc.

Q 5. Explain interval training method. (CBSE 2017)

Ans. Interval training method is a training of heart through endurance training. It is based on 'effort and recovery' principle i.e., it involves a series of high intensity workouts interspersed with recovery (rest) periods. Recovery period can be adjusted according to the efficiency of the athlete. 'Walk-back sprinting' is an example of interval training for runners, in which one sprints a short distance (100-800 m), then walks back to the starting point (recovery period) to repeat the sprint a certain number of times.

Q 6. What is fartlek training? Write in brief. (CBSE 2017)

Ans. Fartlek training methods were developed by Gosta Holmer in 1930s for improving endurance. Fartlek, a Swedish term which means 'speed play', is a combination of continuous and interval training. Its running involves periods of fast running intermixed with periods of slow running. Unlike traditional interval training that involves specific time or measured segments, Fartlek is more unstructured. This type of training stresses on both the aerobic and anaerobic systems.

An example of this training is given below:

- (i) Jogging or easy running for 5 to 10 minutes.
- (ii) Hard speed for 1.5 to 2.5 km.
- (iii) Rapid walking for 5 minutes.
- (iv) Easy running interspersed with sprints of about 50-60 m.
- (v) Full speed uphill for 175-200 m.
- (vi) Fast pace for 1 minute.
- (vii) The above mentioned routine is repeated until the total time prescribed on the training schedule is elapsed.

Q 7. List down any four advantages of fartlek training method. (CBSE SQP 2022-23)

Ans. Advantages of fartlek training are:

- (i) It is good for increasing strength and cardiorespiratory endurance.
- (ii) Several athletes can take part in the training programme at a time.
- (iii) It does not require any equipment and can be organised easily.
- (iv) It is not rigid but flexible in nature.
- (v) It improves the efficiency of the heart and lungs.
- (vi) It provides experience of nature. (Any four)

Q 8. Define speed. Explain the methods of speed development. (CBSE 2015-16)

Or How do acceleration runs and pace races develop speed?

Ans. Speed: It is the ability of an individual to cover maximum distance in minimum possible time.

Developing Methods

(i) **Acceleration Run:** Acceleration runs are usually adopted to develop speed, specially in attaining maximum speed from a stationary position. Before acceleration runs, proper warm up must be done. After every acceleration run, there should be a proper interval so that the athlete may start the next run without any fatigue. Generally, the athlete should take rest of 4 to 5 minutes in between the runs.

(ii) **Pace Races:** Pace races mean running the whole distance of a race at a constant speed. In pace races, an athlete runs the race with uniform speed, generally 800 m and above. Very young children can maintain their maximum speed for

15 to 20 m, whereas a well-trained athlete can maintain maximum speed for 40 m. Repetitions can be fixed according to the standard of the athletes.

Q 9. What are various factors of speed?

Or Explain the types of speed.

Or Write in brief about any three physiological factors determining speed. (CBSE 2016)

Ans. The various factors of speed are:

- (i) **Reaction Speed:** It is the ability to respond to a given stimulus as quickly as possible. In sports, reaction ability is not only significant to react quickly to a signal, but it should also be accurate according to situation.
- (ii) **Movement Speed:** It is the ability to do a single movement in the minimum time. It is of high relevance in sports like jumping, throwing, kicking, boxing, etc.
- (iii) **Acceleration Speed:** It is the ability to increase speed from minimum to maximum. This form of speed, to a great extent, depends upon explosive strength, frequency of movement and technique. It is important in swimming, hockey, football, gymnastic, etc.
- (iv) **Locomotor Ability:** It can be defined as the ability to maintain maximum speed of locomotion over a period of time as far as possible. It is very important in races, speed skating, swimming, hockey, football, etc.
- (v) **Speed Endurance:** It is the ability to perform sports movements with high speed under conditions of fatigue. It is a combination of speed and endurance abilities. It depends upon anaerobic capacity, psychic factors and level of skill.

Q 10. Define flexibility and its types. (CBSE 2020)

Ans. Flexibility is the maximum limit or the range of movement of joints. It depends on the fitness and conditioning of the muscles, joints, ligaments and tendons.

There are two types of flexibility:

- (i) **Active Flexibility:** It is the ability of an individual to perform joint movement with a greater range without any external help.
- (ii) **Passive Flexibility:** It is the ability to perform joint movement with a greater range with an external help of partner. It helps in the development of active flexibility.



Long Answer Type Questions ↓

Q 1. Write a detailed note on Micro, Meso and Macro training cycle.

Ans. Macro Training Cycle: A macro-cycle is an annual plan that works towards peaking for the goal competition of the year. There are three phases in the macro-cycle: preparation, competitive and transition. Preparation phase prepare athletes for

things like general conditioning, fitness, agility and speed. This phase could be 3 meso-cycles, with one meso-cycle focusing on conditioning, the next on strength and power, and the next on agility and speed. Competition phase is during their season, so it could be one long meso-cycle focusing on maintaining fitness levels and working on strategies, skills and techniques. After the season is over, the athlete will take some time off and then transition back into the start of the next macro-cycle, which will bring them back to the preparation phase. The transition phase may consist of one or two meso-cycles, which involve recovery, basic strength, endurance and maintenance.

Meso Training Cycle: A meso-cycle represents a phase of training with duration of between 2-6 weeks (or micro-cycles) that is designed to accomplish a particular goal. A meso-cycle can also be defined as a number of continuous weeks where the training programme emphasise the same type of physical adaptations, e.g. muscle mass and anaerobic capacity. During the preparatory phase, a meso-cycle commonly consists of 4-6 micro-cycles, while during the competitive phase it will usually consist of 2-4 micro-cycles depending on the competition's calendar. The goal in mind is to make sure the body peaks for the high priority competitions by improving each cycle along the way.

Micro Training Cycle: A micro-cycle is the shortest training cycle, typically lasting a week with the goal of facilitating a focused block of training. A batch of micro-cycles makes up a meso-cycle. Each micro-cycle will have its own short term goal and each micro-cycle within a meso-cycle works towards the goal of the meso-cycle. Adjustment of intensity and

training volume is crucial at this stage to achieve the expected results without a hitch.

Q 2. Define strength and explain any two methods to develop it. (CBSE 2023)



EXPERT'S Answer

Ans. Strength is the ability of a group of muscles to overcome resistance. It is one of the most crucial motor components of fitness and plays a significant role in sporting events as it is a direct product of muscle contraction.

Methods to develop strength are as follows:

- (i) **Isometric Exercise:** These are the exercises that are not visible as there are no direct movements. In these exercises, work performed cannot be seen directly, like pushing a wall. These exercises involve muscles carrying out tension against the other group of muscles. These exercises are called 'isometric' because there is no change in muscle length when they are performed. These exercises need less time and equipment and can be performed practically anywhere and everywhere.
- (ii) **Isotonic Exercise:** These are exercises in which movements can be seen directly. These exercises result in toned muscles and increased muscle length. This method is considered to be the best method to develop strength. Examples of isotonic exercises include running and jumping on the spot, weight training exercises and calisthenics exercises.

Q 3. Differentiate between isometric, isotonic and isokinetic exercises.

Ans. The difference between isometric, isotonic and isokinetic exercises are as follows:

S.No.	Isometric Exercises	Isotonic Exercises	Isokinetic Exercises
(i)	Isometric exercises involve static muscle contraction against a stationary resistance.	Isotonic exercises involve dynamic movement but don't require a constant movement speed.	Isokinetic exercises involve movement but maintains a constant speed.
(ii)	Iso-'SAME', metric- 'LENGTH'. This is a type of muscle contraction in which muscle remains at same length.	Iso-'SAME', tonic-'TENSION'. This is a type of muscle contraction in which muscle changes the length either by shortening or by lengthening.	Iso-'SAME', kinetic 'SPEED'. This is a type of muscle contraction in which the muscle moves with some speed.
(iii)	These are used only in a few games like gymnastics, weight-lifting, wrestling, etc.	These are most popular and effective type of strength training used in almost all games/sports.	These generally involve muscle contraction against an electronic resistance and are specific to a particular sport.
(iv)	They develop maximum strength.	It develops explosive strength.	It develops explosive strength as well as strength endurance.
(v)	Can rehabilitate immobilised joint.	Does not contribute to rehabilitation.	Cannot rehabilitate immobilised joint.
(vi)	Amount of strength developed does not last long.	Strength developed through this method remains for longer period.	Amount of strength developed is excellent.
(vii)	Poor	Develops excellent coordination.	Develops good coordination.

(viii)	Does not contribute to development of endurance and speed.	Contributes to development of strength, endurance and speed.	Better development of speed as compared to Isotonic.
(ix)	Examples: (a) Pushing against a wall (b) Flexed arm hang, etc.	Examples: (a) Push-ups, pull-ups (b) Rope climbing, bench press, overhead, press, etc.	Examples: (a) Treadmill (b) Butterfly stroke in swimming, etc.

Q 4. What is movement speed? Explain the methods to develop speed. (CBSE 2015)

Ans. Movement speed is the ability to perform a movement in minimum time. It depends upon technique, explosive strength, flexibility and coordinative abilities. It plays a vital role in boxing, wrestling, gymnastics, swimming, etc.

Following methods are used to develop speed:

(i) Acceleration Runs: Acceleration runs are usually practised to develop speed especially in attaining maximum speed from stationary position. Accelerated runs are repeated over and over again with sufficient intervals between runs. The number of acceleration runs can be fixed according to the age and experience and capacity of the athlete.

(ii) Pace Runs or Races: Pace run means running the whole distance of a race at a constant speed. Generally, 800 m and above races are included in pace runs. In longer races, an athlete must conserve his energy by reducing his speed. For example, if there is a runner of 800 m race and his best time is 1 minute 40 seconds. So, he/she should run the first 400 m in 49 seconds and the next 400 m in 51 seconds.

Q 5. What is endurance? Explain any two types of endurance on the basis of duration of the activity with suitable examples from sports. (CBSE 2024)

Ans. Endurance is the ability of a person to maintain a certain level of energy production for a more extended period. It is the ability to sustain an activity. It is either measured by the number of repetitions or the times an action is performed.

Types of endurance on the basis of duration of activity:

(i) Short-term Endurance: This endurance is needed for activities lasting 45 seconds to about 2 minutes. The most appropriate example for short-term endurance is 800 m run.

(ii) Medium-term Endurance: This endurance is needed to resist fatigue in activities lasting from 2 minutes to about 11 minutes. The most common example of this type is 1500 m and 3000 m run and 100 m rowing.

Q 6. Define flexibility. Explain its types and any two methods that develop flexibility. (CBSE SQP 2023-24)

Ans. Flexibility is the maximum limit or the range of movement of joints. It depends on the fitness and conditioning of the muscles, joints, ligaments and tendons.

There are two types of flexibility:

(i) Active Flexibility: It is the ability of an individual to perform joint movement with a greater range without any external help.

(ii) Passive Flexibility: It is the ability to perform joint movement with a greater range with an external help of partner. It helps in the development of active flexibility.

Flexibility can be improved with the help of following methods:

(i) Static Stretching Method: It includes holding a stretch position with just the strength of the muscles.

(ii) Ballistic Method: It involves some form of rapid movement of a limb to force it beyond its normal range of motion.

(iii) Proprioceptive Neuromuscular Facilitation Technique: It involves slow stretching of the muscles through a full range of motion to achieve maximum muscle relaxation. (Any two)

Q 7. What do you understand by coordinative ability? Discuss about different types of coordinative abilities. (CBSE 2019)

Ans. Coordinative abilities are the abilities which enable an individual to perform smooth and accurate movements including different parts of the body.

The different types of coordinative abilities are:

(i) Orientation Ability: It is the ability to determine the position of the body and its parts in time and space in relation to gravity and moving objects like ball, opponent etc.

(ii) Differentiation Ability: It is the ability to achieve a high degree of perfection and economy of individual body part movements.

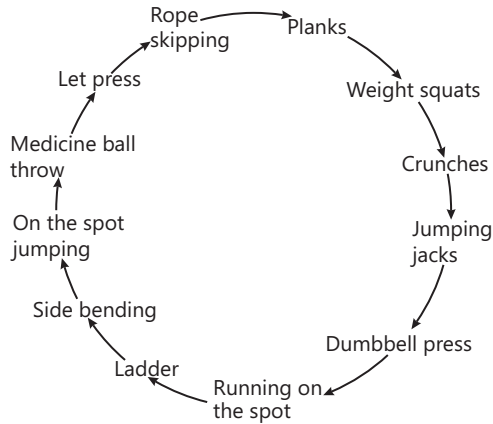
(iii) Reaction Ability: It is the ability to react quickly and efficiently to a well-known or unexpected signal.

(iv) Balance Ability: It is the ability to maintain balance while the body is in motion and to regain balance quickly after balance disturbing movements.

(v) Coupling Ability: It is the ability to coordinate body parts movements with one another and in relation to a definite goal-oriented whole body movement.

Q 8. What is circuit training? Draw a diagram of circuit training with 12 stations and explain its importance in sports. (CBSE 2020)

Ans. Circuit training is a training method to improve mobility, strength and stamina. It comprises of 6-10 strength exercises, in which each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. A typical circuit training diagram of 12 stations is given below:



Importance of Circuit Training

- It can be performed indoors or outdoors.
- A wide range of exercises to select from which maintains the athletes enthusiasm.
- The coach can easily supervise the training.
- It is an ideal balance between strength and conditioning, thus helpful in injury prevention.
- It is a great way to do a whole body workout in a short period of time. (Any four)



TiP

Practice drawing circuit diagrams with 10/12 stations. Incorrect exercises will deduct your marks.

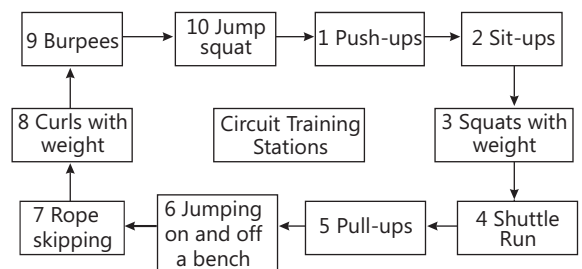
Common ERROR!

Many students commit errors in explaining the importance of circuit along with sports.

Q 9. What is circuit training? Draw a diagram of 10 stations that improve general fitness. How can load be increased in circuit training?

Ans. Circuit training is a training method to improve mobility strength and stamina. It comprises of 6 to 10 strength exercises, in which each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise.

A typical circuit training diagram of 10 stations is given below:



Common ERROR!

Many students are not able to draw the diagram of circuit training along with correct stations.

Following points are important to increase load in circuit training:

- Number of repetitions can be increased per exercise.
- Frequency can be increased.
- Additional load can be increased.
- Interval between exercises can be reduced.



Chapter Test

Multiple Choice Questions

Q 1. While exercising on a multi gym, the type of muscular contraction that occurs is:

- Isotonic
- Isometric
- Isokinetic
- Eccentric

Q 2. Match the following:

List-I (Type of Endurance)	List-II (Examples)
A. Short-term Endurance	(i) Marathon
B. Speed Endurance	(ii) 400 m Sprint race
C. Medium-term Endurance	(iii) 800 m race
D. Long-term Endurance	(iv) 1500 m race

- | | | | | |
|----|-------|-------|-------|------|
| | A | B | C | D |
| a. | (iii) | (ii) | (iv) | (i) |
| b. | (iii) | (iv) | (ii) | (i) |
| c. | (iv) | (iii) | (i) | (ii) |
| d. | (i) | (ii) | (iii) | (iv) |

Q 3. Match the following:

List-I	List-II
A. PNF Stretching	(i) Kicking action in a circular.
B. Dynamic Stretching	(ii) Bringing your leg up high and then holding it there with your hand.
C. Static Active Stretching	(iii) Muscles are stretched without moving the limbs.

D. Static Passive Stretching	(iv) Involves both stretching and contraction of specific muscle group.
------------------------------	---

A	B	C	D
a. (iv)	(iii)	(ii)	(i)
b. (iv)	(i)	(iii)	(ii)
c. (i)	(ii)	(iii)	(iv)
d. (iii)	(iv)	(ii)	(i)

Q 4. Which ability determines and changes the position and movements of the body in different types of situations?

- a. Balance Ability b. Orientation Ability
c. Rhythm Ability d. Adaptation Ability

Q 5. In the sport shown below, which type of strength is used?



- a. Explosive strength b. Static strength
c. Maximum strength d. Both b. and c.

Assertion and Reason Type Questions

Directions (Q. Nos. 6-7): There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from the options given below:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c. Assertion (A) is true, but Reason (R) is false.
d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): Acceleration run is used to develop speed while attaining maximum speed from a static position.

Reason (R): It must be done after proper warm up.

Q 7. Assertion (A): Coordinative abilities are those abilities of an individual which enable the individual to perform a variety of skills properly as well as efficiently.

Reason (R): Coordinative abilities mainly depends on the central nervous system.

Case Study Based Question

Q 8. Read the following passage and answer the following questions.

Flexibility is the ability to execute a movement with greater amplitude or range. A person possessing a good degree of flexibility can perform daily tasks with greater ease and efficiently. Flexibility is helpful in preventing injuries, improving posture, reducing back pain, improving balance while making movements, etc.

(i) The ability to perform a movement with greater amplitude without an external help is called:

- a. passive flexibility b. active flexibility
c. static flexibility d. dynamic flexibility

(ii) Stretching with the help of a prop is an example of:

- a. passive flexibility
b. ballistic flexibility
c. locomotor flexibility
d. active flexibility

(iii) Flexibility is helpful in:

- a. reducing back pain
b. improving posture
c. Both a. and b.
d. reducing anxiety

Very Short Answer Type Questions

Q 9. Define talent identification.

Q 10. What are isometric exercises?

Short Answer Type-I Questions

Q 11. List any two advantages of Interval Training Method.

Q 12. Differentiate between acceleration runs and pace runs.

Q 13. Write a short note on Meso Training Cycle.

Short Answer Type-II Questions

Q 14. Explain any three methods to improve flexibility.

Q 15. What is endurance? How endurance can be developed through Fartlek method?

Q 16. Discuss any three types of coordinative abilities.

Long Answer Type Questions

Q 17. Discuss the types of endurance according to the nature and duration of activity.

Q 18. What are the types of strength? Explain isotonic method to improve strength.



Scan the QR Code

To get Answers of this Chapter Test

MOCK PAPER

Physical Education | Class-XII

Time Allowed : 3 Hours | Max. Marks : 70

1

General Instructions:

- (i) The question paper consists of 5 section and 37 questions.
- (ii) Section A consist of questions 1-18 carrying 1 mark each and are multiple choice questions. All questions are compulsory.
- (iii) Section B consists of questions 19-24 carrying 2 marks each and are very short answer types and should not exceed 60-90 words. Attempt any 5.
- (iv) Section C consists of questions 25-30 carrying 3 marks each and are short answer types and should not exceed 100-150 words. Attempt any 5.
- (v) Section D consists of questions 31-33 carrying 4 marks each and are case studies. There is internal choice available.
- (vi) Section E consists of questions 34-37 carrying 5 marks each and are long answer types and should not exceed 200-300 words. Attempt any 3.

SECTION-A

Q 1. Which of these is not an asana to cure obesity?

- a. Tadasana
- b. Dhanurasana
- c. Halasana
- d. Bhujangasana

Q 2. Paralympic Games was a 1948 sporting competition held at Stoke Mandeville hospital in:

- a. England
- b. United States of America
- c. Germany
- d. Greece

Q 3. What is the other name for Vitamin B₂?

- a. Niacin
- b. Thiamine
- c. Folic Acid
- d. Riboflavin

Q 4. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Partial curl up is used to measure endurance and trunk stability.

Reason (R): In partial curl up, the student lies on his/her back with the knees flexed and feet 12 inches from the buttock in the starting position.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 5. The total number of matches in a knock-out tournament of 34 teams are:

- a. 31
- b. 32
- c. 33
- d. 35

Q 6. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): The female athlete triad is a combination of Amenorrhea, Osteoporosis and Scoliosis.

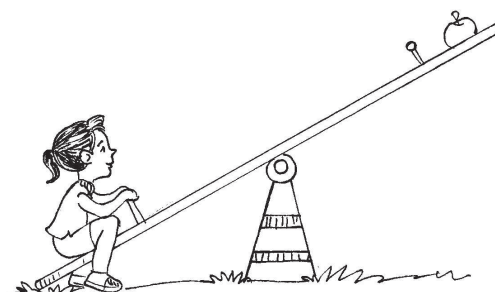
Reason (R): Insufficient intake of calcium and vitamin D in the diet is the main cause of Osteoporosis.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 7. Which of these is not a type of strength?

- a. Explosive strength
- b. Passive strength
- c. Strength endurance
- d. Maximum strength

Q 8. What type of lever is depicted in the picture?



- a. 1st Class lever
- b. 2nd Class lever
- c. 3rd Class lever
- d. None of these

Q 9. Match the following:

List-I	List-II
A. Personality Type A	(i) Pessimistic and hopeless
B. Personality Type B	(ii) Competitive and Aggressive
C. Personality Type C	(iii) Quiet and not over ambitious
D. Personality Type D	(iv) Fear of rejection

A	B	C	D	A	B	C	D
a. (iv)	(iii)	(ii)	(i)	b. (ii)	(iii)	(i)	(iv)
c. (i)	(ii)	(iii)	(iv)	d. (iii)	(iv)	(ii)	(i)

Q 10. Which of the following is not a component of physical fitness?

- a. Strength b. Balance c. Speed d. Endurance

Q 11. Logistics committee deals with:

- a. Accommodation b. Transportation
c. Medical Staff d. All of these

Q 12. Minimum duration of activity should be per week at vigorous intensity in adults above 65 years of age.

- a. 75 minutes b. 150 minutes
c. 300 minutes d. 450 minutes

Q 13. Identify the asana.

- a. Ushtrasana
b. Mandukasana
c. Gomukhasana
d. Tadasana



Q 14. Watching others play and enjoy which in turn motivates the child with special need to participate is a part of which kind of strategy?

- a. Mental b. Physical
c. Psychological d. Social

Q 15. Carrot and orange come under:

- a. energy giving foods
b. body building foods
c. protective or regulatory foods
d. normal foods

Q 16. What is the height of the box used by boys in Harvard step test?

- a. 16 inch b. 18 inch
c. 20 inch d. 22 inch

Q 17. Emotionally unstable, anxiety, sadness are attributes of which personality dimension?

- a. Extraversion
b. Neuroticism
c. Agreeableness
d. Openness

Q 18. In arm curl test, weight of the dumbbell for women is:

- a. 2.5 kg b. 2.3 kg
c. 2.8 kg d. 2.1 kg

SECTION-B

(Attempt any 5 questions)

Q 19. List any two advantages of friction in games and sports.

Q 20. Name any four SAI Khelo India Fitness test for age group 9-18+ years.

Q 21. List the physical activities that can be undertaken to correct knock knee deformity.

Q 22. Explain any two benefits of Ardhamatsyendrasana.

Q 23. Define disability and list down any two types of disability.

Q 24. Explain any two factors that affect a projectile trajectory.

SECTION-C

(Attempt any 5 questions)

Q 25. What do you know about Harvard Step Test? Explain its procedure and administration.

Q 26. List down any four advantages of fartlek training method.

Q 27. Describe the responsibilities of any three committees before a tournament.

Q 28. List down any three asanas used for preventing of Asthma and write two benefits of each.

Q 29. Write briefly about the prevention and management of 'Anorexia'.

Q 30. Elucidate any six effects of exercise on muscular system.

SECTION-D

Q 31. In relation to the pictures, answer the following questions.



- (i) Who is the founder of the first organisation?
- (ii) What is the motto of the first organisation?
- (iii) Second picture games are organised by
- (iv) From 1966 to 1999, the games in the second picture were known as

Or All Paralympic Games are governed by the

Q 32. Study the pictures given below:



Image-1



Image-2



Image-3

Based on the above study and your knowledge, answer the following questions:

- (a) Which type of soft tissue injury you see in image 1?

- (b) injury occurs due to moving contact with a rough surface.
- (c) When tearing or stretching of ligaments occurs as shown in image-3, it is known as:
- (d) What type of soft tissue injury typically results from overuse, force or stretching, affecting either a muscle or a tendon?

Q 33. Your school has been given the responsibility to conduct zonal basketball competition. As the Head boy/Head girl of the student council you have been asked to make various teams of students to help teacher in charges for smooth conduct of the tournament.

- (i) Students good at art and craft and creative designing will be assigned with committee.
 - (ii) What is the name of the committee that announces the dates and venue of tournament?
 - (iii) Few students will be assigned with committee for welcoming the chief guest at the opening ceremony.
 - (iv) Which committee is responsible for preparing the grounds or laying out the track and field?
- Or* committee is headed by a qualified doctor.

SECTION-E

(Attempt any 3 questions)

Q 34. Differentiate between intrinsic and extrinsic motivation. Explain in detail goal setting and Reinforcement as techniques of motivation.

Q 35. What are the nutritive and non-nutritive components of diet? Explain.

Q 36. Explain the applications of law of reaction in different sports.

Q 37. Write in detail about strength improving methods- isometric, isotonic and isokinetic.

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MOCK PAPER

Physical Education | Class-XII

Time Allowed : 3 Hours | Max. Marks : 70

2

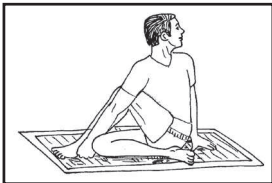
General Instructions:

- (i) The question paper consists of 5 section and 37 questions.
- (ii) Section A consist of questions 1-18 carrying 1 mark each and are multiple choice questions. All questions are compulsory.
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- (vi) Section E consists of questions 34-37 carrying 5 marks each and are long answer types and should not exceed 200-300 words. Attempt any 3.

SECTION-A

Q 1. Name the lifestyle disease(s) prevented by performing this asana.

- a. Diabetes
- b. Obesity
- c. Both a. and b.
- d. Asthma



Q 2. The founder of Special Olympics was:

- a. Eunice Kennedy Shriver
- b. John F. Kennedy
- c. Lyndon B. Johnson
- d. Zurab Tsereteli

Q 3. Match the following vitamins with their functions:

List-I	List-II
A. Vitamin K	(i) Need for blood clotting
B. Vitamin D	(ii) For protection of cell wall
C. Vitamin E	(iii) For vision in dim light
D. Vitamin A	(iv) For Absorption of calcium and phosphorus

- | | | | |
|---------|------|-------|-------|
| A | B | C | D |
| a. (i) | (iv) | (iii) | (ii) |
| b. (i) | (ii) | (iii) | (iv) |
| c. (ii) | (iv) | (iii) | (i) |
| d. (i) | (iv) | (ii) | (iii) |

Q 4. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Aerobic fitness is an essential component for walking distances, stair climbing, etc.
Reason (R): Six minute walk test measures aerobic fitness of the senior citizens.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 5. Which fixture is also known as 'Berger system'?

- a. Knock-out fixture
- b. Round robin fixture
- c. Combination fixture
- d. Challenge tournament

Q 6. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Postural deformities can be cured with the help of the different asanas.

Reason (R): Round shoulders can be cured by performing Chakrasana and Dhanurasana regularly.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 7. Which of these is a physiological factor determining flexibility?

- a. Internal environment
- b. Age
- c. Joint structure
- d. All of these

Q 8. Identify the law of motion, shown in the illustration:



- a. Law of inertia
- b. Law of action and reaction
- c. Law of acceleration
- d. Both b. and c

Q 9. Type D personality individuals are susceptible to:

- a. depression
- b. hypertension
- c. cancer
- d. Both a. and b.

Q 10. Plank is an example of exercise.

- a. isotonic
- b. isokinetic
- c. isometric
- d. None of these

Q 11. Logistics committee deals with:

- a. Accommodation
- b. Transportation
- c. Medical Staff
- d. All of these

Q 12. Psychological benefits of women participation in sports includes:

- a. cooperation
- b. emotional control
- c. physical fitness
- d. communication

Q 13. Which of the following asana should be performed for curing obesity?

- a. Surya Bhedhana Pranayama
- b. Mandukasana
- c. Uttanapadasana
- d. Gomukhasana

Q 14. What is the ratio of carbon, hydrogen and oxygen in carbohydrates?

- a. 1:2:1
- b. 2:2:1
- c. 2:1:1
- d. 1:2:2

Q 15. In which year, first Deaflympics were organised?

- a. In 1949
- b. In 1924
- c. In 1992
- d. In 1987

Q 16. What is the height of the box used by boys in Harvard step test?

- a. 16 inch
- b. 18 inch
- c. 20 inch
- d. 22 inch

Q 17. Aggression is displayed in sports through:

- a. assertion of views
- b. use of abusive words
- c. walking away from the opponent
- d. strictly following the rules

Q 18. Which test is used to test the functional ability amongst senior citizens?

- a. Rockport one mile test
- b. Harvard step test
- c. Rikli and Jones test
- d. SAI Khelo India Fitness test

SECTION-B

(Attempt any 5 questions)

Q 19. Differentiate between static and dynamic equilibrium.

Q 20. Explain the procedure for carrying out the Plate Tapping Test in point form.

Q 21. What do you mean by 'Round Shoulders'? Suggest any two physical activities for correcting round shoulders.

Q 22. Write the benefits of Anuloma-viloma.

Q 23. What are the benefits of physical activities for children with special needs? Explain.

Q 24. What are the various types of friction?

SECTION-C

(Attempt any 5 questions)

Q 25. Describe the method of sit and reach test.

Q 26. What are the components needed in talent identification?

Q 27. Write down the role of any three committees after a tournament.

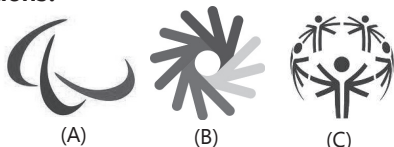
Q 28. Briefly explain the administration of Pawanmuktasana.

Q 29. Briefly write about physical exercises guidelines for adults above 65 years of age.

Q 30. "Regular physical exercise can delay your ageing process". Justify your answer in light of the effect of activities on physiological changes.

SECTION-D

Q 31. In relation to the pictures, answer the following questions:



- (i) Logo shown in picture refers to Special Olympic.
 - (ii) Who was the founder of Special Olympics?
 - (iii) According to figure 'B', the hand shapes of 'OK', 'Good' and 'Great' that overlap each other in a circle, represent the original sign for
 - (iv) How many countries participated in the first Paralympic Games in Rome (Italy) in 1960?
- Or What is the anthem of the Paralympic?

Q 32. Study the pictures given below:



Image-1



Image-2

- (i) Which type of fracture you see in image-2?
- (ii) When a young, soft bone bends as shown in image-1, it is known as
- (iii) Which type of injury is illustrated above?
- (iv) Which type of fracture occur because of overuse injuries and the failure to have adequate equipment to protect the body?

Q 33. ABC School is one of the reputed school in their location for the number of sports facilities it provides to its stakeholders. Keeping that in consideration CBSE Sports cell has given them the responsibility of conducting CBSE Football cluster. 33 teams have sent their entry for participation in the tournament.

- (i) Due to large number of teams willing to participate, the school is conducting the competition by fixture.
 - (ii) Total number of matches will be
 - (iii) Total number of rounds will be
 - (iv) How many byes will be given in lower half?
- Or How many teams will be placed in 3rd quarter?

SECTION-E

(Attempt any 3 questions)

- Q 34. What is friction? Write the advantages and disadvantages of friction by giving suitable examples from sports.
- Q 35. What are the pitfalls of dieting?

- Q 36. Write a detailed note on psychological attributes in sports.
- Q 37. Explain types of speed and methods to develop speed.



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MOCK PAPER

Physical Education | Class-XII

Time Allowed : 3 Hours | Max. Marks : 70

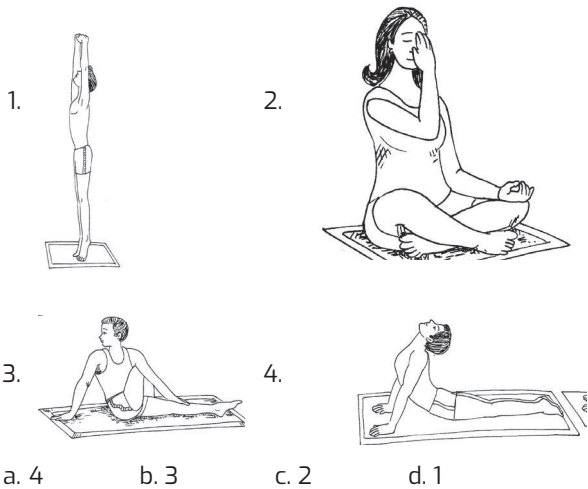
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General Instructions:

- (i) The question paper consists of 5 section and 37 questions.
- (ii) Section A consist of questions 1-18 carrying 1 mark each and are multiple choice questions. All questions are compulsory.
- (iii) Section B consists of questions 19-24 carrying 2 marks each and are very short answer types and should not exceed 60-90 words. Attempt any 5.
- (iv) Section C consists of questions 25-30 carrying 3 marks each and are short answer types and should not exceed 100-150 words. Attempt any 5.
- (v) Section D consists of questions 31-33 carrying 4 marks each and are case studies. There is internal choice available.
- (vi) Section E consists of questions 34-37 carrying 5 marks each and are long answer types and should not exceed 200-300 words. Attempt any 3.

SECTION-A

Q 1. Identify the odd one:



Q 2. The first Special Olympics Games were held in:

- a. New York b. Paris
- c. Chicago d. Washington D.C.

Q 3. Eating large amounts of food at very short intervals of time is known as:

- a. anorexia nervosa b. osteoporosis
- c. bulimia nervosa d. None of these

Q 4. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Explosive strength is a combination of strength and speed abilities.

Reason (R): It is used in swimming, long distance races and cycling events.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 5. How many byes will be given if there are 8 teams in the league tournament?

- a. 7 b. 5
- c. 4 d. 0

Q 6. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Sodium maintains the balance of acid and base.

Reason (R): It is found in sea food and chocolate.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
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Q 7. Match List-I and List-II, selecting the correct option:

List-I	List-II
A. Abrasion	(i) Joint Injury
B. Greenstick Fracture	(ii) Soft Tissue Injury
C. Shoulder Dislocation	(iii) Cause of Sports Injury
D. Lack of Fitness	(iv) Bone Injury

- A B C D

 - (ii) (iv) (i) (iii)
 - (iii) (ii) (iv) (i)
 - (iv) (iii) (i) (ii)
 - (i) (iii) (ii) (iv)

Q 8. Which of the following Newton's law of motion applies to an athlete performing a high jump off a solid surface?

 - First
 - Second
 - Third
 - All of these

Q 9. Who categorised the personality traits as introverts and extroverts?

 - CG Jung
 - GW Allport
 - WH Sheldon
 - MC Dougall

Q 10. Which of the following is an advantage of doing isokinetic exercise?

 - They strengthen the muscles throughout their range of motion.
 - They can be performed anywhere and require no special equipment.
 - They are simple to perform and do not require coaching.
 - They develop both explosive strength and strength endurance.

Q 11. What is the formula to divide an odd number of teams in the upper half for a knockout fixture?

 - $N + 1/2$
 - $N - 1/2$
 - $N(N - 1)/2$
 - $N(N + 1)/2$

Q 12. Lateral curvature or sideways curvature of spine is related to:

 - round shoulder
 - kyphosis
 - knock-knee
 - scoliosis

Q 13. Which of the following asana is NOT used to cure Asthma?

 - Tadasana
 - Dhanurasana
 - Parvatasana
 - Bhujangasana

Q 14. School management needs to recognise the essential place of physical activity in the education of children with special needs.

Which of these is not one of the results of physical activities in children with special needs?

 - Improvement in confidence
 - Improvement in endurance
 - Increase in depression
 - Better hand-eye coordination

Q 15. helps in smooth elimination of stool or faeces.

 - Carbohydrates
 - Roughage
 - Minerals
 - Vitamins

Q 16. Johnson-Metheny Test battery does not consist of motor stunts.

 - Front Roll
 - Back Roll
 - Side Roll
 - Jumping Full-Turns

Q 17. In hostile aggression, the main aim is to using aggression.

 - cause harm to the opponent
 - express your feeling of jealousy
 - achieve a positive goal
 - show your hostility to an opponent

Q 18. In partial curl-up test the difference between two parallel lines is

 - 8 inches
 - 4 inches
 - 6 inches
 - 10 inches

SECTION-B

(Attempt any 5 questions)

- Q 19. Give two applications of equilibrium in sports.
- Q 20. Explain the procedure of six minute walk test.
- Q 21. Suggest exercises as corrective measures for Kyphosis and Bow legs.
- Q 22. Write any two advantages of Gomukhasana.
- Q 23. Write in brief the aims and objectives of Paralympic Committee.
- Q 24. Enlist any four factors affecting projectile trajectory.

SECTION-C

(Attempt any 5 questions)

- | | |
|--|--|
| Q 25. Discuss in detail short-term effects of exercise on respiratory system. | Q 28. Write down the procedure and contraindication of Bhadrasana in detail. |
| Q 26. What is fartlek training? Write in brief. | Q 29. Write down the physical exercises guideline for children under 5 years of age. |
| Q 27. Your school is organising 'Run for Unity', explain the responsibilities of accreditation, technical and finance committee. | Q 30. Elaborate any three physiological factors determining flexibility. |

SECTION-D

Q 31. In relation to the pictures, answer the following questions.



- (i) What is the mission of the first organisation?
- (ii) What is the motto of the first organisation?
- (iii) Until 1965 the games in the second picture were known as
- (iv) Second picture games are conducted after every years.

On the basis of above given fixture, answer the following question:

- (i) The third round in this case can also be called as
- (ii) What is the formula for calculating the total number of teams in upper half?
- (iii) Total number of matches in 2nd round are
- (iv) The second bye is given to the team of the upper half.

Or List any two advantages of knock-out tournament.

Q 33. Mr. Balachandran, aged 65 years worked as a civil engineer in a construction company. He had to walk and climb a lot as part of his job. After retirement, he settled with his son spending time with his grandchildren. Now a days he is experiencing difficulty in doing certain chores which involves physical movement.



- (i)is recommend to check Mr. Balachandran's fitness.
- (ii) series of tests are prescribed in fitness test for Mr. Balachandran?
- (iii) The 8 foot up and Go test, as shown in the picture is performed to assess
- (iv) Chair stand test is used for strength.

Or Rikli and Jones developed various test for senior citizens in

SECTION-E

(Attempt any 3 questions)

- Q 34. What are the personality traits according to the Big Five theory.
- Q 35. Explain macronutrients and their role in our diet.

- Q 36. Describe the types of lever with the help of their diagrams.
- Q 37. Define flexibility and explain the methods of flexibility development.

Scan the QR Code and get the Answers to this Mock Paper



MOCK PAPER

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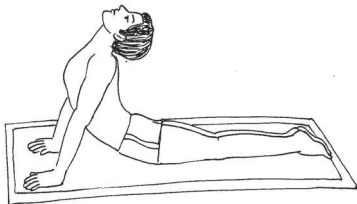
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SECTION-A

Q 1. Identify the Asana:



- a. Bhujangasana
- b. Halasana
- c. Vajrasana
- d. Dhanurasana

Q 2. The first World Winter Special Olympics Games were held in:

- a. 1962
- b. 1987
- c. 1960
- d. 1977

Q 3. In which type of Anorexia does an individual lose weight by taking laxatives or diuretics?

- a. Bulimia nervosa
- b. Purging type
- c. Restricting type
- d. Anorexia nervosa

Q 4. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Fartlek training method was developed by Gosta Holmer in 1930's.

Reason (R): Fartlek training method lays emphasis on both aerobic and anaerobic systems.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
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Q 5. Archana a P.E. Teacher of ABC School sent invitations to 26 teams to play Kho-Kho under Khelo India Programme. All terms accepted the invitation. Now, help Archana and suggest her which type of tournament she should organise to make the competition successful.

- a. Knock-out tournament
- b. League tournament
- c. Round-robin tournament
- d. Berger tournament

Q 6. Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Anemia is caused due to the deficiency of iodine.

Reason (R): Iodine is essential for the production of hormones in the thyroid gland.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)
- c. Assertion (A) is true, but Reason (R) is false
- d. Assertion (A) is false, but Reason (R) is true

Q 7. Which of these is a type of endurance?

- a. Static b. Dynamic
c. Specific d. Relative

Q 8. When the sum of force acting upon the object and sum of the movement acting upon the body is both equal to zero then the body is said to be in:

- a. equilibrium b. static equilibrium
c. dynamic equilibrium d. None of these

Q 9. A person having both traits of introvert and extrovert is known as:

- a. mesomorph b. extraversion
c. ambivert d. endomorph

Q 10. Talent identification is a process.

- a. general b. scientific
c. specific d. None of these

Q 11. How many byes will be given if 21 teams are participating in a knock-out tournament?

- a. 11 b. 12 c. 10 d. 13

Q 12. Psychological benefits of women participation in sports includes:

- a. coordination b. obesity
c. self-esteem d. communication

Q 13. Which of the following is a contraindication for Pawanmuktasana?

- a. Slipped disc b. Shoulder impingement
c. Knee injury d. Enlarged liver

Q 14. Rule used by special Olympics to achieve the intentions of fairness is referred as:

- a. Honest Effort Rule
b. Maximum Effort Rule
c. Minimum Effort Rule
d. Best Effort Rule

Q 15. Calculate the BMI of a girl and identify the category if her weight is 68 kg and height is 161 cm:

- a. Underweight b. Normal weight
c. Overweight d. Obesity class

Q 16. Johnson-Metheny test battery has items.

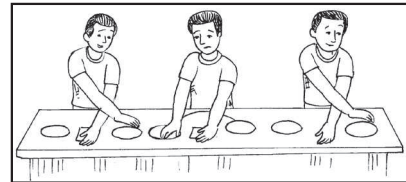
- a. 6 b. 5
c. 10 d. 4

Q 17. Match List-I with List-II and select the correct answer from the codes given below:

List-I	List-II
A. Extraversion	(i) Enthusiasm
B. Conscientiousness	(ii) Responsible
C. Agreeableness	(iii) Compassionate behaviour
D. Neuroticism	(iv) Emotional Stability

- | | | | | | | | |
|----------|------|-------|------|---------|-------|------|-----|
| A | B | C | D | A | B | C | D |
| a. (i) | (ii) | (iii) | (iv) | b. (iv) | (iii) | (ii) | (i) |
| c. (iii) | (iv) | (ii) | (i) | d. (ii) | (iii) | (iv) | (i) |

Q 18. Name the test shown in the picture:



- a. Flamingo Balance Test
b. Sit and Reach
c. Plate Tapping Test
d. 600 m Run/Walk

SECTION-B

(Attempt any 5 questions)

Q 19. Define centre of gravity. Give two applications of centre of gravity in sports.

Q 20. Give the names of the test included in SAI Khelo India Fitness Test in school.

Q 21. Explain physical benefits of women participation in sports.

Q 22. Enlist four asanas those help to control back pain.

Q 23. "Participation in physical activities is advantageous for children with special need." Briefly explain any four advantages.

Q 24. Elucidate Newton's law of inertia.

SECTION-C

(Attempt any 5 questions)

Q 25. What are the components of Rikli and Jones Test? Explain the procedure for administering any one test item.

Q 26. What are the specific training tasks in a meso cycle?

Q 27. League tournament is a better way to judge the best team of the tournament. Comment.

Q 28. Explain the procedure and benefits of any asana for obesity.

Q 29. Write in brief about Osteoporosis. What are the causes of Osteoporosis in women?

Q 30. Discuss any three short-term effects of exercise on cardiovascular system.

SECTION-D

Q 31. While organising sports events for the Annual Sports Day, Arjun and Ravi being the captain and vice captain of sports, formed various committees as shown below.



(i) selects various officials such as referees, judges, etc., in tournament.

(ii) The head of a sport committee is director.

(iii) The Boarding and Lodging Committee for a tournament arranges

(iv) Finance committee maintains the account of and

Or

Which committee provides first aid to the injured or affected sportsperson immediately.

Q 32. Below given is the details of different types of vitamins required for our body:

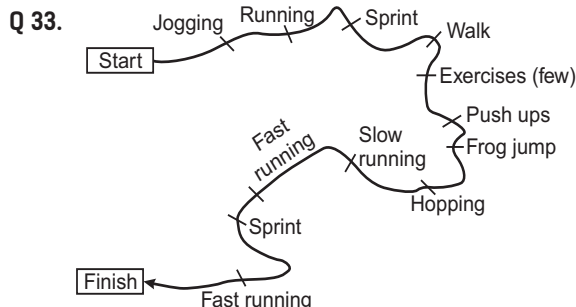


(i) The vitamins and minerals are collectively known as foods.

(ii) Fat soluble vitamins are

(iii) Which of the following statement is false about Vitamin C?

(iv) Vitamin B₁ works as



(i) From the given picture, it is identified as training method.

(ii) This training method was developed by

(iii) The above training method helps in increasing the

(iv) In the above training method, plays an important role.

Or The Swedish word meaning 'speed play' is

SECTION-E

(Attempt any 3 questions)

Q 34. Mention the strategies to enhance exercise adherence.

Q 35. Write a short note on Special Olympics. Mention the different programmes run by Special Olympics around the world.

Q 36. What is friction? Explain its types. How is friction advantageous or disadvantageous in the field of sports? Explain with suitable examples.

Q 37. What do you understand by fracture? How can fractures be classified? Explain.



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