
Support Material Physical Education

(English Medium)

CLASS - XII

Support Material

CLASS - XII **Physical Education (048)**

Under the Guidance of
Mrs. Harjeet Kaur DDE (PE & NI)

Team Leader : Nutan Duggal

SPE Zone - 8

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Syllabus of 2016-17
Physical Education

Theory No. of Periods 180

Max. Marks 70

Unit I. Planning in Sports

- * Meaning and Objectives of Planning
- * Various Committees and their Responsibilities
- * Tournament - Knock Out, League or Round and Combination
- * Procedure to Draw Fixtures - Knock-Out (Bye and Seeding) and League (Staircase) and Cyclic)
- * Intramural and Extramural-Meaning, Objectives & its Significance.
- * Specific Sports Programme (Sports Day, Health Run, Run for fun, Run for Specific Cause & Run for Unity).

Unit II. Adventures Sports and Leadership Training.

- * Meaning and Objectives of Adventure Sports
- * Types of Activities - Camping, Rock Climbing, Trekking, River Rafting and Mountaineering.
- * Material Requirement and Safety Measures.
- * Identification and Use of Natural Resources
- * Conservation of Environment
- * Creating Leaders through Physical Education.

Unit III. Sports and Nutrition

- * Balanced Diet and Nutrition : Macro and Micro Nutrients
- * Nutritive and Non-Nutritive Components of Diet.
- * Eating Disorders - Anorexia Nervosa and Bulimia
- * Effects of Diet on Performance
- * Eating for Weight Control - A Healthy Weight, The pitfalls of Dieting, Food Intolerance and Food Myths.

Unit IV. Postures

11 Periods

- * Concept of Correct Postures - Standing and Sitting

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- * Advantages of Correct Posture
 - * Causes of Bad Posture
 - * Common Postural Deformities - Knock Knee, Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis.
 - * Physical Activities as Corrective Measures

Unit V. Children and Sports

08 Periods

- * Motor Development in Children
- * Factors Affecting Motor Development
- * Physical and Physiological Benefits of Exercise on Children
- * Advantages and Disadvantages of Weight Training and Food Supplement for Children.
- * Activities and Quality of Life.

Unit VI. Women and Sports

- * Sports Participation of Women in India
- * Special Consideration (Menarch, Menstrual Dysfunction, Pregnancy, Menopause)
- * Female Athletes Triad (Anemia, Osteoporosis & Amenorrhea)
- * Psychological Aspects of Women Athlete.
- * Sociological Aspects of Sports Participation.
- * Ideology

Unit VII. Test and Measurement in Sports

- * Measurement of Muscular Strength - Kraus Weber Test
- * Motor Fitness Test - AAPHER
- * Measurement of Cardio Vascular Fitness - Harvard Step Test/ Rockport Test.
- * Measurement of Flexibility - Sit and Reach Test
 1. Chair Stand test for lower body strength
 2. Arm Curl test for upper body strength
 3. 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.

Unit VIII. Physiology and Sports

- * Gender Differences in Physical & Physiological Parameters.
- * Physiological Factors Determining Component of Physical Fitness.
- * Effect of Exercises on Cardio Vascular System.
- * Effect of Exercises on Respiratory System.
- * Effect of Exercises on Muscular System.
- * Physiological Changes due to Ageing.
- * Role of Physical Activity Maintaining Functional Fitness in Aged Population.

Unit IX. Sports Medicine

- * Concept & Definition.
- * Aims & Scope of Sports Medicine.
- * Impact of Surface & Environment on Athletes.
- * Sports Injuries : Classification, Causes & Prevention
- * Management of Injuries : **Soft Tissue Injuries** (Abrasion, Contusion, Laceration, Incision, Sprain & Strain), **Bone & Joint Injuries** (Dislocation, Fractures : Stress Fracture, Green Stick, Communated, Transverse Oblique & Impacted)

Unit X. Biomechanics and Sports

- * Projectile and Factors Affecting Projectile Trajectory
- * Angular and Linear Movements.
- * Introduction of Work, Power and Energy
- * Friction
- * Mechanical Analysis of Walking and Running

Unit XI. Psychology and Sports

- * Understanding Stress, Anxiety and its management.
- * Coping Strategies - Problem Focused and Emotion Focussed
- * Personality, its Dimensions and Types; Role of Sports in Personality Development.
- * Motivation, its Type and Techniques
- * Self-esteem and Body image
- * Psychological Benefits of Exercise.

Unit XII. Training in Sports

- * Strength- Definition, Types and Methods of Improving Strength-Isometric, Isotonic and Isokinetic.
- * Endurance- Definition, Types and Methods to Develop Endurance- Continuous Training, Interval Training and Fartlek Training.
- * Speed - Definition, Types and Methods to Develop Speed- Acceleration Run and Pace Run.
- * Flexibility - Definition, Types and Methods to Develop Speed-Acceleration Run and Pace Run.
- * Flexibility - Definition, Types and methods to improve Flexibility.
- * Coordinative Abilities - Definition and Types

PRACTICAL	Periods 60	Max. Marks 30
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|-----|----------------------------------------------------------------------------------|----------|
| 01. | Physical Fitness - AAHPER | 05 Marks |
| 02. | Athletics - Middle and Long Distance Runs and Throws | 05 Marks |
| 03. | Health and Fitness Activities - Asanas/Swiss Ball/ Plyometric/Aerobics (Any One) | 05 Marks |
| 04. | Skill or any one Team Game of Choice from the given list*** | 05 Marks |
| 05. | Viva | 05 Marks |
| 06. | Record File** | |

* The events being opted must be other than from those administered under Physical Fitness Test.

** 1. Write benefits of Asanas, Swiss Ball and Plyometric.

2. Measure Resting Heart Rate and Respiratory Rate of ten members from family of neighbourhood for three weeks and show graphical representation of the data.
3. Draw a neat diagram of the Field/Court of any one Game of choice. Write its history, Rules and Regulations, Terminologies and Important Tournaments.

*** Athletics, Basketball, Football, Handball, Hockey, Kho Kho and Volleyball.

UNIT - 1

Planning in Sports

Key Points :-

- * Meaning and Objectives of Planning
- * Various Committees and their Responsibilities
- * Tournament - Knock-Out, League or Round Robin and Combination.
- * Procedure to Draw Fixture - Knock-Out (Bye and Seeding) and League (Staircase and Cyclic)
- * Intramural and Extramural-Meaning, Objectives & its Significance.
- * Specific Sports Programme (Sports Day, Health Run, Run for Fun, Run for Specific Cause & Run for Unity).

1.1 Meaning of Planning :

“Planning is a way to systematize, direct and organise the events or competitions and extract the advantage and benefit of the available resources.

“Planning is the process of making a sequence of work for a future line of action”.

The success of Physical education programmes depends upon efficient staffing, food, direction, proper control, well super vision, good co-ordination and minimize the chances of lapses.

Objectives :

- * To reduce undue pressure
- * To provide proper co-ordination among the committees.
- * To have good control over all the activities.
- * To improve efficiency.
- * To reduce the chances of mistakes.
- * To increase the creativity.
- * To enhance the sports performance.
- * To protect existing facilities.
- * Provide new facilities to meet demand.
- * Helps in decision making.

1.2**Formation of Committees and
Their Responsibilities**

Administrative
Director



Executive Committee



Organizing Committee games/ sports

- * Publicity Committee
- * Boarding and lodging committee.
- * Reception committee
- * Decoration ceremony committee

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- * Transpiration committee
 - * Grounds & Equipment committee
 - * Committee for entertainment & refreshment
 - * Committee for entries & programmes
 - * Committee for officials
 - * Awards committee
 - * Medical committee

1.3. Tournament : A series of sports competitions, in which, a team finally wins and rest of the participating lose the matches. It depends on various factors i.e. - No. of participating teams, availability of grounds and equipments, No. of days and funds.

Importance of tournament

- The sportsman learns the discipline by playing tournaments.
- The sportsman meets other sportsman at a single platform.
- He learns ethical values such as honesty, fair play, respect for others.
- Tournaments provides recreation to all, i.e. organizers, spectators, students.

Types of Tournament

A. Knock out : In this type of tournament, the team once defeated, gets eliminated from the tournament. Only the winning teams contest in the next rounds. Opportunities are given to the winning players/ teams.

B. League : In single league tournament all participating teams compete once, with each other, where as in double league, each team plays with every as in double league, each team plays with every other team twice, without any consideration of victory or defeat.

C. Combination Tournaments : Combination tournaments are organized in group or zonal matches. Whenever there is a large number of teams, combination tournaments facilitate the Physical Education Teachers, job. It gives them elbow room to try out new experiments.

There are mainly four types of combination tournaments.

- (a) Knock out cum knock out
- (b) League cum league
- (c) Knock out Cum league
- (d) League cum knock out

D. Challenge Tournament : This type of tournament comes handy when there are one to one contests or there are two players on each side. One player challenges the other and the other player accepts the challenge. Games in which such tournaments are held are - Boxing, Tennis, Table Tennis, Badminton etc. Fixtures in such tournaments are decided according to : (a) Ladder Method (b) Physical method (c) Cobweb Method.

1.4 Procedure to Draw Fixture Knockout

- Step 1.** Divide the total no teams in to two half if total no teams are more than 16 divided than also in quarter.
- Step 2.** Check if total no of team are in power of two i.e. (2,4,8,16,32,64.....) or not.
- Step 3.** If total no of teams are not in power of two then byes will be given.
- Step 4.** Calculate the byes & place them according to the formula.

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- Step 5.** Arrange the match. It should be remembered that match can be arranged between the teams in the same round.
- Step 6.** It should be remembered that if the total no teams are more than 16 the byes of upper half will be placed separately my lower half will be separately.
- Step 7.** In case of seeding or special seeding we calculate the byes of the deducting total no seeding from the total no. of teams.

Formula No. 1. Total no matches = total no of team 1

Formula No. 2. To calculate total no of rounds multiply 2 with 2 continuously (2*2*2*....) unit the multiplication value reaches equal to or more than the total no. of teams than calculate the repetition of digit 2 multiplication which will be equal to total no rounds.

Formula No. 3 total no byes = next power of total no of team

Formula No. 4 If total no teams are even. 2,4,6,8 team in upper half = $\frac{\text{total no team}}{2}$

Team of lower half = $\frac{\text{Total no team}}{2}$

Total no teams are odd (1,3,5,7,9....) then

Team in upper half = $\frac{\text{Total no teams}+1}{2}$

Teams in Lower half = $\frac{\text{Total no teams}-1}{2}$

Formula No. 5

If total no byes are even (2,4,6,8)

Then byes in upper half = $\frac{\text{Total no Byes}}{2}$

Bye in lower half = $\frac{\text{Total no Byes}}{2}$

If total no bye are odd (1,3,5,7)

Then

Bye in upper half = $\frac{\text{Total no Bye}-1}{2}$

Byes in lower half = $\frac{\text{Total no Byes}-1}{2}$

Formula no. 6. When divide the total no of team in quarter then divide the total no. of team my 4 & follow the given table.

$$\frac{4 \mid \boxed{\text{Total no of team}} \mid Q}{R}$$

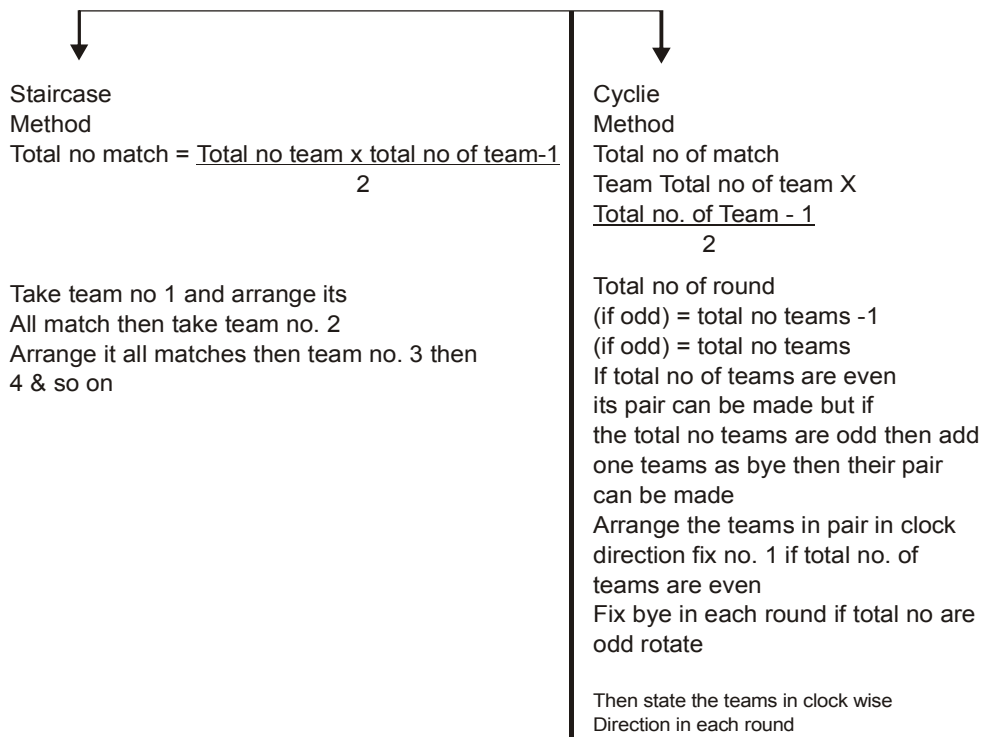
Qsr
If R=0
If R=1
If R=2
If R=3

Formula no - 7 placement of bye :-

1st bye will be given to last team of lower half 1,2,3,4
2nd bye will be given no. 1st team of upper half 5,6,7,8
3rd bye will be given to 1st team of lower half 9,10,11,12
4th bye will be given to last team of upper half 13, 14
5th bye comes besides bye no. 1
6th bye besides bye no. 2
7th besides bye no. 3
8th bye near to bye no. 4 then 9 the bye near to bye no. 5 soon

Seeding placement will follow the same sequence of bye

Procedure to draw the picture (league tournament)



1-5A Intramurals and Extramurals : Meaning, Objectives and its significance

Meaning of Intramurals :-

Intramural is derived from the latin word” Intra” means “within” and “Muralis” means “Wall”, So we can say that the activities, which are performed within the walls or within the campus of an institution are called ‘Intramurals’

Objectives of Intramurals :-

1. To provide opportunity to every student to participate in Games and sports.
2. To develop leadership Qualities among students.
3. To develop Feeling of Cooperation.
4. To provide Recreating.
5. To develop the Feeling of Sports-manship.
6. To provide opportunity to learn a variety of games and skills.
7. To provide opportunity of get Experience of Organisation of Competitions.
8. To find out talented Sportpersons.
9. To provide opportunity of Develop personality.

B. Extramurals :-

Extramural is derived from the latin words “Extra” and “Murals”. Here extra means “outside” and murals means “wall”. So, We can say that the activities which are performed outside the walls of an institution or school, are known as “extramurals”.

Objectives of Extramurals :-

1. To provide Experience to Students.
2. To improve the Standard of Sports.
3. To broaden the Base of Sports.
4. To develop Sportsmanship and Fraternity
5. To provide knowledge of New Rules and Advanced Techniques.

1.6 Specific Sports Programme

Sports and games programmes are arranged in the world as well as in our country to promote the games and sports for a specific cause. Every country in the world has some or other cause for promoting specific sports programmes. The programmes motivate and create the feeling to take part in these sports programmes. People become health-conscious and try to remain fit and stay healthy for as long as possible. These specific sports programmes are usually organized by the federations, state government, NGO etc. to create health consciousness among the people and take part in health related sports programmes.

More and more people of all age groups should take part in such sports programmes. The various important specific programmes are :-

1. Sports Day - A. School - Annual Sports Day
 B. National Sports Day
2. Health Run
3. Run For Fun
4. Run for Specific Cause
5. Run for Unity.

Very Short Questions Answer (1 Marks)

Q.1 What do you mean by planning or explain the meaning of planning.

Ans. It is a predicate process which explain the organization of work administration of work delegation work & supervision of work in detail

Q.2 What do you understand the term bye or what is bye.

Ans. When the total no of teams are not in power of two (i.e. 2,4,8,16,32,64) then byes are given to some team. Those teams get the bye they do not play in 1st round they directly play in the 2nd round.

Q.3. What is seeding or what do you understand by seeding or special seeding.

Ans. Seeding is a special advantage given to last year winner & runner up team or to the good teams of the Tournament with the help of seeding teams can be directly entered in to any round except the final round seeding always given in form of power of two i.e. (2,4,8,16,32).

Q.4. What are the knock out tournament or what do you understand by knock out tournaments.

Ans. In these types of tournaments after loosing 1st match the team gets eliminated from the tournament in the knock out tournament a team will be continue in the tournament until it does not loose any match.

Q.5 What are the league tournament or what are the round robin tournament.

Ans. In these type of tournament all the teams of the tournament will play with each other on the basis of result of all matches the winner & runners up are decided they are of two type
a) Single league b) Double league.

Q.6 What are the combination tournament or what do you understand by combination tournament.

Ans. In these types of tournament initial rounds are played on the basis of specific types i.e. knock out or league and rest of the rounds these tournaments are following types.

1. Knock out cum knock out
2. League cum league
3. Knock out cum league
4. League cum knock out

Q.7. What is the aim of intramural tournament.

Ans. Over all development of child is the aim of the intramural tournament.

Q.8 What is tournament.

Ans. Tournament is a series of matches organized to find out the best team in a particular sports.

Q.9. Enlist various types of tournament.

Ans. There are four types of tournament.

1. Knock out tournament.
2. League tournament.
3. Combination tournament
4. Challenge tournament.

Q.10. Define intramurals

Ans. Intramurals :- Games played inside the school are called intramural most of the students of the school participate in it example :- House competition school athletic meet.

Q.11. Define Extramural

Ans. Games played outside the school in any other institution only selected students from school participate in it.

Q.12. Define Fixture

Ans. The organized method in which team participate in a fixed order and one team is declared winner at the end.

Short Question Answer (3 Marks)

Q.1 What are the objectives of the planning or explain the objectives of the planning.

Ans. Objectives of planning are following

1. To create good coordination.
2. To keep good control
3. To reduce unnecessary pressure of immediacy
4. To minimize the chances of mistake
5. To avoid wastage of money, time & resources
6. To utilize the resources effectively economically
7. To improve the effectiveness of the organization.

Q.2. What are the advantages and disadvantages of the knock out tournament.

Ans. Advantages

Results come early

Requirement of funds are less

Requirement of equipment & officials are less

Competition will be intense due to the nature of elimination.

Disadvantages

- * It may be possible that stronger team being matched together in early round & get eliminated in the early round that can lose the charm of the tournament.
- * It may be possible that weak team got the position in the tournament.
- * Due to the fear of elimination players play with the fear which is not good for his health & sports performance.
- * Talented players some time are not selected due to elimination of their team in early round.

Q.3 What are the advantage & disadvantages of league or round robin tournament.

OR

Write down the merits demerits of the league tournament.

Ans. Merits

1. Only real player/ team has best potential will be the winner of the tournament.
2. Charm of the tournament still maintained though out the tournament.
3. Good team/ player will continues though out the tournament so the chance of selection of good players is still alive.

Demerits

1. Funds are required more
2. Time are required more
3. Result come late
4. Officials & gournnd realized more
5. Equipments are realized more.

Q.4 What are the objective of intramural tournaments of explains the need of intramural.

Ans. **Objectives**

1. Physical development
2. Mutual development
3. Social development
4. To develop good hardships quality
5. To recreate the child
6. To control egression
7. To provide platform to show himself
8. To in case the souse of competitions
9. To develop the qualities of a good header
10. To give the knowledge of the rules of various game

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11. To find out the talented sport man
 12. To develop good personality.

Q.5. What are the objectives of the intramural tournament or need of intramural tournament.

Ans. **Objective**

1. Physical development
2. Mental development
3. Social development
4. To provide knowledge of latest rules regulation of the game
5. To develop good personality.
6. To realize the actual level of the personality (sports man)
7. To development leadership quality
8. To find talented sports persons.
9. To provide recreation.
10. To develop opportunities for mass - participation.

Q.6 Write down the activities for the intramural tournament.

Ans. Major games :- hockey, football, Kho-Kho, Kabaddi etc.

Minor games :- Shuttle run, sag race, triple leg race,
Lemon race etc.

Rhythmic Games :- P.T. Lazium, dumbal, dance etc.

Creative games :- drawing, painting.

Combat games :- Judo, Wrestling, boxing etc.

Q.7 Write down the importance of the extramural tournament.

OR

Write down the importance of the extramural tournament

- Ans.
1. Help in the physical development.
 2. Help in the mental development.
 3. Help in the social development.
 4. Help in the personality development.

- Q.8 Explain the staircase method of league tournament and draw the fixture of 12 teams in staircase methods.

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

Ans. Total Number of team = 9

21

$$= \frac{N(N-1)}{2} = \frac{9(9-1)}{2} = \frac{9 \times 8}{2} = 36 \text{ match}$$

Total number round = n = 9 round

Fixture

I round 9 B 8 1 7 2 6 3 5 4	II round 8 B 7 9 6 1 5 2 4 3	III round 7 B 6 8 5 9 4 1 3 2	IV round 6 B 5 7 4 8 3 9 2 1	V round 5 B 4 6 3 7 2 8 1 9	VI round 4 B 3 5 2 6 1 7 9 8
VII round 3 B 2 4 1 5 9 6 8 7	VIII round 2 B 1 3 9 4 8 5 7 6	IX round 1 B 9 2 8 3 7 4 6 5			

Q.10 What is the difference between Bye and Seeding.

Seeding	Bye
* Given to only winner, runner-up and good teams of the Tournament	Can be given to any term
* Directly entered in to any round Round except final	Can be entered only in second round
* Always given to 2,4,8,16 teams	Can be given to any no of team it can Be calculate by next power of 2-total no. of teams.

Q.11. In a hand ball knockout tournament 12 teams took part out of which strong team like SKV No.1 Seemapur and SKV GT Road lost out in the first round. Due to the exit of these teams the player of the teams became dejected and the spectators excitement also decreased, seeing this the tournament organizers announced that they will organize a consolation tournament.

- a. Why did strong teams like SKV No.1 Seelampur and SKV GT Road exit in the first round of the tournament.
- b. Why did the players of the two teams became sad.
- c. What values are depicted by the decision of the organizers to organize a consolation tournament.

Ans. (A) The hand ball tournament was based on knock out in which losing team goes out of tournament that is why because of losing in the first round the teams of Skv no.1 Seelampur and Skv GT Road went out of the tournament.

(B) Both teams were considered strong contenders of the tournament but because they lost in the first round the players of the teams become dejected.

(C) The organizers should the ability to understand the feeling of the player and the spectators though their a announcement this announcement would motivate player to improve their game and promote the interest of spectators.

Q.12. What is different between Intramural and Extramural.

Ans. Intramural : Game played inside the school are called intramural most of the student of the school participate in it.
Example : House competition, school athlete meet etc.

Extramural :- Games played out side the school in any other institution only chosen students from school participate in it.

Q.13. Explain the procedure (method) to fix byes.

Ans. When the total number of the teams in the tournament are not in the power of 2 then bye is given.

The method of bye is

First find the next power 2 after the number of teams.

Example :- Total team = 11
 Next power of 2 = 16
 Number of bye = $16-11=05$ bye

1. First bye is given to lower half bottom team
2. Second bye is given to top most team of upper half
3. Third bye is given to most team of lower half
4. Fourth bye is given to bottom team of upper half
5. Other byes are determined using this order.

Long Answer Type Question 5 Marks

Q.1 Enlist the committees for organizing sports event and explain any eight committees in detail ?

Ans. Various committees are formed for systematic and smooth conduct of competition / tournament.

1. Committee for publicity.
2. Transport committee
3. Boarding and loading committee.
4. Decoration and ceremony committee
5. Grounds & equipment committee
6. Refreshments and entertainment committee
7. Reception committee
8. Committee on entries and programmers.
9. Committee for officials.

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10. Announcement committee
 11. First aid committee
 12. Accreditation committee
1. Committee for publicity : The committee for publicity announces the date, venues and sports even advance information to the institution and printing etc. Its main responsibility is to advertise the sports events.
 2. Transports committee :- This committee is responsible for providing the facilities regarding transportation of various team to the venue of sports event or to the place of boarding and loading as the case may be.
 3. Boarding and loading committee :- Boarding and loading committee is responsible for making necessary arrangement for providing accommodation and serving meals to the sports persons and officials.
 4. Ground and equipment committee :- This committee is responsible for making the grounds or laying out the track and field this committee also makes necessary arrangements of equipments related to the games / athletic meet.
 5. Reception committee :- The members of this committee are responsible to welcome the chief guests at the opening and closing ceremonies it is also the duty of this committee to welcome the other quests and spectators.
 6. Committee for official :- This committee select various officials such as referees judges recorders starters marshals track umpires time keepers and lap scorers for athletic meet and referee umpires time keepers recorders and judges etc.
 7. Announcement committee :- This committee is solely responsible for making various announcement during the sport meet or games this committee announces regarding opening and closing ceremonies.

8. First aid committee :- First aid committee is headed by a well qualified doctor this committee provide first aid to the victim or affected athlete/ sports person immediately.

Q.7 Explain the meaning of specific sport programs? Explain any four.

Ans. Specific sports programs are those programs of sports which are often not related to th competition these programs are designed with multiple objectives with their focus on the well being or an individual the aims of programme is to create awareness among the common people regarding unity & integrity prevention & protection against various diseases etc.

Specific sports programmes

Sports Day :-

Sports day is organized in the school once in the year so that the all round development of children could be done various physical and recreation activities are conducted on sports day it is organized by almost each and every school on sports day every child gets ample opportunities to take part in activity of there choice. Due to these days most of students get experience as organizer as well as administrator sports day also provide opportunity to select talent for future.

Health Run :-

These programmers are organized by health and sports department to raise the standards of health and also to raise funds for charity registration of participantss is done in advanced and day and time is fixed there is no age bar. People of any age can take part. There is no competition. These provide significant health benefits. But precautionary

measures must be taken before participating i.e. proper sports kit health status of individual.

Run for Fun :-

This is to create awareness among people to keep fit and healthy there is fun and frolic while on the run there is no competition it is commonly organized for arranging funds for charity it can be performed in different customs different age group children like adults teenage etc.

Run for Unity :-

This is to inculcate peace and harmony among the people of different religion of faith. Its purpose may be either national or international brotherhood many people from corporate world film stars and marathon racers from abroad take part, first three position holders get cash prize it can either be a long distance race or a relay. In relay race every participant runs a specific distance and given opportunity to the teammate to participate. So these runs bring sense of togetherness among people.

Q.3 What do you mean by intramurals? Mention the significance of intramurals for school children.

Ans. The word intramural (Intra+murals) within+wall, It means that the activities which are performed within the walls or within the campus of an institution are called intramurals. These activities are organized only for the students of a school or institution. No students of other school can participate in these activities intramural competition is one of the best means to motivate.

All the students of an institution for taking part in the games

and sports “A games for each and each for a game “may be considered the motto of intramurals. These activities are the most pleasurable as well as enjoyable for the students they get maximum educational benefits from such competition so a large number of students must be involved in a wide range of intramurals activities.

Significance of Intramural :-

- * Intramurals are very significant for physical mental emotional and social development of students.
- * These programmes also lay stress on moral and ethical values of students.
- * Intramurals are necessary for the development of health of children.
- * These programmes are also important to calm down the fighting instinct of children.
- * These programmes refresh the children and make them agile.
- * Intramurals provide maximum recreation to the students.
- * Intramurals provide ample opportunities to the students to participate in game and sports.
- * Intramurals are also essential for development the leadership qualities among the students.

Q.5 Make the fixture for 13 teams on the basis of knock out.

Ans. Total no. of matches :-

Total no teams -1 $13-1=12$ matches

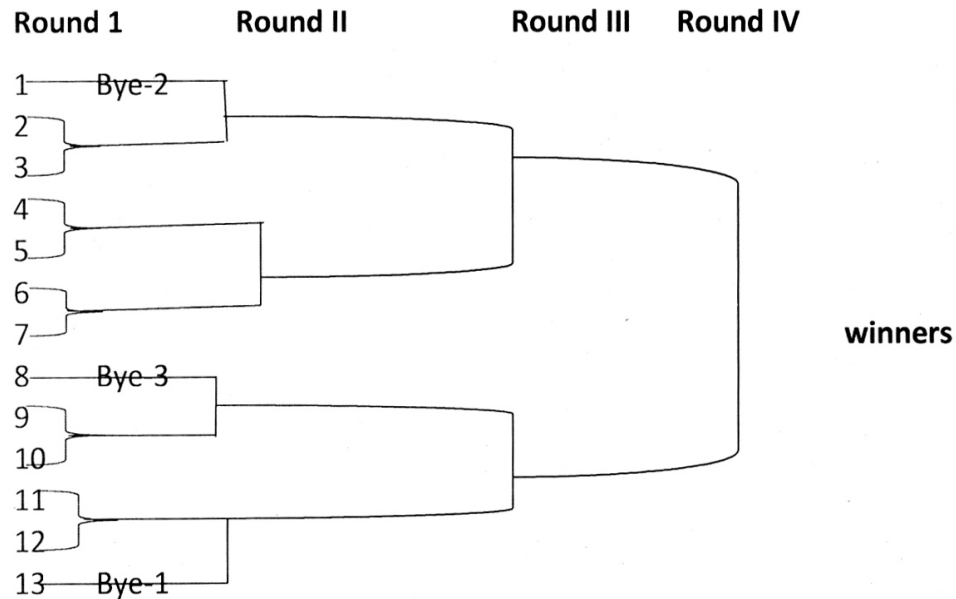
Total no of round = $2*2*2*2$

Digit 2 repeats four time so no of round = 4 rounds

Total no bye :- next power of 2- total no. of team $16-13 = 03$

No of team is upper half= $\frac{\text{Total no of team}+1}{2} = \frac{13+1}{2} = 07$ team

$$\text{No. of teams in lower half} = \frac{\text{Total no of team}+1}{2} = \frac{13-1}{2} = 06 \text{ team}$$



Q.6 Draw the fixture for 24 team on the basis knockout tournament

Ans. Total no matches = Total no of team -1 = 24-1 = 23.

$$\text{Total no. round} = 2 \times 2 \times 2 \times 2 \times 2$$

$$\text{i.e. Digit 2 report 5 times} = 5 \text{ rounds}$$

$$\text{So total no round} = 5 \text{ round}$$

$$\text{Total team in upper half} = \text{Total no of teams} = \frac{24}{2} = 12 \text{ teams}$$

$$\text{Total team in lower half} = \text{Total no of teams} = \frac{24}{2} = 12 \text{ teams}$$

As the total no of teams are more then 16 so we have to divide teams also in quarter.

Teams in each quarter : 4] 24 [6 (Q=6)

$$24$$

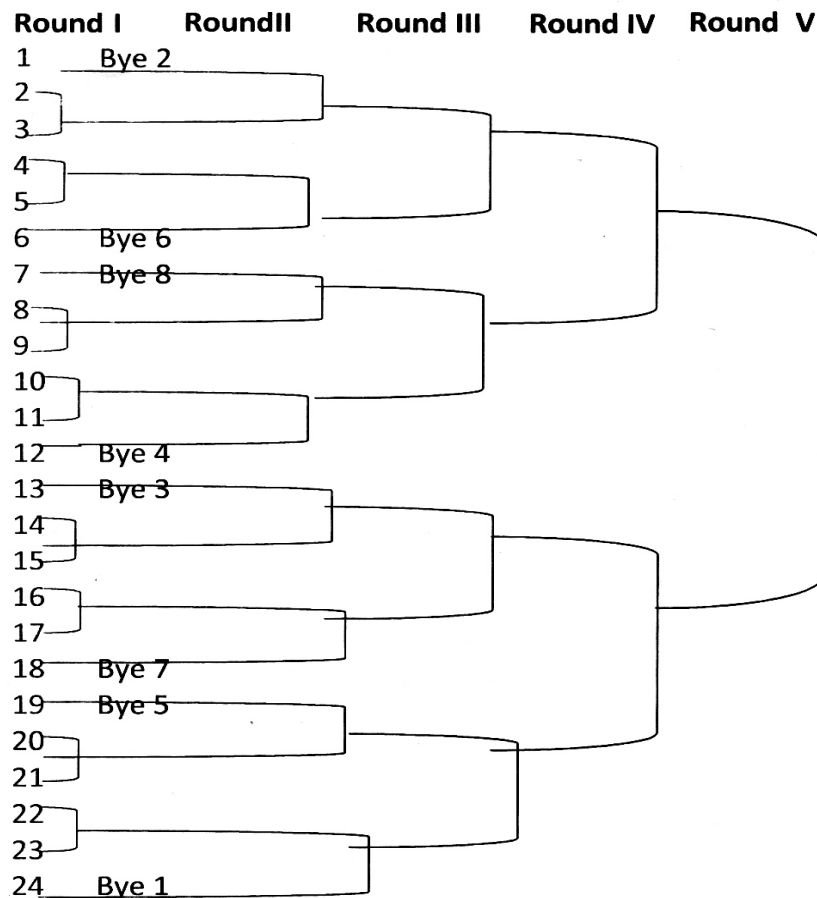
$$R=0$$

Total No bye= next power of two-total no of team

$$= 32-24 = 08 \text{ byes}$$

$$\text{Bye in upper half} = 8/2 = 4$$

$$\text{Bye in lower half} = 8/2 = 4$$



Q.7 Draw a fixture for 11 teams on knock out basic in which 2 teams are special seeding.

Ans. Total no matches = Total no of team -1 = 11-1 = 10

Total no round = $2 \times 2 \times 2 \times 2$

Repatiation of digit 2 is 4 time so total no round = 4 rounds

When seeding is given in fixture, one round is added

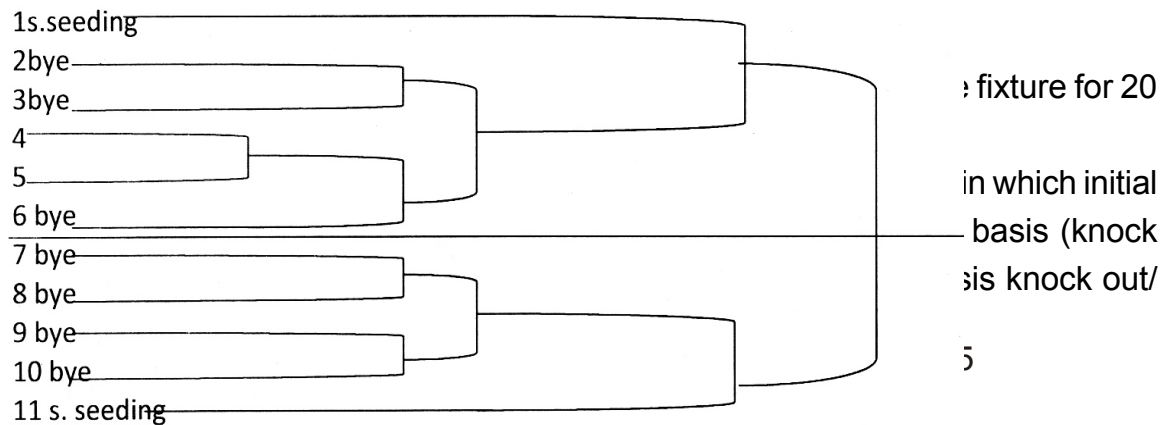
Total no bye :- next power of two -

$$\left[\begin{array}{l} \text{(total no team - no seeding teams)} \\ = 16 - (11 - 2) = 16 - 9 = 7 \text{ byes} \end{array} \right]$$

$$\text{Team in upper half} = \frac{\text{Total no of team} + 1}{2} = \frac{11 + 1}{2} = 6 \text{ teams}$$

$$\text{Team in lower half} = \frac{\text{Total no of team} - 1}{2} = \frac{11 - 1}{2} = 5 \text{ teams}$$

I Round II Round III Round IV Round V Round

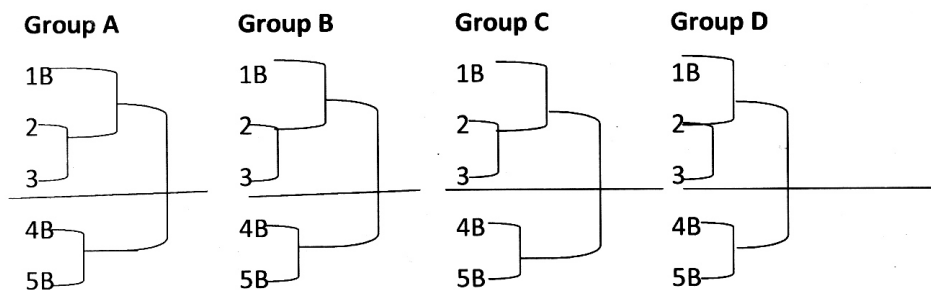


Hear we makes 4 group each group has equal 5 teams.

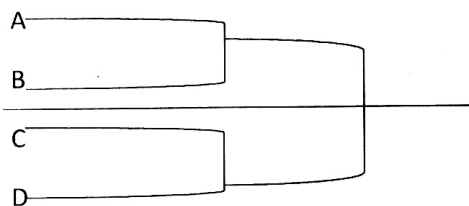
Group - A1, 2,3,4,5 Group (B) - 1,2,3,4,5

Group - (C) 1,2,3,4,5 Group (D) 1,2,3,4,5

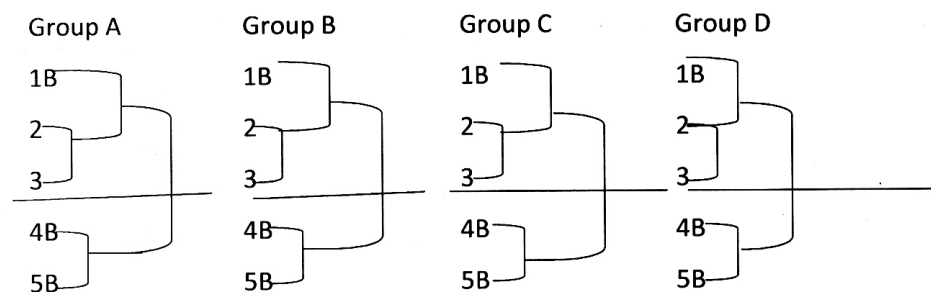
knock out cum knock out



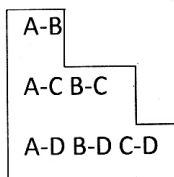
Group winner (a,b,c,d)



Knock out cum league



Group winner group A= (A,B,C,D)



League cum league

Group A

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group B

1-2
1-3 3-4
1-4 3-5 4-5
1-5 3-6 4-6 5-6

Group C

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group D

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group winner =a,b,c,d

A B
A C B-C
A D B-D C-D

League cum knock out

Group A

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group B

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

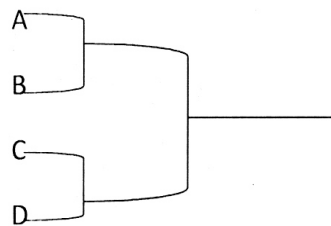
Group C

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group D

1-2
1-3 2-3
1-4 2-4 3-4
1-5 2-5 3-5 4-5

Group winner just like A= A,B,C,D



UNIT - 2

Adventure Sports and Leadership Training

Key Points :-

- * Meaning and objectives of adventure sports.
- * Types of activities - Camping, Rock climbing, Trekking, River rafting, Mountaineering.
- * Material requirement and safety measures.
- * Identification and use of Natural Resources.
- * Conservation of surrounding.
- * Creating leaders through physical education.

2.1 Adventure Sports

Meaning : Adventure sports are such type of sports, which involve extraordinary speed, height, physical exertion*, and surprising stunts.

Objectives of Adventure Sports

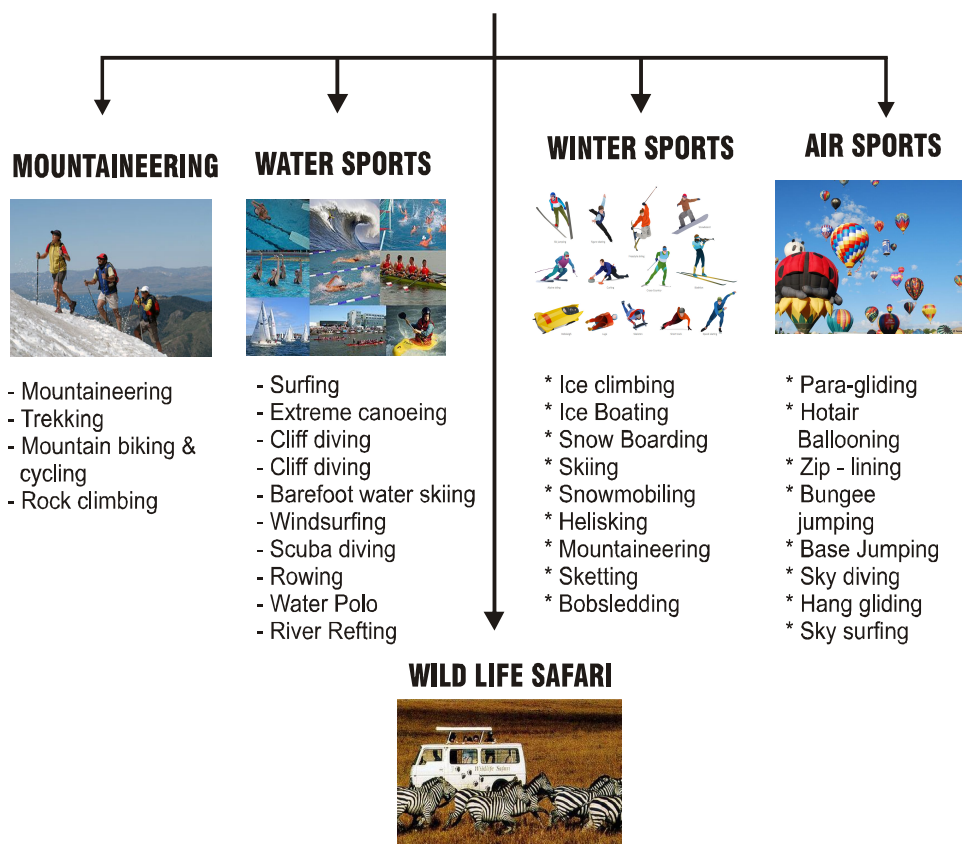
Aim : the main aim of adventure sports is to provide a carefully planned stimulating environment which will help each individual and excellent foundation for creative learning and independence.

Objectives :

- Thrill, excitement and fun.
- Exposure to nature.

-
- Self assessment.
 - Over come fear and develop self confidence
 - Enhancement of decision making power.
 - Channelizing energy.
 - Stress booster.
 - Information and knowledge enhancement.
 - Development of positive attitude toward life.
 - Build concentration.
 - Encouragement of social relationship and teamwork.
 - Develop motor and cognitive skills, creative learning
 - inculcate values amongst children.

2.2 Types of Adventure Sports



2.2 Types of Activities

Camping :- Camping means going away temporarily to a place having temporary accommodation. It is like going away from home to a new home (camp) with limited facilities. There are various types of camping such as scout camp. N.C.C. camp N.S.S. camp. Sports camp. adventure camp and social camp etc.

Rock Climbing :

Rock climbing is a sport in which participants climbs up, down or across a natural rock or artificial rockwalls. In rock climbing, the objective or goal of a climber is to reach the end point or summit of a predecided route without falling. There are different types of climbing such as Aid climbing freeclimbing, trad or traditional climbing "Sport climbing top rope climbing free soloing and bouldering.

Trekking :

Trekking means going on a long and difficult journey, especially on foot. Its course often includes journey over mountainous regions and woods.

Types of trekking

- a) Easy trekking :- The individuals specially the beginners are offered easy treks.
- b) Moderates trekking :- Moderates treks are slightly difficult and challenging than easy treks.
- c) Strenuous trekking :- Strenuous trekking a lot of physical effort energy and determination.
- d) Difficult trekking :- Such type of trekking is suitable only for real adventure seekers.

River Rafting :

River rafting is another adventure sport. It is a river journey under taken on a raft or boat made of inflatable material. The difficulty of river rafting is from grade I to VI

Mountaineering :- Mountaineering is another type of adventurous sports prevailing all over the world. It is one of the finest outdoor oportunities available to the lovers of high places. Mountaineering is an adventurous sports that combines climbing and hiking up mountains or mountain terrains.

2.3 Adventure Activities :- Equipment Required and Safety Measure Camping is Base for all Adventure Activities.

Camping :-

Equipment Required :- Tent, Ground Cloth, Poles, rope, Mat, Dust bin, Sleeping Bag, Compass, Water Bottel, Matches, Utensils, Cooling items, proper clothing, Rain Gear, Toilet Paper, Whistle, Sunglasses, Scissor, First aid box, watch etc.

Safety Measure :- Camping sight, must be plain and clean, never approach wild animal, always be alert and aware of your surroundings, look out for snakes, spiders and other creatures, protect your eye, maintain discipline, careful around water, pay attention to weather condition etc.

Rock Climbing :-

Equipment Required : Helmet, Harness, Rope, Cord and webbing, carabiners, Belay device, slings, ascenders, discenders, specialized clothing, pully, rock climbing shoes etc.

Safety Measure :- Choose appropriate venue, Find in

experienced mentor, Always check harness and all Equipment, Check your knot, do Not cross your legs etc.

Trekking :

Equipment Required :- Proper clothing, Water Bottle, Rucksack, Rain Gear, Sun Hat, Sun Glasses, Sleeping Bag, Basic First aid Kit, Toiletries, Knife, Rope, Map & Compass etc.

Safety Measure :- An experienced group leader required, ensure your trekking route, use ankle boots, always trek in group, keep sufficient food, know about flora and fauna of your route etc.

Mountaineering :-

Equipment Required :- All Equipment of camping, trekking and rock climbing, avalanche rod, Climbing boot, ice axe, ice piton, ice hammer. Crampon, boot cover etc.

Safety Measure :- Mountaineering must be followed by an experienced guide, all safety measures of camping, rock climbing, and trekking must be followed, be cautious of avalanche etc.

River Rafting :-

Equipment Required :- Swim suit, additional cloth, sunshade, cap, sunglasses, plastic bags for wet things, Helmet, tennis shoes, sand socks, flashlight, sunscreen, personal medication, life jacket or vest, first aid box, water proof bags. All kitchen and camping equipment.

Safety Measure :- Don't go river rafting alone. Swimming ability is required. Wear life vest and helmet. Check equipment for defects. Raft only in day time.

2.4. Identification and Use of Natural Resources

Natural Resources :- Our natural resources are materials

that sustain life on the earth such as air, water minerals and other raw materials.

- a) **Renewable Resources :-** Renewable resources are those natural resources which are filled again naturally such as sunlight. Air and wind etc.
- b) **Non-renewable Resources :-** Non Renewable resources are those natural resources which are either formed very slowly or are not formed naturally in the environment.

2.5 Conservation of Surrounding or Environment

“Environment conservation refers to the practice of protecting the environment, On individual, Governmental levels.”.

Conservation of surrounding or environment simply implies the sustainable use as well as management of natural resources such as wild life water, air, energy and earth deposits mean everything the everything which surrounds us. The aim of conservation of environment is the balanced and appropriate use of Natural resources so that neither so that the Environment is effected nor the coming generation is deprived of them.

Suggestions for conservation of surroundings or environment.

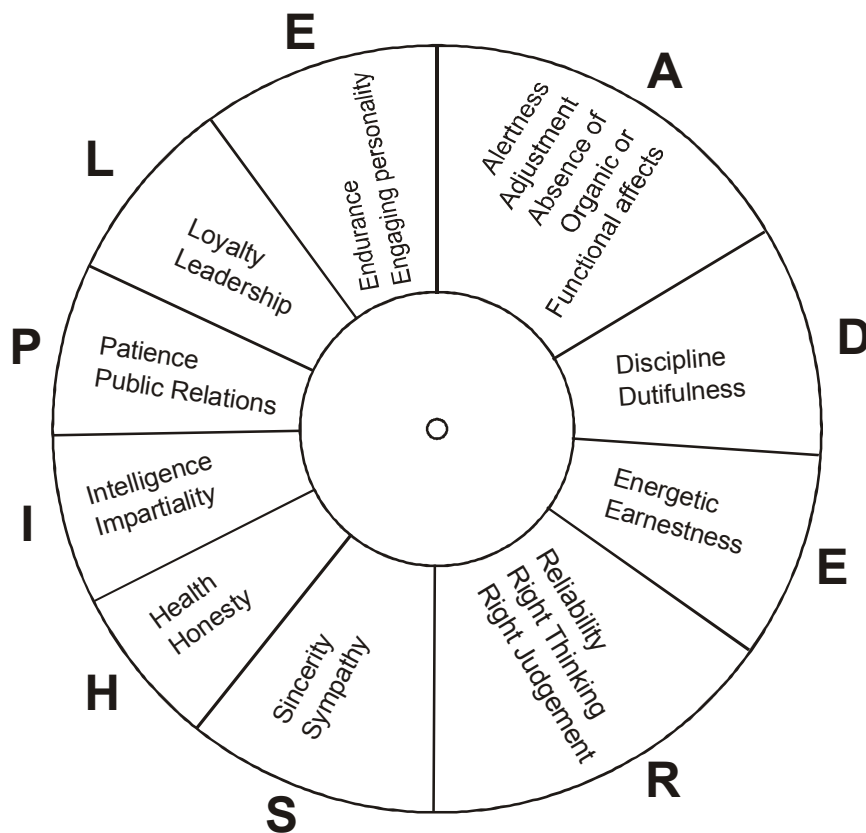
All the government and non government organization should take their responsibility more effectively. Everyone should make one's best efforts for conservation of natural resources.

Suggestions for conservation of surroundings or environment to the persons related to adventure sports.

-
- * Don't wash your clothes in water streams.
 - * Used plastics should not be littered in mountains, disposed off in valleys, buried or burnt or washed away in rivers.
 - * Don't litter mountains while trekking, hiking or mountaineering.
 - * Don't leave burning embers or fire while camping.
 - * Don't remove or cut trees herbs. shrubs for the purpose of burning fire or cooking during expedition.
 - * Refrain from polluting waters with human and kitchen waste.

2.6 Creating Leaders Through Physical Education.

Leadership :- Leadership is the quality of a person to lead others in a family, society, tribe, group, or country.



Leadership Through Physical Education

- * Selecting captains of teams with suitable leadership skills.
- * Providing students with the opportunity to take decisions about their team.
- * Forming committees and sub. groups led by students to undertake various functions.

Very Short Answer Type Question 1 Marks



orts.
are such type of sports which involve
l, height, physical exertion and surprising

nturous sports.

Ans. Trekking, Mountaineering, River rafting, Rock climbing.

Q.3 What are renewable resources?

Ans. Renewable resources can be recovered naturally, Some of the renewable resources are sunlight, air, water, etc.

Q.4 What are non renewable resources?

Ans. Non renewable resources either form slowly or do not naturally

form in the environment as coal, petroleum, etc.

Q.5. What is conservation of environment?

Ans. Conservation is the sustainable use and management of natural resources including wildlife, water, air, and earth deposits.

Q.6 Define leadership?

Ans. Leadership is the quality of a person to lead others in a family, society, tribe, group, or country.

Q.7 What is river rafting?

Ans. River rafting is adventure sport. It is a river journey undertaken on a raft or boat made of inflatable material.

Q.8 List the equipment required for camping.

Ans. Tent, sleeping bags, first aid kit, multi tool box, bags for handling wastes, torches, food, mosquito, net or mosquito repellent.

Q.9. Write the objective of adventure sports.

Ans.

1. To do something unique and daring in the field of sports.
2. To accept the challenges posed by nature and natural surroundings.
3. To promote the spirit of risk taking and team work.
4. To serve as a training ground for future leaders in physical education.

Q.10. What is trekking?

Ans. Trekking is long adventurous journey undertaken on foot in areas where common means of transport are generally not available.

Short Answer type Question**(80 to 90 words) - (3 marks each)**

Q.1 What are the equipments and safety measures required for rock climbing?

Ans. In this type of activity one should climb on a rock or mountain. This training is necessary for mountaineering. The following are the equipment and safety measures required for rock climbing.

Equipments :- Helmet, rubber, climbing shoes, climbing ropes/ high strength cord, anchors, harness or a set of ropes for fastening, carabineers or hooks with safety locks, belay devices, rappel devices, belay gloves, ascenders, slings, nuts, pitons and camming devices, daisy chains.

Safety Measures :- Venue must be appropriate for rock climbing, all the activities must undergo by a trained/ experienced mentor, all the equipments should be checked before use, lead climber should come down at last.

Q.2 What are the equipments and safety measures required for mountaineering?

Or

What steps should be followed before going to mountaineering?

Ans. Mountaineering is an adventure sports which includes Trekking, climbing and skiing mountains. In this type of sports, we divide it into 4 parts -

Landcraft or Jungle craft, rockcraft, snowcraft and icecraft.

The following equipments and safety measures are required for mountaineering.

Clothing :- Jackets, mats, woolen socks, gaiters.

Equipment for camping - tents, sleeping bags, camp chairs,

stove and utensils, food, water lanterns or flash light, food for cooking.

Equipment for mountaineering :- Ice axe, Helmets, Ropes and rope bags, Head lamp, slings, (metal plate with spikes), sackbacks, camping devices (protection devices, Pulley and ascenders, carabineers and hooks with safety closures or springs, belaying and rappel devices, ice screws, nuts and hexes, harnex (straps and fitting for fastening), oxygen (cylinders and mask).

Safety Measures :- Mountaineering activities must be done under the experts and experienced leader, should have a thorough knowledge of track route of mountaineering, one should know flora and fauna or the route, always be alert and aware of your surroundings, keeps sufficient food for the group, all the equipments should be checked before use, beware of avalanche.

Q.3 What are natural resources?

Ans. Natural Resources

Air :- Air is one of the most important natural resource, living organisms cannot live without it. It is essential for their survival.

Water :- Water is also very essential for life. It is one of the important constituent of protoplasm (living substance) and other body fluids. Water is an important medium needed for various life processes in living organism (plants and animals)

Forest :- Forest is a natural ecosystem having trees of different species and vegetation of different kinds.

Fossil Fuel :- Fossil Fuels are the fuels formed by natural processes in the earth's crust over millions of years. The major fossil fuels are coal, oil and natural gas.

Value Based Question :-

Q.4. Delhi Government schools went for Rishikesh- Neelkant trek. Rakesh, one of the student of these school decided to clean plastic waste and other waste of this 8km trek. He motivated all his friends to put waste in a bag as to keep environment clean.

- i) What did Rakesh decided during the trek?
- ii) What did Rakesh motivated to his friends to do?
- iii) Which value Rakesh shows during the trek?

Ans.

- i) Rakesh decided to clean the waste the trek, during the trek.
- ii) Rakesh inspired his friends to clean the environment by cleaning the leftover waste from the trek.
- iii) Following values were shown by Rakesh during trekking.
Leadership skills
Environment Friendly
Inspiring Others.

Long Answer Type Questions (150 to 200 words) (5 marks each)

Q.1 What are do's and don'ts for Adventure Activities?

Ans. Do's :-

Adventure activities must be organized under the expert guidance.

Proper knowledge of sight and route.

Ensure safety of participants.

Keep first aid arrangement.

Arrangement of good quality of equipment.

Be prepared to face weather change while you are camping.

Bio-degradable and non-biodegradables waste products should be thrown in proper bins.

Cleanliness should be maintained on camp site.

Fire should be properly extinguished during camping in forests or hilly areas.

Don't :-

Throw eatables and empty bottles on camp site.

Clothes and utensils should not be washed in running rivers and canal waters.

Used plastic cans and aluminum and toffee wrappers should not be thrown on hills and mountains.

People should not defecate and urinate near river banks.

Raincoats or clothes that have been only been used once should not be left in hills.

Cutting or tress is prohibited in forest and hilly areas during camping.

Drinking water river canal water should not be polluted under any circumstances.

There should be no noise pollution during trekking that can disturb the lifestyle of wild animals.

Deforestation is prohibited in forest and hilly areas during camping.

Q.2. How adventure sports helps to inculcate the quality of leadership?

or

How does leadership quality develop through participation in physical education?

Ans. Leadership is nothing but the quality of a person to lead a group. Through participation in adventure sports a numerous quality of leadership develops. They are as -

L : Loyalty, Leadership

E : Endurance, Engaging personality

A : Alertness, Adjustment, Absence of organic or functional defects, Ability to coordinate activities .

-
- D : Discipline, dutifulness, dependability, desire to help others.
E : Energetic, earnestness.
R : Reliability, right thinking, right judgement.
S : Sincerity, sympathy, self control, sociability, scholarship, sacrifice, super motor capacity.
H : Health, Honesty
I : Intelligence, industriousness, impartiality, interest in teaching.
P : Patience, perseverance, personality, physical skills, public relations.

When a student or individual take part in adventure sports he or she develops the above qualities. By assigning the duties in physical education it develops confidence, to lead their team. By doing adventure activities, it develops the discipline, confidence and the ability to take decisions. By taking part in those activity the student become energetic, reliable, social and honest.

Different adventure sport activities develop the quality of patience, public relation and it grooms the personality of an individual. Hence at last we can say that through participation in adventure and sports, we can develop the leadership qualities in the individual.

Q.3 What are the objective of adventure sports?

or

How adventure sports helps in achieving the objectives of physical education?

Ans. The objective of physical education are the development of an individual mentally, socially and emotionally fit. Through participation adventurous sports, following objectives can be achieved.

To develop self confidence :- By overcoming the fear and experiencing the thrill one can develop self confidence.

To build the concentration :- In these sports a person has to be very alert and attentive all the time. It develops the concentration.

To develop mental and physical fitness :- These sports help in developing the mental and physical fitness. Such sports fitness skills like jumping, climbing and swimming etc.

To improve social relations :- During participation in adventure sports qualities like sympathy co operation, helpfulness, adjustment, group cohesion, unity, sincerity, patience, fraternity are developed.

To have bonding with Nature :- Most of the adventure sports are outdoor activity which give enough opportunities to experience nature which develops the bonding with nature.

To face the challenges against the Nature :- These sports enhance one's capacity to deal with odd situations with courage and determination.

Proper use of abundant energy :- Adventure sports provide the participant a positive and a healthy channelization of their abundant energy.

To provide amusement and excitement :- It is the vital objective of adventure sport to provide amusement and excitement.

To encourage creativity :- These sports allow and encourage creativity of an individual.

Inculcate adventure :- Motivate to learn sportsmanship.

UNIT - 3

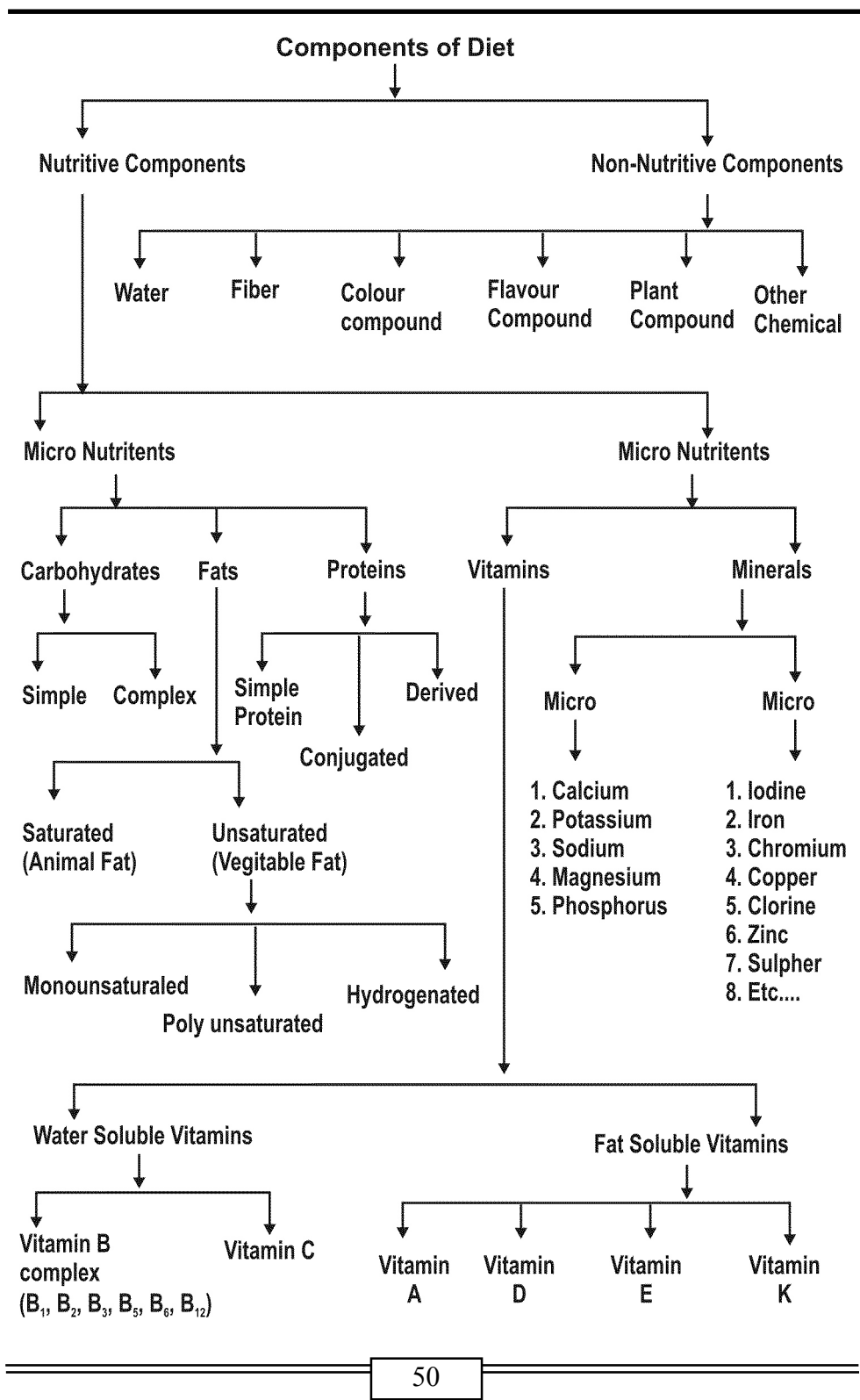
Sports and Nutrition

Key Points :-

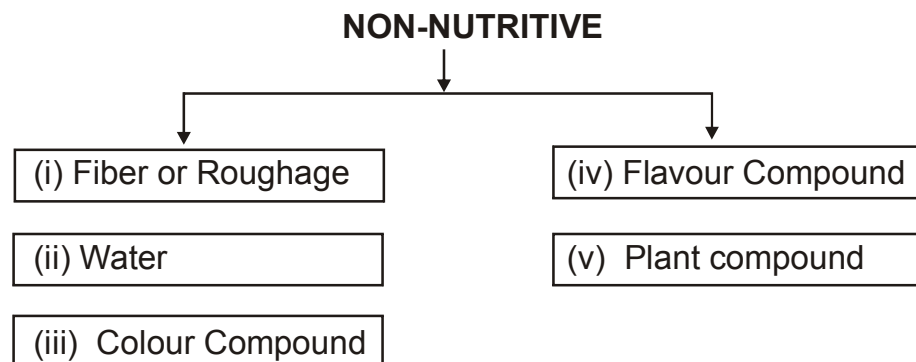
- * Balanced Diet and Nutrition : Macro and Micro Nutrients.
- * Nutritive and Non-nutritive components of diet.
- * Eating disorders - Anorexia Nervosa and Bulimia.
- * Effects of Diet on performance.
- * Eating for weight control - A healthy weight, the Pitfalls of dieting, Food Intolerance and Food myths.
- * Sports Nutrition (Fluid & Meal intake, pre, during and post competition).

3.1

- A. Balanced Diet :-** A complete food, a diet contains adequate amounts of all the necessary nutrients required for proper growth & maintenance of body.
- B. Nutrition :-** It is the process of obtaining & consuming food or breaking down food & substances taken in by the mouth to use for energy in the body.
- C. Nutrients :-** The energetic food in our diet consists of various types of essential chemicals for our body termed as nutrients :- e.g. Protein, fat, carbohydrates, vitamins & minerals.



3.2 Non-Nutritive Components of Diet.



3.3 Eating Disorders - (i) Anorexia Nervosa & Bulimia.

A. Anorexia Nervosa - It is a serious & potentially life threatening mental illness. The eating disorder is characterized by self-starvation & excessive weight loss. It is caused by genetic predisposition & a combination of environmental, social & cultural factors.

B. Bulimia Nervosa :- It is an eating Disorder characterised by recurrent binge eating followed by compensatory behaviour such as purging or consuming large amount of food in a short amount of time followed by frantic efforts to avoid gaining weight. By Self induced vomiting, excessive use of laxatives, enemas or diuretics or excessive exercise.

Treatment :- Psychological Therapy, medication, Hospital treatment balanced Diet eating roughage Education etc.

3.4 Effects of Diet on Performance.

Good diet and nutrition can improve sporting performance. Any diet which has all constituents of food, necessary for the maintenance and growth of body in sufficient amount is important for all people busy in simple work or in highly competitive sports.

3.5 Eating for weight control :-

(i) A healthy weight is a weight that lowers your risk for health problems, generally body mass index (BMI) and waist size are good ways to achieve healthy weight. Methods to calculate BMI - $\text{Weight in Kg} / (\text{Height in m})^2$.

Category	BMI
Under Weight	<18.5
Normal Weight	18.5 - 24.9
Over Weight	25 - 29.9
Obesity Class I	30 - 34.9
Obesity Class II	35 - 39.9
Obesity Class III	35 - 39.9

Eating for weight control :- Factors to control body weight

- * Balanced diet
- * Drinks lots of water
- * Eating lot of fibrous food
- * Regular Medical Checkup
- * Avoid Fats
- * Medicine only by doctors advice
- * Physical Activity
- * Avoid Drinking
- * Avoid Junk food
- * Meals in small shifts
- * Follow Hygenic Habits
- * Do not Dieting
- * Never Try sliming pills
- * Avoid over eating
- * Balancing the intakes of calories and expenditure of calories.

B. Pitfall of Dieting

An individual who is overweight wants to reduce weight they starve for reducing weight many times skip meals to lose weight, sometimes take slimming pills.

- * Extreme Reduction of Calories.
- * Restriction on some nutrients
- * Skipping meals
- * Intake of calories through drinking
- * Under estimating the calories.
- * Intake of labelled foods.
- * Not preferring physical activities.
- * Low energy diet.
- * Taking energy diet.
- * Starving

C. Food Intolerance

Food intolerance is that when a person has difficulty in digesting a particular food.

Symptoms : Nausea, Vomiting, Pain in joints, headache and rashes on skin, Diarrhoea, sweating, palpitations, burning sensations on the skin stomach.

Causes :

Absence of activity of enzymes responsible for breaking down the food elements. These are usually innate sometimes diet related or due to illness.

Management :

Change in diet causing reaction some therapies like fructose intolerance therapy, lactose intolerance therapy, histamine intolerance therapy can be applied.

D. Food Myth/ Dieting Myths.

(i) Myth :- Low fat or no fat diet are good.

Fact :- Body needs fats for energy, tissue repair and to transport vitamin A,D, E,K. Just cut down on saturated fat eating unsaturated fats.

(ii) Myth Crash :- Dieting or Fasting may lose weight.

Fact :- it may be true in short term but ultimately it hinders weight loss. Losing over the long term burns off fat whereas crash dieting or fasting not only removes fat but also loses muscles.

(iii) Myth :- Food eaten late night is more fattening.

Fact :- it doesn't make much change.

(iv) Myth :- Low fat milk has less calcium than full fat milk.

Fact :- Skimmed and semi skimmed actually have more calcium because it is in watery part and not in creamy part of milk.

(v) Myth :- Vegetarian cannot build muscles.

Fact :- Vegetarian can build muscles as meat eaters by getting their proteins from vegetables such as cheese nuts pulses. etc.

(vi) Myth :- Healthy food is expensive.

Fact :- Tinned, stored, packed food is expensive, whereas local & seasonal food is inexpensive.

3.6. Sports Nutrition (Fluid & meal intake, pre, during and post competition)

Eating Diet before exercise :

1. The meal should be taken at least three to four hours and snacks at least one to two hours before exercise, to give us time for digestion.
2. The diet should include starches such as cereal, bread and

-
- fruit, to give us a slow, steady release of energy.
3. We should avoid simple sugars because they increase insulin level, which in turn reduces our blood glucose and make us feel tired.
 4. To avoid dehydration, include plenty of fluids in the diet.
 5. As fat and protein take a longer time to digest, avoid such diets before exercise.

Eating Diet during exercise :

1. Take small sips of water and other fluids even if you do not feel thirsty.
2. Drinking liquid glucose to save your own limited stores of glycogen.

Eating Diet after exercise:

1. Drink lots of water and other fluids to replace any loss or fluid.
2. The food should be rich in carbohydrate within an hour of exercising even if we do not feel hungry, to restore glycogen stores quickly.

Very short Answer type Question (1 Mark Each)

Q.1 Mention the types of carbohydrate?

Ans. Two types simple & complex.

Q.2. List down simple types of carbohydrates?

Ans. Glucose, Galactose, Fructose, Maltose, Sucrose lactose.

Q.3 State complex carbohydrates types ?

Ans. Starch, Glycogen, Dextine, Cellulose are the types of complex carbohydrates.

Q.4 How many amino acids are found in proteins?

Ans. 23 amino acids and 9 are essential for us.

-
- Q.5 State two Non Nutritive components of Diet?
Ans. Water & Fibers of Roughage coloured, flavoured.
- Q.6 Which type of vitamin B are found in diet?
Ans. Vit. B₁, B₂, B₃, B₅, B₆, B₁₂, = 6 Vit. B.
- Q.7 Mention two diseases which come from deficiency of protein?
Ans. Kwashiorkor & Marasmus.
- Q.8. Name the macro minerals which should be part of our diet?
Ans. Calcium, Iron, Sodium, Phosphorus, Iodine, Potassium.
- Q.9 List down four myths about dieting?
Ans. (i) Healthy food is expensive.
(ii) Dieting makes you lose weight.
(iii) No fat diet is good.
(iv) Don't take milk immediately after eating fish?

Short Answer Type Question (80 to 90 words) (5 marks each)

- Q.1 Explain Balanced diet and its function in our body?
Ans. Balanced diet :- Balanced diet is that which is consisted of various constituents of food in accurate and appropriate quantity and quality according to the requirement of individual.

Functions of Balanced diet :-

- (i) Sufficient energy is given by balanced diet.
- (ii) it helps individual to grow and develop to optimum level.
- (iii) Proper functioning of organs is done by balanced diet.
- (iv) It helps to repair or replace the worn out tissue.
- (v) Balanced diet improves the defence of body.
- (vi) It helps to improve the overall health status.
- (vii) Balanced diet improves metabolism.
- (viii) it prevents deficiency diseases and maintain body weight thus overall efficiency of individual improves.

Q.2 Mention micronutrients which are important for body?

Ans. Vitamins and minerals are micro nutrients which are needed for our body in small amount but they have their importance for body.

Vitamin A - This vitamin is also known as Retinol, needed for Normal growth & development.

Vitamin D- This is needed for formation of strong bones & teeth.

Vitamin E - It protect the cell membrane.

Vitamin K - It helps in blood clotting.

Water soluble Vitamin :- Vit. B. - Known as Thiamin. It helps in growth & development.

Vitamin C - It known as Ascorbic Acid. It helps to maintenance of ligaments.

Minerals : IRon :- It needs for formation of haemoglobin.

Calcium : - It resources for bone and teeth formation.

Phosphorus :- It makes strong teeth & bones.

Sodium :- It helps nervous system for better neuromuscular responses.

Lodine :- Deficiency causes Goitre.

Fluoride :- It helps teeth & nails.

Chloride :- It helps body to fight against infection.

Q.3 Write importance of protein for our body?

Ans. Proteins are basic structure of all living cells. Proteins are main components of muscles, tendons ligaments, organs glands, glands and all living body fluids like enzymes hormones and blood.

Proteins are needed for growth & development of body. If helps to repair or replace the worn out tissues. It does not provide energy in normal routine whereas it acts as energy

source only under extreme starvation. Proteins are required for making blood, muscle, Nails, skin, hair and body parts and repair them when needed and are important in some situation like early development and maturation, pregnancy lactation, or injury like burn etc.

Q.4 Write difference between types of carbohydrate simple and complex carbohydrate?

- Ans.
- (i) Simple carbohydrate give quick energy on the other hand complex carbohydrates release slow energy.
 - (ii) The types of simple carbohydrates are Glucose, Galactose, Fructose Maltose, Sucrose, Lactose. Complex are starch, Glycogen, Dextrin and Cellulose.
 - (iii) Simple carbohydrate are called mono saccharides while complex are called polysaccharides.
 - (iv) Simple carbohydrate are sweet in taste but complex are not sweet in taste.
 - (v) They can be absorbed quickly other side complex carbohydrates takes time.
 - (vi) Simple carbohydrates can be dissolved in water but complex not.

Q.5. Mention five pitfalls of dieting

Ans. Following are pitfalls of dieting -

1. Extreme Reduction of Calories : - Person reduces the diet considerably which causes low level of energy thus person feels tiredness body aches.
2. Skipping meals :- People often skip meals to reduce weight whereas in next meal they take large amount of food.
3. Low energy Diet :- The person takes diet without fats

-
- and less carbohydrates by which health is affected.
4. Not performing physical Activity :- People often consider that reducing diet for controlling weight but they neglect physical activities which is equally important for healthy Lifestyle.
 5. Taking less Liquid :- People often think that drinking water or liquid makes them to gain weight which is wrong.

Q.6. How water is useful for us ? Explain Briefly?

Ans. Water is a very useful component of our diet because. Blood comprises 90% of water with help of water through blood the nutrients are carried to various parts of the body. It is important for secretion of waste products. It regulates body temperature. Our body loses approximately 2% of our body weight or water per day. We compensate this loss of water by drinking water and by intake of food substances. It also functions as a lubricant, keeps the skin moist and protects the body from shock. Amount 20% of water intake comes from food and remaining intake comes from drinking water.

Q.7 How food intolerance is treated? What are systems Explain in brief?

Ans. Food intolerance is treated by medical help where we know the food which causes problem. Food intolerance is more common than food allergy. Food intolerance is a term used widely for varied physiological response associated with a particular food. The individual elements of certain foods that cannot be properly digested and absorbed by our digestive system.

Systems of Food Intolerance :

Food intolerance can cause nausea, stomach pain, Diarrhoea, Vomiting, Flatulence Gas, Cramps heart burn, headache, irritability, or nervousness etc.

Q.8 What do you mean by bulimia Nervosa? Mention causes?

Ans. It is eating disorder characterized by binge eating and consuming a large amount of food in short time and after taking food persons try to get rid of one of consumed food, by vomiting taking a laxative or excessive exercise to reduce weight.

Two causes to Bulimai Nervosa.

- (1). Purging Type - Individual which has this type of vomit (self induced), a use of laxatives or diuretics (water pills) to avoid gaining weight from binge.
- (2). Non purging type - Individual engages self in regular fasting or excessive exercise.
 - (i) Abnormal levels of Hormones
 - (ii) Dietary.

Q.9 Is fat useful or not useful for us and for body, explain?

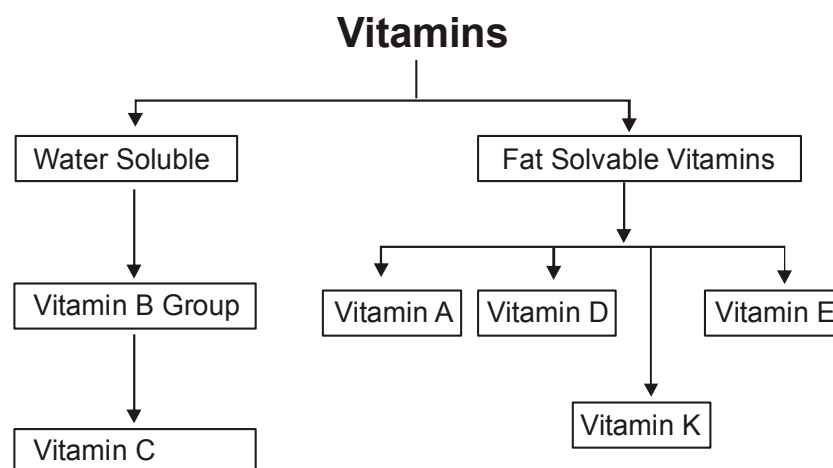
- Ans.
- (i) Fats are store in body and are used as emergency sources of energy.
 - (ii) Fats are important sources of energy for long duration activities and important for proper function of glands and other internal organs.
 - (iii) It helps in transpotation of fat soluble Vitamins A,D.E.K.
 - (iv) it help in blood clotting maintenance of skin & hair.

Our diet should consist of 5 to 10% of fat higher in take of fat high risk of obesity and many heart diseases.
 - (v) Fats maintain body temperature and protect it from

-
- effect of external temperature.
- (vi) They make body soft & oily.

Q.10 Explain fat soluble vitamins and their sources and water soluble vitamins and their sources.

Ans.



Fat Soluble Vitamin

- Vitamin A** Vitamin A is found in Cod liver Oils/animal Liver, yolk, Milk, & Milk products.
- Vitamin D** Vitamin is found in milk, fish, Liver oils?
- Vitamin E** Vitamin E is found in Green leafy Vegetables, Pulses, Liver eggs, cereals.
- Vitamin K** In tomatoes, Potatoes, Spinach, cabbage, soyabean, fish, cauliflower wheat, eggs, meat, we can find vitamin K.

Water Soluble Vitamins

- Vitamin B** Vitamin B - Sources include peas, pork Liver, Legumes
- B2** -- We can find in liver, eggs, dark green vegetables,

		legumes, whole and enriched grain produced milk.
B3	--	Liver Fish, poultry meat, peanuts, whole & enriched grain products.
B5	--	Pork, meats whole grains, cereals legumes, green leafy vegetables.
B6	--	Cereals, grains, legumas, vegetables, milk, cheese, eggs, fish liver, meat, flour.
B12	--	Fish, red meat, poultry, milk, cheese, eggs.
Vitamin C		Lemon citrus fruits like grapefruits, oranges, and kiwis, other good sources mango, papaya, pineapple.

Long Answer Type Question (150 to 200 Words)
(5 Marks Each)

Q.1 What is Balanced Diet? How it is important for individual body?

Ans. Balanced diet in that diet which consisted of various constituents of food in accurate and appropriate in quantity and quality according to the requirement of an individual and helps in growth and development of our body.

Importance :

- (i) **Energy Resource** :- It gives sufficient energy to body for various activities.
- (ii) **For optimum growth & Development** :- It helps individual to grow and to achieve the aim of all round development.
- (iii) **Proper function of Organs** :- By help of balanced diet every organ functions well and properly.
- (iv) **Faster Recovery** :- It helps to repair and replace the worn out tissues thus faster recovery.
- (v) **Strong immune system** :- It make better resistance power

-
- to body to make good immune system.
- (vi) **Improves fitness level** :- It improves over all health states and resulting in fitness of body by preventing diseases.
 - (vii) **Improves Metabolism** :- Quality of metabolizing and thus efficient release of energy.
 - (viii) **Prevents Deficiency Diseases** :- It gives all necessary nutrients to body so deficiency diseases cannot take place.
 - (ix) **Maintaining body weight** :- It helps individual to maintain proper body weight.
 - (x) **Overall efficiency improves** :- It improves all physiological systems of body then more of efficiency level of individual. In this way balanced diet is useful for as.

Q.2 What factors can be considered for making balanced diet?

Ans.

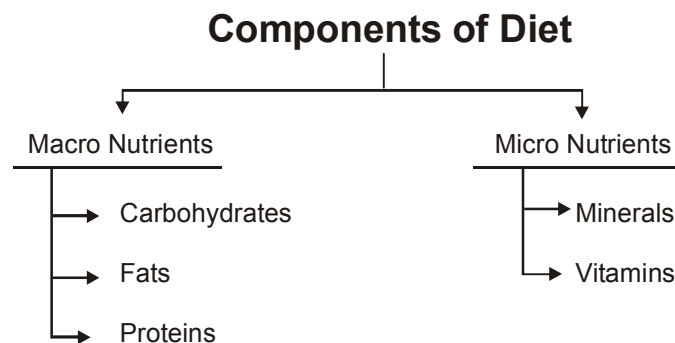
- (i) **Age** :- Age plays great role in making diet for like in growing age a child need more protein but old aged people should avoid more proteins and fats but should take more minerals & vitamins
- (ii) **Gender** :- Sex difference causes variation in diet more caloric requirement to male & less for female.
- (iii) **Profession** :- Heavy physical activities work out needs more calories demand & less physical activities work out less calories demand.
- (iv) **Body weight** :- Obese person need fibrous food more, while slim or lean needs more protein.
- (v) **Specific Sports Diet** :- Various sports need specific diet like long distance runner need more fat, contact body games player need more protein, exploding strength player needs more carbohydrates.
- (vi) **Sufficient Roughages** :- It is non nutritive but important, It

consist fibers that found in fruits & vegetables.

- (vii) **Pregnancy or feeding mother** :- Pregnant mother needs extra diet - carbohydrates, protein, fat, vitamins, minerals etc.
- (viii) **Diet During Health Problems** :- Injured person should take more protein and minerals patients should be given diet full of mineral & vitamins.
- (ix) **Seasonal Food** :- Seasonal food is easily available and economical moreover the nutritional value is high.
- (x) **Climatic Condition** :- The effects the diet like in hot places food should be has oily fried, while in coaster region the food should be more liquid.
- (xi) **Natural Diet** :- Natural sources of diet are early digested by body less polluted not synthetic food.
- (xii) **Doctor's Recommendation** :- Diseased or sick person should take accords to doctor recommendation and patient ovoid fried food jaundice patience avoid protein.
- (xiii) **Eating habbits & social Customes** :- They also effect the diet of individual some take low vegetables veg. other don't take it so it is according to customs also.

Q.3 Why macronutrients should be essential part of our diet?

Ans.



Macro Nutrients :-

Carbohydrates : They are main source of energy for almost all activates. They give quickly energy and less amount of carbohydrate in diet causes under nutrition and weight loss. Excess amount stored in livers and tissues from there they release the energy when in need.

Proteins :- Proteins are needed for growth & development of body. It helps and replace the worn out tissues. It does not provide energy under normal routine but give energy under extrme starvation, High intake of proteins creates overload over kidney and livers. Deficiency diseases are kwashioskar or maras mus.

Fats : Fats are emergency sources of energy and stored in body. Fats carry Vitamine, A,D,E,K. They are sources for energy for large activities. In proper functionary of glands and internal organs against the blood clotting, maintains the skin and important of proper functionary of glands and internals organs and it helps on blood clotting, maintains the skin and hair. Our diet should consiist of 10% of fat more intake more risk of obesity and many heart diseases so this Nutrients and in highly proporation of diet and should be taken in proper amount according to need.

Q.4. Mention the types and effects of micro nutrients on our body?

Ans. Minerals & Vitamins are the micro nutrients of diet.

Function of Micro nutrients.

- (i) **Calcium** :- It is required for bone and teeth formation, deficiently causes osteoporosis, Rickets and retorted growth.
- (ii) **Iron** :- it in required for formation of haemoglobin, deficiency

leads to anaemia.

- (iii) **Phosphorus** :- It helps in making strong bones and teeth.
- (iv) **Sodium** :- It helps nervous system for better response, deficiency causes cramps and tiredness.
- (v) **Iodine** :- It helps in proper growth & development of body, deficiency leads to goitre.
- (vi) **Fluoride** :- It helps teeth and nails.
- (vii) **Chloride** :- It helps body to fight against infection, proper functions of nervous system.

Vitamins :

- A - helps in normal growth & development of eyes and skin.
- D - Important for formation of strong bones & teeth.
- E - It protects the cell membrane and acts as antioxidant.
- K - helps in Blood clotting and heals wounds.
- B - Vit B₁ for growth & development.
- B₂ - helps in growth of RBC.
- B₃ - Play important role in energy transfer, reactions in the metabolism of glucose, fat & alcohol.
- B₅ - Involved in oxidation of fatty acids & carbohydrates.
- B₆ - It helps in metabolism of amino acids.
- B7- it play key role in metabolism of lipids, proteins and carbohydrates.
- B9- Folic Acids Needed for normal cell division especially during pregnancy and infancy.
- B12 - It involved in cellular metabolism of carbohydrates proteins and lipids and helps in production RBC in bone marrow.
- C - helps in healing wounds it helps formation of growth & repair of bones, skin & connective tissues. It makes healthy teeth & gums.

Q.5. What is the effect of Diet on performance of sports persons?

Ans. Diet plays important role in sports performance. The following table will be followed for various activities.

Sports Activities	Diet before Competition	Diet During Competition	Diet After Competition
Endurance Activities - Like Players of marathon, Basketball, Football, Hockey, Cyclist	More amount of complex carbohydrate	Simple carbohydrate with more water	more complex Carbohydrates more vitamins & minerals, low fats more water
Skill Activities - Speed Activities, middle distance races, Kho-Kho, water polo, Skating swimming	More carbohydrates simple and complex	Simple Carbohydrates in Liquid	more complex Carbohydrates more Vitamins & minerals more proteins
Explosive Activities - Body contact Activities, Wrestling, Kabaddi, Judo, Jump, Throw	more carbohydrates both - simple and complex	more Carbohydrates in Liquid	more Carbohydrates complex more proteins more vitamins & minerals

Q.6. State four Myths of Dieting ?

Ans. Myth : Low fat or no fat diet are good for you.

Fact : This is not true cutting down saturated fat and eating unsaturated fat is good body needs fat for energy, tissue repair and transport Vitamins A,D,E,K.

(ii) Myth : Fasting Makes you lose weight.

Fact : True for short period but hinders weight loss. In long term it loses muscular tissues so exercise is recommended for weight loss.

-
- (iii) Don't drink water while taking food. It digest food it don't hamper metabolism so it is not true.
 - (iv) Myth milk should not be taken immediately after fish.
Fact : it is not true it will not give any allergy or irritation scientist don't think so.
 - (v) Fruits and vegetables are more nutritive than cooked foods.
Fact : Scientist discovered in recent years that cooking actually boost levels of important compound in some fruits and vegetable and cooking also breaks down fiber, making it easier for your body to process.
 - (vi) Myth - Eat less nuts they are too fattening
Fact : It is true that nuts contain a lot of fat but it is mostly the food kind. Recent research suggested that eating nuts as part of a healthy diet may even help you loose weight.

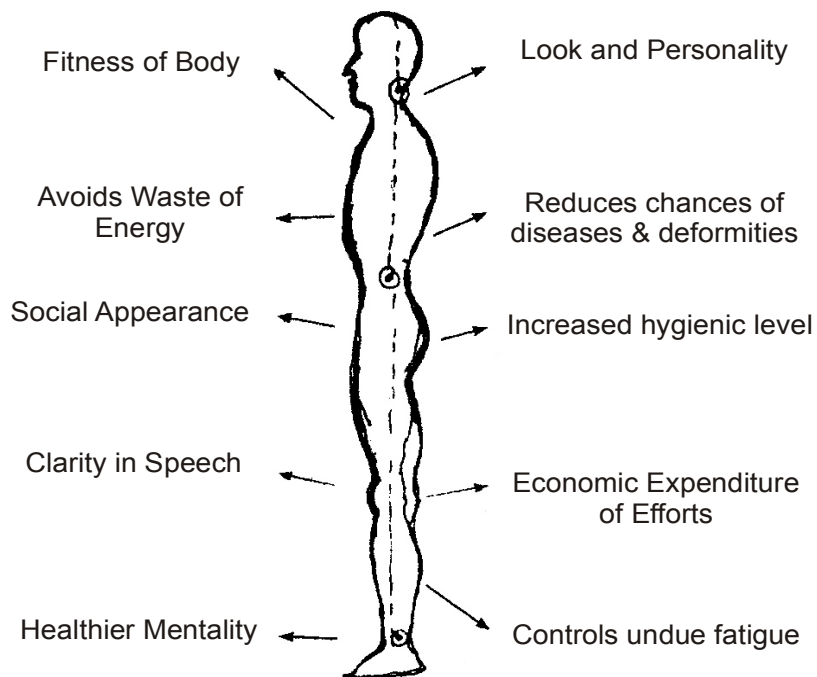
UNIT - 4

POSTURE

Key Points :-

- * Concept of correct postures - standing and sitting
- * Advantages of correct posture.
- * Causes of Bad posture
- * Common postural Deformities - Knock Knee; Flat foot; Round shoulders; Lordosis, kyphosis, Bow Legs and Scoliosis.
- * Physical activities as corrective measures.

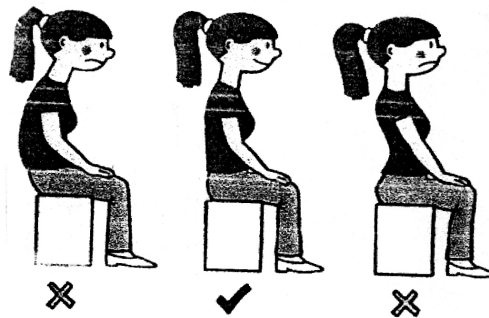
Balanced And well co-ordinated Body Movement



4.1 Definition : Good or correct posture is one in which the body is so balanced as to produce least fatigue.

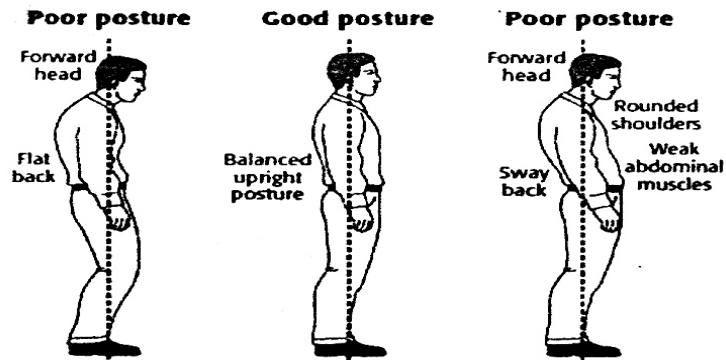
Meaning : Correct or good posture is the position of body held without any sense of effort. The efficiency of body depends upon good posture. It is directly related to the health status of an individual. By good posture the various organs of the body get rest. The body does not get easily tired and the person remains in good health.

A. Correct Sitting Posture : In correct sitting posture the back bone should be so, the natural curve should be straight against back of chair. Head should in line to hip and shoulder. Arms should be balanced, the waist should touch the back of chair. Thigh should in straight line resting on seat legs should rest vertically on feet.



B. Correct standing posture : In correct standing posture, feet apart about 8 to 12 inches Feet should be parallel to each other and balanced evenly on both feet. Hold the head straight. Chin parallel to floor, keep shoulder hips and knees in straight line. From side view ear, shoulder, hip, knee and ankle should be centred along an imaginary straight line. The centre of Gravity (C.G.) Should be with the centre of Gravity.

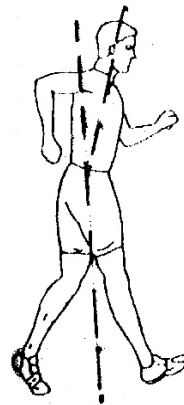
4.2. Advantages of Correct posture :



- i Good physical Appearance
- ii Physical Fitness
- iii Lessen the Fatigue
- iv Improves Appetite
- v Good body balance
- vi Grace & Efficiency of movement
- vii Reduce postural Deformities
- viii Prevent Disorders & Diseases
- ix Psychological Balance
- x Improves confidence
- xi Change in mental attitude
- xii Social Value
- xiii Economic Value

4.3 Causes of bad Posture

- (i) Accident
- (ii) Diseases
- (iii) Lack of Nutritional Diet
- (iv) Wrong Postural Habit
- (v) Improper Treatment
- (vi) Psychological Stress



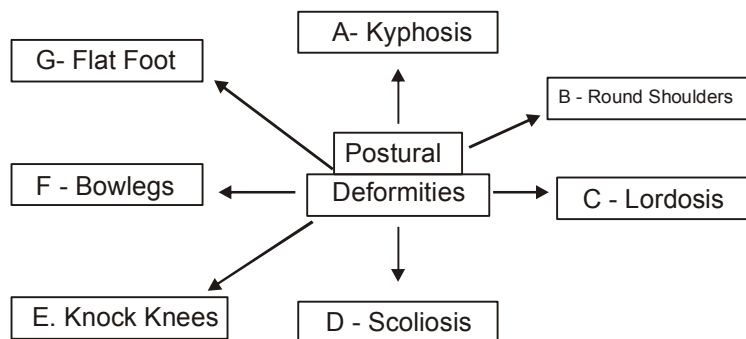
Wrong Posture
of Walking



Correct Posture
of Walking

-
- (vii) Lack of sufficient Strength
 - (viii) Age Factor
 - (ix) Poor Eyesight
 - (x) Bad Shoes or Clothing
 - (xi) Obesity
 - (xii) Taking heavy weight on one side.

4.4 Common Postural Deformities



4.5. Correective Measures Normal Spine



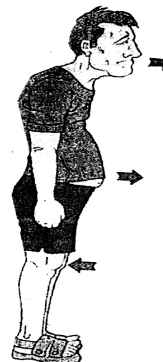
Normal Spine

- A. Kyphosis** - It cause hampat back of body, Shoulders come forward and neck drops forward - It is also called round upper back - Kyphotic Spin

B. Round Shoulders :- It is the postural defect in which shoulders are projected forward.

Corrective Measures -

- (i) Chakra Asanas
- (ii) Dhanur Asanas
- (iii) Bhujang Asana
- (iv) Ushth Asanas
- (v) Backward Bending
- (vi) use pillow and sleep straight
- (vii) Holding the horizontal bar regularly for sometimes.



C. Lordosis - Inward curvature of the spine, the abdomen is ahead of body and shoulder comes out ward and side ward, body weight shifted back ward.

Corrective measures -

Forward bending Asanas.

- (i) Paschimotan Asanas
- (ii) Halasanas
- (iii) Forward Bending
- (iv) Alternate toe touching
- (v) Stoop walking (long stride walking)
- (vi) Prone Position
(lying face downward)

Lordosis of the spine

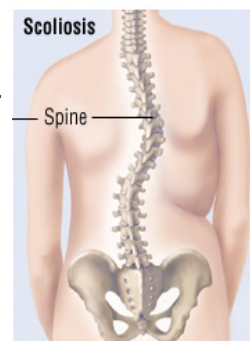


Exaggerated lumbar curve

D. Scoliosis - It is problem of spine in which vertibral column bends to sideward.

Corrective measures.

- (i) Ardh Chakra Asanas
- (ii) Trikon Asanas
- (iii) Tarr Asanas
- (iv) Chin - ups



E. Knock Knee - In this thigh bend inward and knees strike each other while walking & running.

Corrective measures

- (a) Vriksh Asanas
- (b) Akar Dhanur Asanas
- (c) Padma Asanas
- (d) Pillow walking
- (e) Outward walking
- (f) Horse Riding
- (g) Walking calipers



F. Bow Legs. This is the defect of legs in which legs bend outward. The space between knees widens up and legs take curve shape.

Corrective measures :

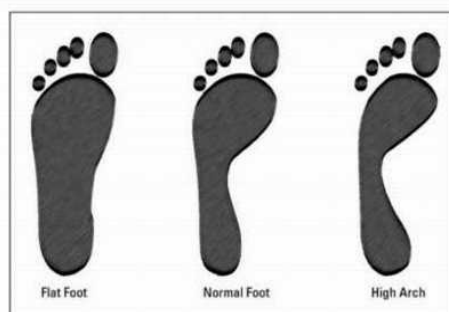
- (a) Ardh Chakra Asana.
- (b) Garud Asana.
- (c) Ardh Matsayendra Asana
- (d) Walking inward
- (e) Walk on bend toe of the feet



G. Flat foot : In this default of feet, person give complete print of their foot sole over the plane surface. In flat foot the inner curve of foot bulges more than normal.

Correct measures :

- (a) Tarr Asanas
- (b) Walking on sand
- (c) Regular running
- (d) Good quality shoes.
- (e) Pressure over foot
- (f) Writing with foot



-
- (g) Rope skipping
 - (h) Sit down hold wad of paper by toes
 - (i) Jumping on toes regularly.
 - (j) Performing up and down the heels regularly.

Very Short Answer Type Question (1 Mark each)

Q.1 What do you mean by posture?

Ans. It is the specific position of a person while sitting, standing, walking, lying etc.

Q.2. What is good Posture?

Ans. A good posture is the particular state of body in which our various body parts are properly aligned, they support each other and body can perform more efficiently on the expenditure of less energy.

Q.3 What is kyphosis

or

What is round back or hump back

Ans. The curve of thoracic region of spine is increased posteriorly or in the backward direction is known as kyphosis.

Q.4. What is lordosis or what is hollow back?

Ans. The increment in the curve of lumbar region of spine anteriorly or in forward direction is known as lordosis.

Q.5. What is scoliosis?

Ans. Lateral bending of spine from its mid line is called scoliosis. Scoliosis are of two type **c** curve & **s** curve.

Q.6 What are bow legs?

Ans. Bending of legs in outward direction just like the bow is known as bow legs in other words legs bend in convex shape.

Q.7 What is knock knee?

or

What is Genu valgum?

Ans. Bending of legs in inward direction in concave shape is known as knock knee. In the knock knees the gap is disappeared.

Q.8 What do you understand by flat feet?

Ans. Disappearing the long arch of the feet is known as flat feet. In this condition mid part of the feet touches the ground.

Q.9. What is round shoulder?

Ans. In this deformity our shoulders become round & tilt in the forward direction.

Q.10. Write down correct way of sitting posture.

Ans. Back should be straight, feet should be properly placed on the ground.

Q.11. Write down the correct way of standing posture.

Ans. All body parts aligned in such a way to support each other, back should be straight, body weight is equally distributed on both legs & C.G of all body parts must be near to the imaginary line that pass through the center of the body.

Short Question Answer (3 Marks)

Q.1 What are the characteristics of good posture.

Ans.- Correct alignment of various body part so, as to support each other.

- Body wt. equally distributed on both legs.
- Good coordination among the various body parts.
- Less Fatigue
- Good balance
- C.G. of various body parts lay near to the imaginary line that passes through the center of the body.

Q.2 What are the importance of the Good posture?

Ans- More work can be done on the expenditure of less energy.

-
- Appearance will be more attractive.
 - Good coordination among the various body parts.
 - Good body balance
 - Movements can be done more effectively.
 - Good posture helps to maintain good health.
 - Good posture helps to maintain physical fitness.
 - Good posture always make an individual psychologically strong.

Q.3. What are the common causes of poor posture?

- Ans.
- Injury
 - Disease
 - Bad habits
 - Weakness of muscles & Bones
 - Heredity
 - Improper clothing.
 - Mal Nutrition
 - Chronic Fatigue
 - Over load
 - Unhygienic condition
 - Occupation
 - Accident
 - obesity
 - lack of exercise
 - Carry heavy loads for long time.

Long Question (5 Marks)

Q.1 What are the symptoms of kyphosis and how it can be cured?

Ans. Symptoms :-

- Distance between the scapula increases.
- The length of the chest muscles (pectorals) become short.

-
- Shoulders tilt forward.
 - Neck tilt forward
 - Upper Body wt. lean forward.

Treatment :- In order to cure kyphosis such types of exercises are suggested, those increase the length of the pectorals and provide strength to the thoracic region such as :

- Back stroke swimming.
- Chakar Asana
- Bhujang Asana
- Dhanur Asana
- Reverse bending on the swiss ball
- Reverse butterfly
- Pillow back extension
- Bent rowing
- Marjaryasana (cat pose)
- Adhomukha svanasana (Down word dog pose)
- Ustrasana (Camel pose)
- Half wheel pose (Ardha chakaarasana)

Q.2. What are the symptoms & treatment of lordosis.

Ans. Symptoms :

- Forward & downward tilt pelvis
- A large gap between the lowerback & the floor when laying in supine line position.
- Pain in lower back
- The length of lower back muscles get shortened.
- Abdomen at lumbar region tilt forward.

Treatment of Lordosis

- In order to cure the lordosis those types of exercises are suggested, which increase the length of lower back muscles & strengthen the abdominal muscles such as.
- Sit ups < Bent knee
Straight legs
- Leg raises
- Halasana
- Good morning exercises
- Nauka Asana
- Paschimotanasana
- Cycling
- Oblique crunches
- Lower back muscle stretch
- Lunges
- Mountain climbing exercises
- High jumps on the spot (knees touches the chest)

Q.3 What are the symptoms and treatment exercise for scoliosis.

Ans. Symptoms :

- One shoulder up & one down
- Pelvis - One side up & one down.
- Body Weight uneven on both legs.
- Body seems to bend one side.

Treatment :

- Breast stroke swimming
- Trikon Asana
- Hanging on Horizontal bar
- Streaching exercises in which down shoulder goes up.
- Perform down ward facing stretches.

Q.4 Write down the symptoms, causes & treatment of knock knee.

Ans. **Symptoms :**

- Knees touch each other in standing position.
- Knees touch each other in walking.
- Knees touch each other in running.

Causes :-

- Obesity
- Defficiency of vit D
- Rickets
- Early age walk or standing
- Malnutrition
- Enlargement of medial ligament of both knees quickly as compare to lateral ligament.
- Heavy load for long time.

Treatment :-

- Horse riding
- Padamasana
- Standing with pillow between the knee
- Use walking calliper
- Straight leg lift.
- Straight leg knee press on the towal placed under the knee
- Side kicking the football

Q.5 Write down the symptoms, causes & treatment of Bow legs.

Ans. **Symptoms :**

- Gap between the knees are increased
- Knee moves in outward direction in standing, walking & running.

-
- Shape of legs look like the bow.

Causes :-

- Enlargement of lateral ligament of both knee quickly as compare to medial ligament.
- Weakness of bones and muscle.
- Long time cross leg sitting.
- Faulty style of Walking.
- Obesity
- Rickets
- Early age standing and walking.

Treatment :

- Walking (feet twisted inward)
- Use of walking callipers.
- Massage therapy.
- Use those exercise which strengthen the muscles surrounding the knee such as leg extension in laying position.
- Use yoga strap to bind the legs together then make cow face posture & forward bending are recommended.
- Pilate exercise such as roll up & ballerina arms are effective to tone legs.

Q.6. Write down the symptoms, causes & treatment of Flat feet.

Ans. **Symptoms :**

- Pain in mid part of feet during standing & walking.
- Disappearing the long arch of the feet
- Complete feet print can be seen on the floor.

Causes

- Weakness of muscles & bones.

-
- over weight
 - Obesity
 - Carrying heavy load for long time.
 - Injuries
 - Malnutrition
 - Faulty shoes.

Treatment :-

- Writing with legs
- Walking or running on the sand.
- Jumping on toe
- Wearing proper shoes
- Pick the pebble with help of feet
- Walking on toe
- Tadasana
- Vajra-asana
- Ball Ball under the feet game
- Wear the shoe with hankey inside the mid part of the feet.

Q.7 Explain the symptoms, causes & treatment of round shoulder.

Ans. **Symptoms :**

- Shoulder become round & tilt forward
- Neck tilt in forward direction.
- Down shoulders.

Causes

- Wrong habits
- Tight clothing.
- Faulty furniture
- Profession

Treatment

- Dhanurasana
- Chakarasana
- Bhujang asana
- Reverse bending on the swissball
- Reverse butterfly
- Pillow neck extension
- Downward dog pose (adho mukh Svanasana)
- Camel pose (Ustra sana)
- Half wheel pose (Ardh Chakrasana)

UNIT - 5

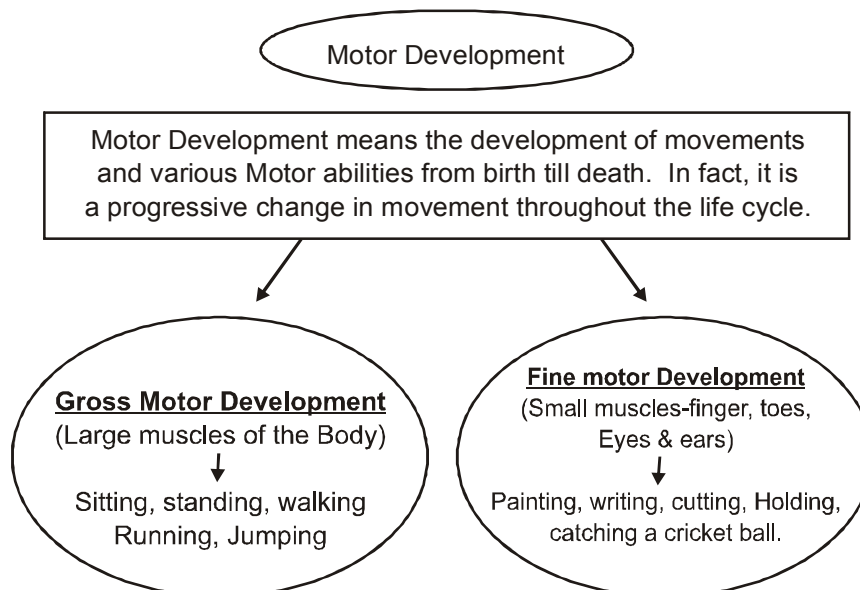
Children and Sports

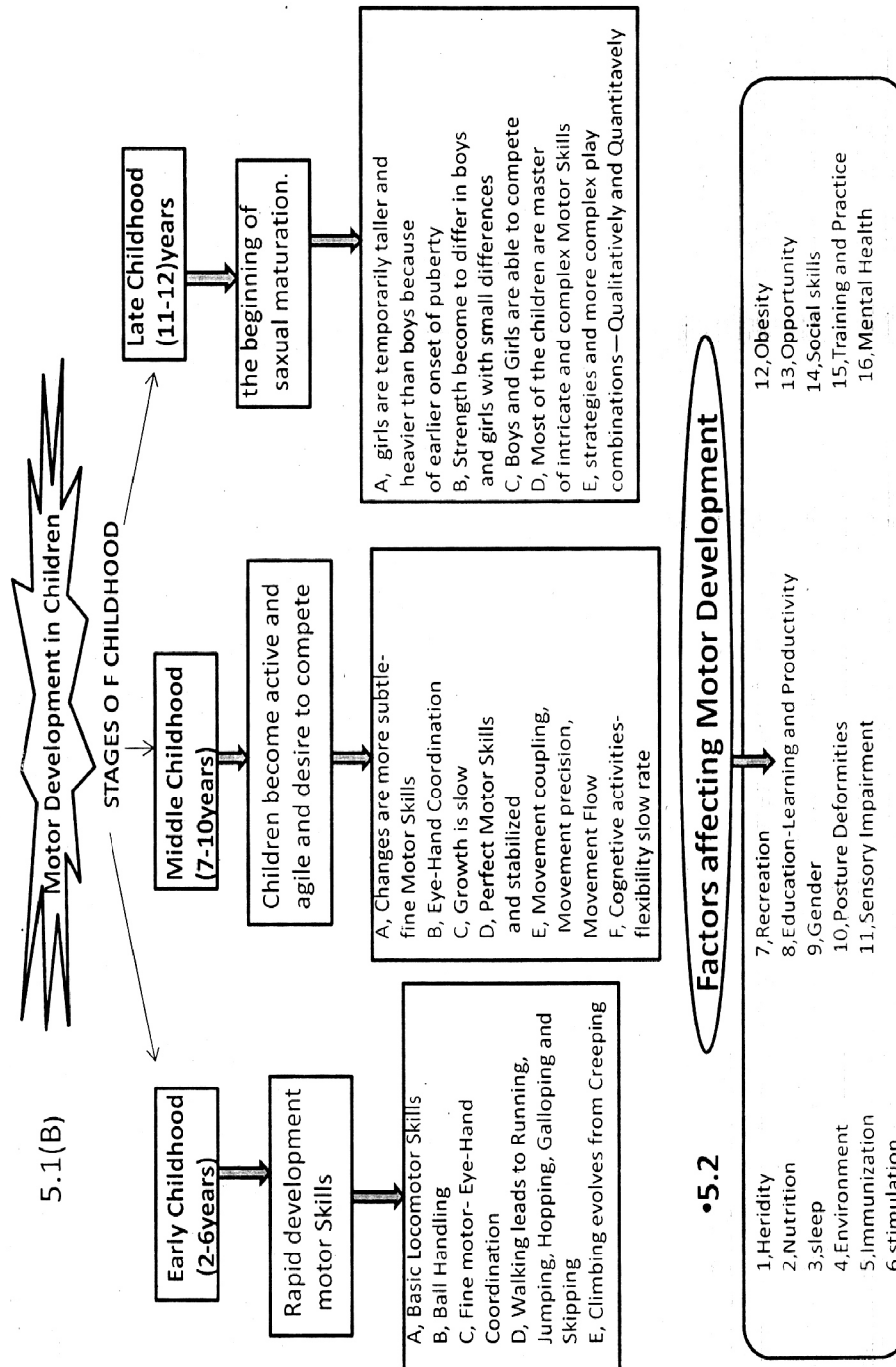
Key Points :-

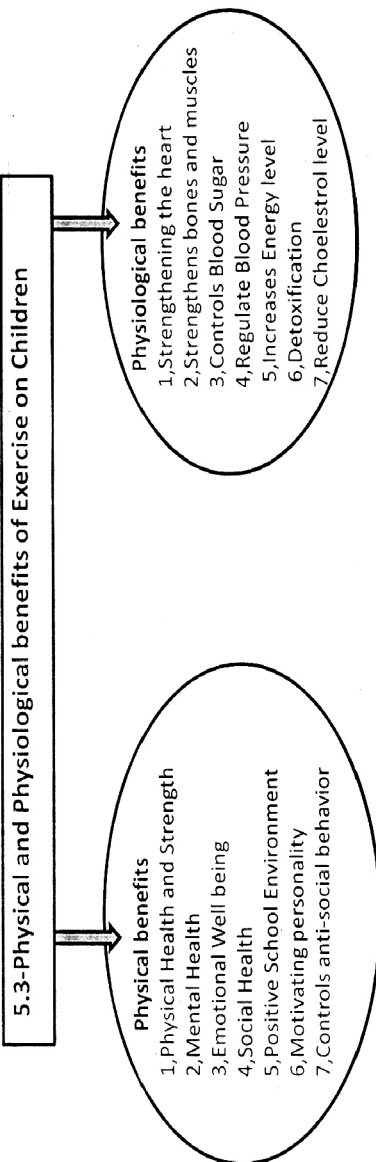
- * Motor development in children
- * Factors affecting Motor development
- * Physical and physiological benefits of exercise on children.
- * Advantages and Disadvantages of Weight Training and Food supplement for children.
- * Activities and Quality of Life.

5.1 Motor Development in Children

5.1 (A)







5.4 Advantages and Disadvantages of Weight training and food supplement for children

(A) Weight training:- Weighting training is defined as those exercises, that are designed to strengthen specific muscles by causing them to overcome a fixed resistance, usually in the form of Bar bells or dumb-bells. Actually it refers to exercise phase of the activity, where weight in the form of bar-bells are used to condition and alter the sizes of various segments of the body.

Advantages of Weight Training

- 1,Improves Posture and range of motion
- 2,Increases muscles strength, bone density and endurance
- 3,Protection against injury
- 4,Improve motor performance
- 5,Promote healthy Blood pressure and Cholesterol levels
- 6,Maintain Healthy Weight
- 7,Develop confidence and self esteem
- 8,Improve immune system functions
- 9,Improve Psycho-socio well being
- 10,Promote and develops exercise habits

Disadvantages of Weight Training

- 1,Maturity
- 2,Introduce Injury
- 3,Safety
- 4,Loss of Flexibility

5.4(B)

Food Supplement

Food supplement means a nutrient that is added to diet to nourish the body without getting regular diet. Generally, food supplement include Vitamins, Minerals, Fibres, Fatty acids or Amino acids among other substances. They can be in the form of Powder or Tablets which can be added to water or milk for consumption.

(a) Types of Food Supplement

1, Protein Supplement

2, Vitamine Supplement

3, Calorie Supplement

4, Fibre Supplement

(b) Benefits of Food supplements

- 1, Food supplements help those Children and teenagers with irregular eating habits or unbalanced meals.
- 2, They ensure to replenish sufficient quantity of nutrients to avoid deficiency from meal
- 3, Provide instant energy to the body
- 4, Children with the chronic medical conditions such as Asthma, Scurvy, rickets, osteoporosis or digestive problems
- 5, Particularly active children who play physically demanding sports.

© Disadvantages of Food Supplements

- 1, Some body building supplements may contain steroid or like substance which are very harmful substance and could lead to serious liver injury, stroke, Kidney Failure etc.
- 2, Weight loss supplements may contain numerous untested ingredients, which are not safe and effective for children
- 3, Mostly, the supplements cause allergy and intolerance among the children
- 4, Dietary supplements, including the herbal products may interact with other product or medicines may cause Unwanted side effects.
- 5, Numerous Multi-vitamins and Mineral supplements may cause headache, Diarrhea, nausea, cramps etc. among the Children due to overdose.
- 6, Children eat a lot of fast foods, convenience foods, and process foods.

***Warning*:- Food supplements must be taken under the supervision a qualified medical practitioner**

(d) Precautions while taking Food Supplements

- Before taking the food supplements we should take following precaution:
1. first of all ensure that there is a lack of essential nutrients in a child. So consult the doctor whether the child needs to take supplements or not.
 2. Before purchasing an individual should ensure that it is free from preservatives, contains no fillers and does not contain any added sugar.
 3. Food supplements may create harm if they are taken in excessive dosage, specially the minerals and fat soluble Vitamins, which can be accumulated in the body. Some of the Food Supplements may cause harm due to their rapid absorption in a short period of time.
 4. Don't pay HEED to the words of salesman or the advertisements, which claim that these supplements will improve child's brain.
- After taking the above mention precautions into consideration, Food supplements may be taken for proper growth and development of children.

5.5 Activities and Quality of Life

Activities mean, physical movement such as Running, Jumping, Walking, Cycling, Jogging exercises, Games and Sports etc.

Physical Activities defined as Any Bodily movement, produced by skeleton muscles, requiring energy expenditures or any type of physical exertion or activity, performed to develop or maintain Physical Fitness or overall health

"Quality of life is the satisfaction of any individual's values, goals and needs through The actualization of their abilities or their life style"

Role of Physical Activities in Improving Quality of Life

Mental Health

- Boosts mental wellness
- Improves memory and active mind
- Improves mental health and mood
- Improves reaction time
- Releases tension
- Promotes Enthusiasm & optimism
- Manage stress, anxiety & depression

Physical Health

- Improve the blood circulation
- Control weight
- Prevent bone loss
- Boost energy level
- Improve self image
- Help delay or prevent chronic illness & disease
- Better posture and balance
- Stronger Immunity

Very Short Answer Questions
(1 Marks each)

Q.1 Define Motor Development?

Ans. Motor Development refers to the development of a child's bones, muscles and ability to move around, and react with controlled movements.

Q.2. What is physical Activity?

Ans. Physical Activity is defined as any bodily movement, requiring energy expenditure.

Q.3 State -Food supplements?

Ans. Food supplement means Nutrients added to the diet to nourish body, these are missing in the regular diet. Food supplements include Vitamins, minerals, Fibres, Fatty Acids or amino acids among other substances. They can be in the form of powder or tablet.

Q.4. What do you mean by weight training?

Ans. Weight training means, exercises those are designed to strengthen specific muscles by causing them to overcome a fixed resistance in the form of Barbells, Dumb-bells.

Q.5. Elucidate the meaning of Gross Motor development?

Ans. Gross Motor development involves, the development of large muscles in the child's body such as sitting, walking, running, climbing, jumping etc.

Q.6. Define Fine motor development?

Ans. Fine motor development involves, the small muscles of the

body, specially in the small movements of Fingers and hand such as Writing, Holding, Catching, Smashing etc.

Q.7. Write the meaning for Quality of life?

Ans. Good quality of life refers to a life style where persons can carry out their day to day activities comfortably without strain.

Short Answer Question

3 Marks each

Q.1. Disadvantage of weight training in the children?

Ans.1. **Risk of injury** :- Incorrectly and excessive weight training introduce injury and pain in children.

2. **Less flexibility** :- Weight training reduces the level of flexibility because weight training is mostly practised for development of strength. So flexibility is reduced due to it.

3. **Maturity** :- Children should not begin weight training or any other workouts untill they are physically and emotionally mature enough to handle it because it can lead to serious, bony injury or deformities in the children.

4. **Growth of Children** : Excessive weight training may cause negative effects on the normal growth of children.

5. **Needs a supporter** :- children shall not perform any weight training or workout in case of absence of supporter.

Q.2 Write the need of Food supplements?

Ans. Food supplements is an addition in diet intended to provide nutrition such as vitamins, Fibres, Minerals, amino acids and Fatty acids. The advantages of Food supplement are :-

1. Food supplements provide the substances, to complete diet.
2. Food supplements ensure they get the substances and Vitamins in sufficient quantity as per requirements.

-
3. Food supplements are the easy way to get nutrients as needed.
 4. Food supplements provide instant energy to meet out emergencies.

Q.3. Write down precaution to take food supplement?

or

Write the important consideration before taking food supplement?

Ans. Before taking the food supplements we should take following precautions :

1. Ensure that difficiency of essential nutrients in a child. So, consult the doctor whether the child needs to take supplements or not.
2. Before purchasing, an individual should ensure that it is free from preservatives, contains no fillers and does not contain any added sugar.
3. Food supplements may create harm if they are taken in excessive dosage, specially the minerals and fat soluble Vitamins, which can be accumulated in the body. Some of the food supplements may cause harm due to their rapid absorption in a short period of time.
4. Don't pay HEED to the words of salesman or the advertisement, which claim that these supplements will improve child's health. After taking the above mentioned precautions into consideration, food supplements may be taken for proper growth and development of children.

Q.4 Write the disadvantage of food supplements?

- Ans.1. Overdose of food supplements is always risk for organic systems, they may lead to allergy shocks or other reactions.
2. Food supplements are very expensive. So, it is not possible

for each family to buy.

3. Some body building supplements may contain steroids or like substances, those could lead to serious liver, heart, kidney illness.
4. Weight loss supplements may contain numerous untested ingredients which creates risk for children.
5. The possibility of contaminated food supplement is very high So, this is great danger for children.

Q.5. Write the safety measures during the weight training?

Ans. Safety measures should be taken before or during weight training:-

1. Weight training should not be done alone.
2. Warming up should be done before weight training.
3. Proper limbering down should be done after training.
4. Training should be performed under the guidance of coach.
5. For best results we should take balanced and nutrition diet.

Q.6. Write the physical benefits of exercise on children?

Ans. Physical exercises provide opportunity for children to feel healthy and good, be active and have fun and express themselves. Some of the physical benefits of exercise are:-

1. Health : - Exercise encourages growth and development of children's body that includes developing coordination and movement control, feeling more energetic and maintaining a healthy body weight.
2. Mental Health :- Exercise improves concentration skills and ability to manage anxiety and stress. It also helps children to feel more confident, happy and relaxed. It improves the self esteem and self concept and brings the sense of belongingness amongst children.

-
3. Social Skills :- The great way of development social skills like coordination, cooperation, team work amongst children. It also help developing leadership quality in them. Active children are less involved in anti social or criminal activities.

Q.7. Explain the physiological benefits of physical exercise on children?

- Ans.1. Strengthens the Heart and it's activity :- Regular exercise improves the working capacity of heart by strengthening the heart muscles and saves the person from various heart diseases. It prevents sugar accumulation in the blood and reduces the risk of diabetes. It regulates the blood pressure and increases the energy level of a person.
2. Strengthens the Bones and muscles :- Regular exercise enhances the bones mineral density and also keeps them stronger.
3. Keeps veins and arteries clear :- Exercise helps to enhance blood flow in the body... It helps in Reducing harmful substances, cholesterol and fats from the body. It increases the flexibility of blood vessels and reduces extra weight.

Long Answer Questions:

Q.1 Write the advantages of weight training?

or

How weight training improves the working quality of children?

- Ans.1. Improves the posture and range of motion :- Weight training helps to develop correct posture and extension, contraction of muscles leading to increase range of movement.
2. Increase muscles strength, bone density and endurance :- Resistance training can improve bone density and muscles mass. Due to more muscles mass, the tolerance Power is

-
- increased and improves endurance of the body.
3. Protection against the injury :- Weight training, improves physical activity, system of the body and reduces risk of injury.
 4. Promote health blood pressure and cholesterol level :- Physical exercise with the resistance training decreases bad cholesterol level and increases good cholesterol. It also improves blood circulation, which in turn maintains a healthy blood pressure.
 5. Improves immune system function :- With the proper digestion, release of enzymes, Absorption of nutrients, release of toxic substances and healthy functioning of body organs, the immune system functioning is improved and the body become capable of fighting diseases and infections.
 6. Improves psycho-social well being :- A child with the well shaped healthy body with more potential to work is better accepted by society. A well maintained healthy physique makes a child more confident or raise his self esteem.

Q.2 Explain the motor development during the childhood?

or

Describe the stages of motor development?

or

Describe the pattern of physical development?

Ans. Motor development means “The development of movement and various motor abilities from birth till death”. Motor development is progressive change in movement throughout the life cycle. As a matter of fact, the ability to move is essential to human development various motor movements or motor skills are essential for everyday life activities such as walking, sitting, running, jumping, catching or holding, throwing etc. Motor development in children.

-
1. Early childhood :- The period of early childhood starts from second year and continue till sixth year. The motor development during this periods takes place rapidly. It is know as pre-school years.
 - a) In this period, a child becomes perfect in various fundamental movements such as Running, Jumping, throwing & acquires the ability to unite or combine.
 - b) Children stride length increases and they develop a more mature running pattern.
 - c) Proficiency in climbing on ladder become efficient.
 - d) To hope and gallop skillfully.
 - e) Fine eye-hand coordination.
 2. Middle childhood :- The period of middle childhood starts from 7th year and continues up till 10th year. During this period the changes, which takes place are -
 - a. Children become more agile
 - b. Strong desire to engage in various physical movements and activities.
 - c. Good eye-hand-leg coordination.
 - d. Better in balance and postures.
 - e. Motor skills are perfected and stabilized.
 - f. Coordinative abilities develop at the higher level, while the flexibility develop at the slower level.
 3. Late childhood :- The period of late childhood begins from 11th year and continues upto 12th year or till the beginning of sexual maturation process. The no of changes take place during this period are-
 - a. Girls are temporarily taller and heavier than boys because of the earlier onset of puberty.

-
- b. Strength begins to differ among the boys and girls
 - d. Most of the children are master to most complex motor skills.
 - e. They learn strategies and more complex combination of motor skills.
 - f. Running and jumping movements, qualitatively and quantitatively develop at the faster rate. Coaches and teachers of physical education should continue to encourage skill development with an increasing stress on strategies and tactics.

Q.3 Discuss the factors affecting Motor Development in Children?
or

Write the factors responsible for good healthy body of children?

Ans. The factors affecting motor development in children are :-

1. Heredity : Genes are the small structure of body, which are responsible for various types of development of children. The working capacity of all organic systems are dependent on genes. The no. of factors, which are transferred from parents to children are :
 - a. Muscle fibres
 - b. Length of fibres
 - c. Working capacity of Cardio-vascular system
 - d. Bony structure.
 - e. Inherent chronical diseases.
 - f. Gender
2. Environment :- Encouragement, love & security helps the children to take risk to explore fearlessly and to know more about their surroundings, which leads to a better sensory development. healthy environment and inter-personal

relationship leads to good personality of child.

3. Nutritious food promotes good motor development. Sensory and motor development depends on nutrition that the child gets to a great extent. Balanced nutritious food helps to develop stronger and healthier children.
4. Opportunity for children :- Opportunity to play or gain knowledge give a better chance of developing sensory motor activities. Children get more opportunity to develop agility, balance, coordination, flexibility, strength and speed.
5. Postural Deformities :- Postural deformities may be caused due to some disease, accident or by birth. Children suffering from deformities of posture encounter hinderance in performing normal activity, therefore their motor development is impacted negatively.
6. Sensory Impairment :- Sensory impairment means senses like hearing, sight, speech etc. not functioning properly. Motor development is affected in children suffering from sensory impairment. For example. A child not able to hear faces difficulty to understand and follow instructions, which cause hamper motor development.
7. Obesity :- Excessively over weight and obese children find it difficult to move properly or perform certain finer movements of body. They become slow and sluggish in movement. Therefore obesity has a negative impact on motor development in children.

Q.4. Write the role of physical activities in improving quality of life among the children?

or

Write the physical and physiological benefits of exercise for children?

or

State the advantages of an active body?

Ans.

1. Physical activity improves mental health:

- a. Mental wellness :- Physical activity can relieve tension, anxiety, depression and anger.
- b. Improves memory and active mind : Exercise increases the flow of oxygen, which directly effects the brain. Mental brilliance and memory can be improved with physical activities.
- c. Improves mental activities : Regular physical activities help in keeping the thinking, learning and judgement skills sharp. It can also reduce the risk of darker aspect of life.

2. Physical activity improves social health:

- a. Physical activity help to improve self images.
- b. Promotes enthusiasm and optimism :- Physical activities help a child to promote enthusiasm and optimism for better social recognition in the peer group.

3. Physical activity improves physical health:

- a. Stronger immunity : It enhances child's immune system and decreases the risk of developing any chronic illness and disease associated with the age and maintains quality of life.
- b. Improves the functioning of heart and minimize health related chronic diseases. Physical activities help delay or prevention

of heart related chronic illness by improving the working capacity of heart such as controlling the blood pressure good cholesterol, Controlling 2 types of diabetes.

- c. Strengthens bones and muscles :- Regular muscle strengthening activities help to increase or maintain the muscle mass and strength. It also helps in improving flexibility of joints. Regular physical activities help to strengthen bones and joints of the body.
- d. Maintain healthy weight :- Regular physical activities helps in digestion and promotes regular movements. It also rises the metabolism and helps to loose extra weight easily.
- e. Prolonged optimal health : Regular physical activities improve the strength, stamina and ability of organic system in children.

UNIT - 6

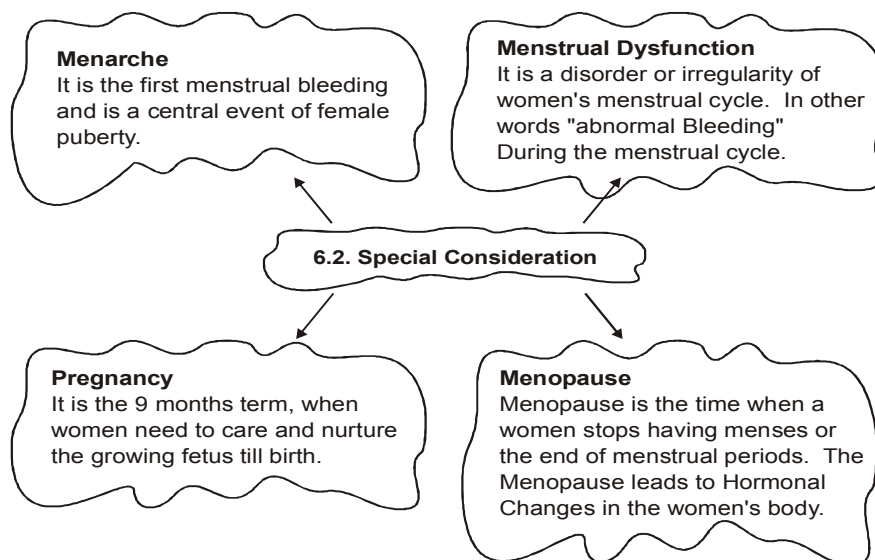
Women and Sports

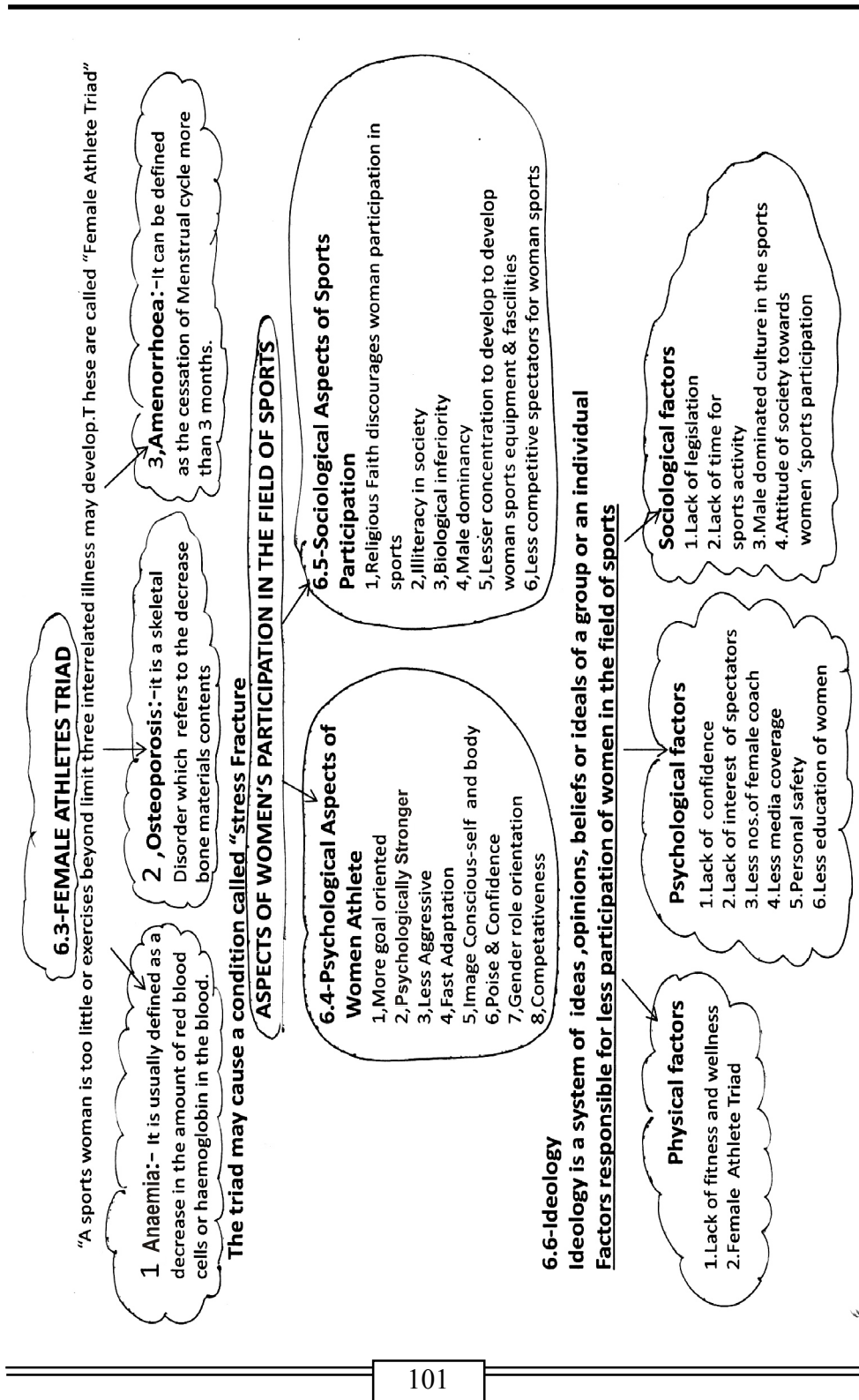
Key Points :-

- * Sports participation of women in India.
- * Special consideration (menarche, Menstrual Dysfunction, Pregnancy, Menopause)
- * Female Athletes Triad (Anaemia, Osteoporosis & Amenorrhoea)
- * Psychological Aspects of Women Athlete
- * Sociological Aspects of Sports Participation
- * Ideology

6.1. Sports Participation of Women in India

Sports participation of women means women participation in the field of sports and games.





Very Short Answer Type Question
(1 Marks Each)

Q.1. What is menarch?

Ans. Menarch is the first menstrual bleeding of the young girl (9-16 yrs.)

Q.2 What do you mean by sports participation of women?

Ans. Sports participation of women means "Participation of Women in the field of sports and games.

Q.3 What is menstrual dysfunction?

Ans. Menstrual dysfunction is a disorder or irregular menstrual cycle in women. It can also be defined as "An abnormal bleeding during the menstrual cycle".

Q.4. What is ideology?

Ans. Ideology is a set of Doctrines or beliefs that are shared by the members of a social group or it is the imaginary relations to the real conditions of existence.

Q.5. What is Amenorrhoea?

Ans. Amenorrhoea is a menstrual disorder or illness in females in which female of 18 years and above either never began menstruating or their absence of menstruation for three months or more than that in females with the history of normal menstrual cycle.

Q.6. Why there is less participation of women in Sports in India? Give any three reasons.

Ans. There is a less participation of women in India because:-

-
1. Lack of interest of spectators and no coverage of women sports.
 2. Lack of education among women.
 3. Attitude of society towards women sports participation

Q.7. What is menopause?

Ans. Menopause is the time when women stop having menstrual cycle, it occurs when menstruation ceases due to hormonal changes. In other words "It is permanent, Cessation of primary functions of the Ovaries.

Q.8. What is the Osteoporosis?

Ans. Osteoporosis is a skeletal disorder in which reduction in bone mass may cause fracture.

Q.9. What is the female athlete triad?

Ans. Female athlete triad is a syndrome in which anaemia, osteoporosis and amenorrhoea effect adversely on the body.

Q.10. What is menstrual Cycle?

Ans. The monthly cycle of changes in the ovaries and the lining of the uterus (endometrium), starting with the preparation of an egg for fertilization. When the follicle of the prepared egg in the ovary breaks, it is released for fertilization and ovulation occurs.

Short Answer Type Questions

(3 Marks each)

Q.1 What are the causes and risk factors of osteoporosis?

Ans. There are various factors, which lead to osteoporosis, these are :-

-
- A, **Insufficient calcium in diet :-** The main cause of osteoporosis is intake of insufficient calcium in diet.
- B. **Amenorrhea :-** Women suffering from Menstrual dysfunction or Amenorrhoea for more than 6 months are likely to face osteoporosis because the secretion of the hormone called Oestrogen is decreased in those women. This hormone is necessary for absorption of calcium in our body.
- C. **Eating disorder :-** Eating disorder like anorexia and bulimia etc. may also cause osteoporosis because they can be less amount of calcium intake.
- D. **Bad Eating Habits :-** Intake of Caffeine, Alcohol, tobacco or smoking may lead to osteoporosis. These products have a negative effect on Bone Density.

Q.2. Write the Psychological factors, affecting women participation in Sports?

Ans. The various psychological traits of women athletes are :

1. **Gender Role Orientation-Many** Sports like wrestling, weight lifting, body building etc has been considered inappropriate for women because of the potentially Harmful masculinizing effects of sports.
2. **competitiveness** - Males are found to be competitive in comparison to female. In fact Female are more goal oriented and perform magnificiently in artistic activities such as Gymnastic.
3. **Confidence :-** Female sportsperson is less confidence the comparison to male sportsperson. While sports women is significantly confident than non sportsperson.
4. **Self-esteem :-** Female athletes have low self esteem in comparison to male athletes. Intensive training helps in enhancing self-esteem.

-
5. **Self image or body image :-** Sports participation is helpful in the enhancement of positive body image. It provides good shape and well balanced body and finally it improves self-image.

Q.3 Briefly discuss about sociological aspects of sports participation.

Ans. There are various factors, which are responsible for low sports participation of women in society. These factors are:-

1. **Family** - Family is a very significant social factor, which is generally responsible for early sports socialization. The socializing process at home for both sex is different. Males usually get more support and encouragement to get involved in sports activities. They are further provided with more facilities to encourage and support participation in sports and games. However female usually are not encouraged to get involved in sports activities.
2. **School** - The culture of sports is generated in schools and reputation of school is dependent on the success of male and females as sports personalities. Lots of schools do not have girl teams as male teams (soccer/ wrestling/boxing etc/) They do not have proper arrangements for coaches and sports facilities for females.
3. **Culture** - Cultural beliefs have have great impact on the involvement of females in sports. Many cultures still firmly believe that women's place is in the kitchen. The participation in the sports masculinises females are viewed negatively.

-
4. **Attitude and prejudices** - Attitude and prejudices of society play significant role in sports participation, some females avoid certain sports for fear of being perceived masculine. Due to such attitude and prejudices of society regarding sexuality inhibit females to participate.

Q.4 What are the effects of menopause?

Ans. Menopause is the time when a woman stop having menses or menstrual cycle.

The main effects of it are :-

- A. Hormonal changes.
- B. Lose bone density
- C. Increase blood sugar which increase the risk of heart diseases.
- D. Increase the body mass.
- E. Emotional imbalanced.

Q.5. Elaborate the various types of disorders/ problems related to menstrual dysfunction?

Ans.

- 1. **Absence of menstrual periods** :- This problem may be due to eating disorder, excessive exercise schedule, extreme level of stress and medications etc.
- 2. **Premenstrual syndrome** :- Many girls may have symptoms such as acne, backaches, Sore breasts, headaches, constipation, depression, irritability and feeling anxious etc. These symptoms may be faced by female before their menstruation.
- 3. **Abnormal Cramps** :- These cramps are caused by a chemical in the body that makes the muscles in the uterus contract.
- 4. **Heavy or prolonged period** :- It is common for a girl's menstrual period to be heavier on some days than others.

-
5. **Irregular menstrual period :-** The regular menstrual cycle for a female is 28 days. However, it may vary from 21 to 35 days.
6. **Delay in the first menstrual period.**

Q.6 Poonam was a good judo player from her school days. She used to come to school from a remote village. Most of the aged persons of the village used to object her taking part in judo. Even they used to say her parents not to allow her for sports, but they wanted their daughter to be an international level judo player. They did not care of them. They tried to give or arrange all facilities for her to be an international player. Now after ten years of hard work, she has been selected for world judo championship. She is sure to win laurels for her country.

On the basis of above passage answer the following questions;

1. Do you agree with the views of most of the villagers? Answer in brief.
- Ans. I am not agree with the views of most of the villages because according to them judo is a body contact game which is not for girl and they thought that girls are weak.
2. What values are shown by poonam's parents regarding her sports participation?
- Ans. Poonam's parents have shown support, encouragement, motivation regarding her sports participation.
3. What values are shown by poonam in respect of her parents?
- Ans. Poonam has shown physical and mental strength, confidence, try to change the attitudes of society towards the participation of women in sports.

Long Answer type Questions (5 marks each)

Q.1 Elucidate the steps to improve participation of women in sports and games.

Ans. The steps to improve women participation in the field of sports and games:-

- A. Motivation and inspiration to women for participation.
- B. Support from family and parents.
- C. To organise camp, seminar and workshops.
- D. To provide knowledge and media coverage.
- E. Educating women at grass route level and participation.
- F. Provide better infrastructure and facilities.
- G. Ensuring safety and security of women.
- H. More opportunity for competition
- I. Develop new techniques and environments.
- J. To build physical and psychological strength.
- K. Healthy and balance food.
- L. Better incentives and awards.
- M. Culture in domestic constrains.
- N. Change in attitude and perception in village level
- O. Equality and community mobilizing.

Q.2 What do you mean by female triad? Explain the causes of it?

Ans. Female triad means a syndrom in which anaemia, oestoporosis and amenorrhoea are present in the female. The triad is a serious disorder or illness with life long health consequences and can be very fatal. In fact it is syndrom of three interrelated conditions.

- A. Anaemia :- decrease amount of red blood cells or haemoglobin in the blood. It can be defined as a lowered ability of blood to carry oxygen to the tissues of the body.**
Female athlete anemia may be caused by

-
- a. Acute bleeding
 - b. Stomach ulcers
 - c. Gastrointestinal blood loss
 - d. Cancer
 - e. Child birth
 - f. Menstruation cycle
 - g. Surgery
 - h. Inadequate iron intake
 - i. Poor iron absorption
 - j. Loss of iron through sweat (Especially during long distance races).

B- Osteoporosis :- It is a skeletal disorder which refers as to the decreased bone material contents.

- a. Insufficient calcium in diet.
- b. Amenorrhoea
- c. Eating disorder
- d. Bed eating habits

C. Amenorrhoea:- It is a menstrual disorder or illness in female of 18 years or above either never began menstruating or there is an absence of menstruation for three months and more.

The factors or causes which may inspire or enhance the chances of amenorrhoea,

- A. Hormone changes
- B. Intensive exercises
- C. Intake of less carbohydrates or calories.

Q.3 Explain women participation in sports in India.

or

Discuss ideology in terms of women and sports participation in brief.

Ans. For women's participation in sports we have a look at ancient period. Regarding participation in the first modern olympic (1896 athens), there was no participation of women.

- Women participated first time in 1900 olympics. (22 women participated in)
- In 1904 six women participated.
- And after 100 years in 2000 sydney olympics 4069 women had participated.
- In 2008 Beijing olympics 4637 women participated.

Participation in India

- In 2000 karnam Malleshwari was the first woman who won bronze medal in Sydney Olympic from India.
- In 1984 performance of P.T. Usha was very good in Athletics.
- In 2012 london olympics Saina Nehwal and M.C. Mericom got bronze medal.

In 2016, Rio Olympics, Sakshi Malik won bronze medal, P.V. Sandhu won silver medal where as Deepa Karmakar opened new dimesions in gymanastics.

Over the past several decades the participation of women in sports in sports field has increased tremendously.

But really, it is a matter of regret for all of us to know that sports is such a field where gender inequality is strongly evident. The general social environment has not only inhibited women from participation in sports but has also criticise them when they participate. Many people comment for women "Why don't they stay in the kitchen where they belong"?

But Now time has changed. Women are capable of changing society. Now the ideology suggests that women are participating in every sphere of life and proving themselves globally.

UNIT - 7

Test & Measurement in Sports

Key Points :-

- * Measurement of Muscular strength Kraus weber test
- * Motor Fitness test - AAHPER
- * Measurement of Cardio-Vascular Fitness-Harward Step Test/Rock Port test.
- * Measurement of flexibility-Sit & Reach Test

Rikli Jones - Senior Citizen Fitness test

1. Chair stand test for lower body strength
2. Arm curl test for upper body flexibility.
3. Chair sit & reach test for lower body flexibility.
4. Back scratch test for lower body flexibility.
5. Eight foot up & go test for agility
6. Six minute walk test for aerobic endurance

7.1 Measurement :- Measurement refers to the process of administrating a test to obtain a quantitative data. It can also be said that the measurement aids evaluation process in which various tools and techniques are used in the collection of data.

“Measurement :- is a process by which the level of performance, fitness, ability, knowledge, personality and skills are measured with the help of various standard Tests”.

Importance of Test & Measurement in Sports.

1. **Selection of Athlete :** On the basis of skill testing Evaluation

of measurements.

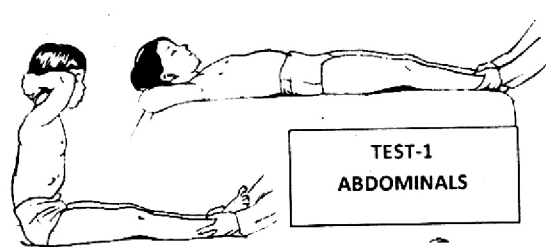
2. **Individual Game Classification of athletes :-** Classification based on gender. age. body, weight, height, interest and physical fitness.
3. **To study the Development of Athlete :-** Development of athlete in respect to their neuro muscular, social, interpretive, emotional development etc.
4. **Individually Focused Training Programme :-** Based on individual's weakness & strength.
5. **Motivation of an Athlete :-** measurements & evaluation process creates interest in the training.
6. **To predict in advance the performance potentials :-** Through measurements & evaluation procedure the future performance can be predicated.
7. **To prepare Norms & Standards :** All types of standards involve testing & measurements as an essential tool. Norms are set by testing large no. of individuals of an area.
8. **To measure current Fitness Status :-** Record of past & present health status.
9. **To conduct research :** Mandatory part to conduct research in the field of physical education sports & health promotion.
10. **To Achieve Objective & Goals :** Coaching & training is done with keeping a fixed target in a given time.

7.1 Kraus-Weber (K-W) Test

Dr. Hans Kraus and Dr. Sonja Weber developed the Kraus-Weber Minimum Test in the 1950's. The six-item medical fitness test measures the strength and flexibility of key postural (core) muscles. The test consists of five strength challenges and one general flexibility procedure. The Kraus-Weber Tests do not require sophisticated equipment and are easy to administer.

Administration of the Kraus-Weber test

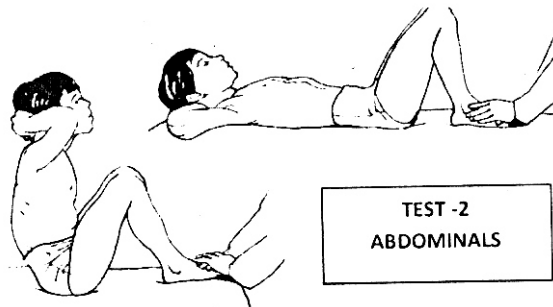
The following six tests of key muscle groups represent the minimal performance necessary for healthy living. Because this is a Minimum test, you will need to be able to perform All six parts successfully.



Test - I : Purpose : To measure the flexibility of the lower back and hamstring muscles.

Procedure : The subject lies down in supine position i.e... flat on his back and hands behind his neck. The legs are straight. The examiner holds the feet to keep them on the ground. The subject is asked to perform one sit-up.

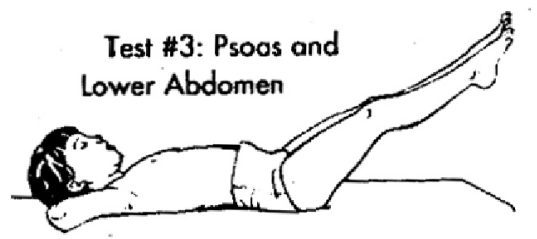
Score : If he cannot raise his shoulders from the table or ground the score remains zero.



Test -2 Purpose : to assess the strength of the abdominal muscles.

Procedure : The lying position for this test is same as the first K-W test - the subject lies down in a supine position flat on his back and hands behind his neck except that this time the knees are bent. The examiner holds the feet to keep them on the ground. The subject is required to perform one sit-up.

Score: If he unable to raise his shoulders from the table or ground, he gets zero.



Test -3 Purpose : to assess the strength of the psoas and lower abdominal muscles.

Procedure : Subject lies in supine position i.e.. flat on his back with his hands behind the neck. He is asked to raise his feet 25cm (10 inches) from the ground. His legs should be straight, no bending at the knee.

Score : He passes this test if he holds that position for **ten seconds**. Scoring from 0-10 depends upon the number of seconds he holds the appropriate position.

Test #4: Upper Back



Test -4 Purpose : to assess the strength of the upper back muscles.

Procedure : The subject lies in prone position i.e... face down on his stomach with a pillow under his lower abdomen and his hands behind his neck. The examiner holds his feet down. The subject is asked to raise his chest, head and shoulders, while the examiner counts to 10 seconds.

Score : He passes this test if he holds that position for **ten seconds** :- Scoring from 0-10 depends upon the number of seconds he holds the exact position.

Test #5 : Lower Back



Test-5 Purpose :- to assess the strength of the lower back muscles.

Procedure :- The subject lies in prone position i.e.... face down on his stomach with a pillow under this lower abdomen

and his hands behind his neck. The examiner holds his chest down. The subject is asked to raise his feet, keeping his knees straight. The examiner counts to 10 seconds.

Score: Scoring from 0-10 depends on the number of seconds he holds the position.

Test-6 Purpose : To measures the flexibility of the lower back and hamstring muscles.

Procedure : The subject stands erect, bare-footed, hands at sides and feet together. He is asked to lean down slowly to touch the floor with finger-tips for 10 second. Bouncing and jerking is not allowed. The examiner holds his knees in order to prevent any bending.

Score : Scoring from 0-10 depends on the number of seconds he holds the position

7.2 Motor Fitness Test AAHPER (American Alliance for Health, Physical Education and Recreation)

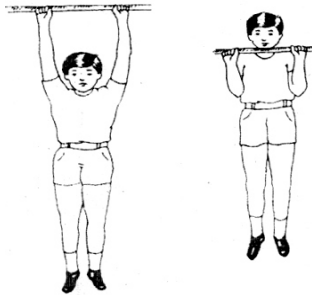
Motor fitness refers to the capability of an athlete to perform effectively at their particular sports. The components of motor fitness are agility, balance, co-ordination, which entails speed and strength and finally reaction time.

The first version of this test was published in 1958 and then

revised in 1965 and in 1975 many changes were made in the test battery. In 1976, the final draft was prepared in which following items were included in AAHPER youth fitness test battery.

1. Pull-ups for boys & flexed arm hand for girls.
2. Flexed - let sit-ups
3. Shuttle run
4. Standing long jump
5. 50 yards dash
6. 600 yards run

1. A. Pull - ups for boys



Purpose : To measure arm and shoulder strength.

Equipment : A metal or wooden bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used and if no regular equipment is available, a piece of pipe or even rungs of a ladder can serve the purpose.

Procedure : The bar should be high enough so that the student can hang with his arms and legs fully extended and feet free from the floor. The bar is held with palm facing away from his. The student is advised to raise body so that the chin reaches the level of bar. Then he lowers his body to

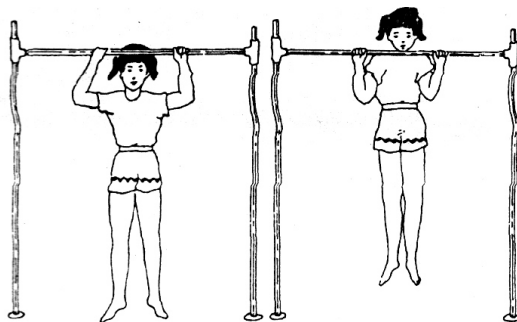
a full hang as in starting position. The exercise is repeated as many times as possible.

Rules :

- i) Each student will be allowed one trial.
- ii) The body must not swing during the execution of the movement.
- iii) The knees must not be raised and the kicking of legs is not permitted.

Scoring : Record the number of completed pull ups.

B. Flexed arm hang (for girls only)



Purpose : To measure arm and shoulder strength.

Equipment : A horizontal bar is used. The diameter of the rod ought to be 1½ inches. A stop watch is needed to record time.

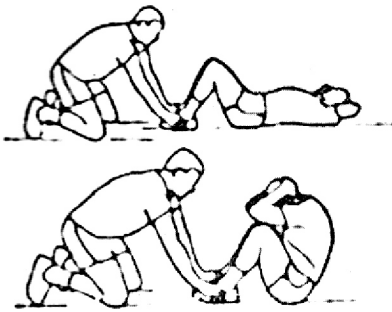
Procedure : The height of the bar should be adjusted so it is approximately equal to the pupil's standing height. The pupil should use an overhang grasp, with the assistance of two spotters, one in front and one in back. The Pupil raises her body off the floor to a position where the Chin is above the bar, the elbows are flexed and the chest is close to the bar.

The pupil holds this position as long as possible.

Rules :

1. The stopwatch to start as soon as the subject takes the hanging position.
2. The watch is stopped when.
 - i) Pupil's Chin touches the bar
 - ii) Pupil's head hits back ward to keep Chin above the bar.
 - iii) Pupil's Chin falls below the level of the bar.

2. Flexed - leg sit-ups



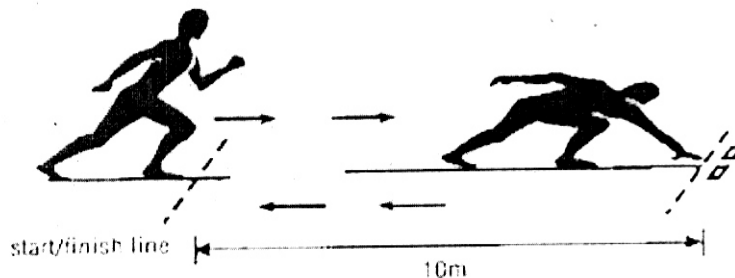
Purpose :- To measure abdominal strength and endurance.

Equipment :- clean floor, mat or dry turf & stop watch

Procedure :- The student is advised to lie on floor on his/her back. keeping knees bent. The angle of knees should be around 90 degree. The feet are held by partner. The student is further advised to put fingers interlocked and put behind the head. Teh student curls up and touches the elbows to knees.

Score : The score is counted as maximum number of sit ups in 60 seconds.

3. Shuttle run



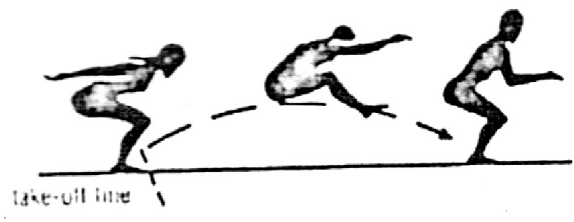
Purpose : To measure speed and agility.

Equipment : 1. Two wooden blocks 2x4 inches 2. Stop watch

Procedure : Two parallel lines are marked 30 feet apart wooden blocks 2x4 inches are kept on one side of marked line. The student stands opposite to the line, where wooden blocks are placed. On start the student runs towards wooden blocks and pick one of them. Then places the block on the line from where he started. The student continues to run and similarly lift other block and place at starting line.

Score : The score is elapsed time for complete trial. The better of two trials is taken as final score.

4. Standing long Jump



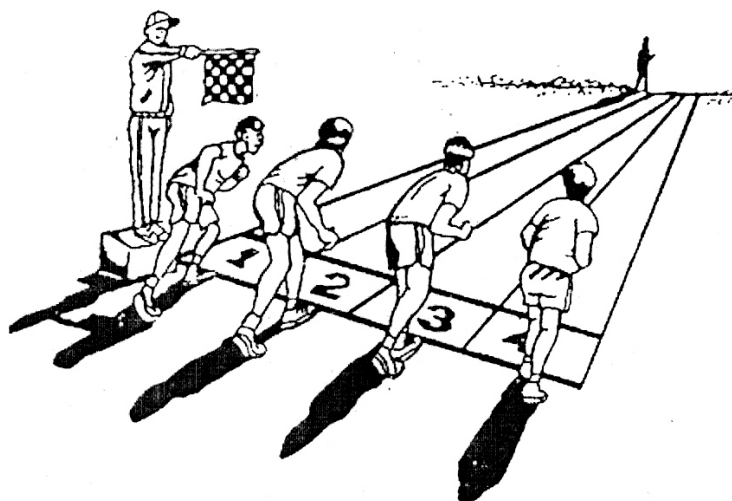
Purpose : To measure legs power.

Equipment : Mat, Floor or outdoor jumping pit & measuring tape.

Procedure : The student is advised to stand on restraining line with feet close and he/she dips at the knee swinging arms before jumping. The student lands on both feet together. The distance from take off line to the heel is measured in inches.

Score : The best of three trials is recorded as final score.

5. 50 yards dash



Purpose : To measure speed

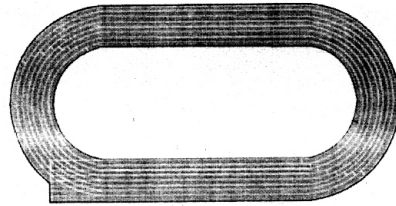
Equipment : 50 yards marked track, stop watches

Description : pupils will take positions behind the starting line. The starter will give the start and the time keeper on finish will take the time on starter's signal.

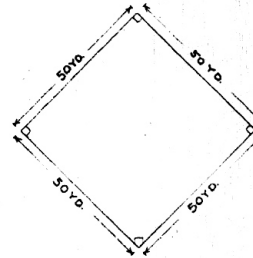
Score : The score is the amount of time between the starter's signal and instant the pupil crosses the finish line. The time is recorded nearest to 10th of a second.

6. 600 Yards run (548.64 Meter)

6. 600 yards run (548.64 METER)



400M Track may be used for the test



Equipment : marked track, stop-watch

Procedure : Pupil will take standing start from starting line. On starter's signal they will start running. The pupils are advised to run or walk for 600 yards but the aim is to finish as early as possible.

Score : The time is recorded in minutes and seconds.

7.3 (i) Harvard Step Test

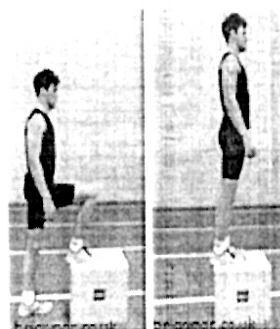
The harvard step test is a test of aerobic fitness, developed by Brouha et al. (1943) in the Harvard Fatigue Laboratories during WWII. The features of this test is that it is simple to conduct and requires minimal equipment.

Objective : The objective of this test is to monitor the development of the athlete's cardiovascular system.

Required Resources

To undertake this test you will require :

- * Gym bench (45 cm high)
- * Stopwatch
- * Assistant



How to conduct the test

This test requires the athlete to step up and down off a 45cm high gym bench for 5 minutes at a rate 30 steps/ minute.

- * The athlete warms up for 10 minutes
- * The assistant gives the command “Go” and starts the stopwatch.
- * The athlete steps up and down onto a standard gym bench once every two seconds for five minutes (150 steps)
- * The assistant stops the test after 5 minutes.
- * The assistant measures the athlete’s heart (bpm) one minute after finishing the test pulse 1
- * The assistant measures the athlete’s rate (bpm) two minutes after finishing the test - Pulse-2
- * The assistant measures the athlete’s heart rate (bpm) three minutes after finishing the test pulse3.

Scoring : The fitness index score is determined by the following equations. For example. if the total test time was 300 seconds (if completed the whole 5 minutes) and the number of heart beats between 1-1.5 minutes was 90. between 2-2.5 it was 80 and between 3-3.5 it was 70, then the long form fitness index score would be : $(100 \times 300) / (240 \times 2) = 62.5$. **Note:** you are using the total number of heart beats in the 30 second

period. Not the rate (beats per minute) during that time.

Score Cardiovascular Rating

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	>90.0	80.0-90.0	65.0-79.9	55.0-64.9	<55
Female	>86.0	76.0-86.0	61.0-75.9	50.0-60.9	<50

7.3 (ii) Rockport Walk Test

The Rockport is a common aerobic fitness test for those of low fitness level.

Purpose : The purpose of this Rockport fitness walking test (Kilne 1987) is to monitor the development of the athlete's VO₂ max.

Equipment Require :

- * 400 metre track
- * Stopwatch
- * Weighing scales
- * Assistant



Procedure : This test requires the athlete to walk one mile (1609 metres) as fast as possible.

- * The assistant weighs and records the athlete's weight
- * The athlete warms up for 10 minutes.
- * The assistant gives the command "GO". starts the stopwatch and the athlete commences the test.
- * The assistant records the time taken for the athlete to complete the test and the athlete's heart rate immediately on finishing.

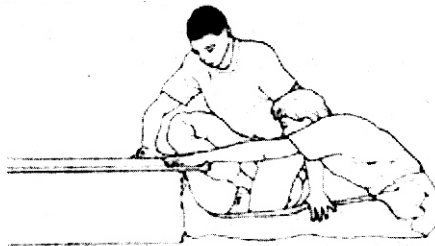
Scoring : A VO₂max Score can be calculated using the following equation (Kilne et al., 1987 and McSwegin et al., 1998) :

Females : $VO_2 = -139.168 - (0.388 \times \text{age}) - (0.077 \times \text{weight in lb.}) - (3.265 \times \text{walk time in minutes}) - (0.156 \times \text{heart rate})$.

Males : add 6.318 to the equation for females above.

7.4 Sit and Reach Test

The sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test was first described by Wells and Dillon (1952) and is now widely used as a general test of flexibility.



Purpose

The sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles.

Equipment required : Sit and reach box or flexometer

Procedure :

1. This test involves sitting on the floor with legs stretched out

straight ahead shoes should be removed.

2. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor.
3. With the palms facing downwards, and the hands on top of each other or side by side. The subject reaches forward along the measuring line as far as possible.
4. After some practice reaches the subject reaches out and holds that position for one two seconds while the distance is recorded.
5. No jerk allowed.

Scoring : The score is recorded to the nearest centimeter or an inch as the distance reached by the hand and 10 inches are subtracted from the recorded reading to obtain flexibility score, which is compared with the standards given in.

7.5 Rikli & Jones Senior Citizen Fitness Test

The senior fitness test was developed as part of the lifespan, wellness programe at fullerton university. By Dr. Roberta Rikli and Dr. Jessie Jones. As such, the test is sometimes known as the fulleton functional test. It is a simple easy to use battery.

Key Points :

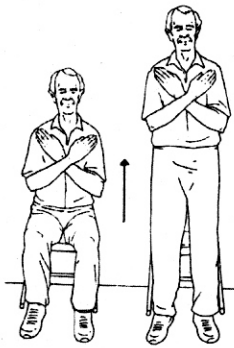
- * Assesses physical performance in older adults across a wide range of age groups and ability levels.
- * User Friendly
- * Minimal equipment and space required.

-
- * Non lab setting
 - * Assesses a cross- section of major fitness components associate with independence functioning in later years.
 - Upper and lower body strength.
 - Aerobic endurance
 - Agility / dynamic balance

7.5.1 Chair Stand Test

Purpose : This test assesses leg strength and endurance.

Equipment required : a straight back or folding chair without arm rests (seat 17 inches / 44 cm high), stopwatch.



Procedure :

- Take resting vital sings.
- Demonstrate the movement, first slowly then quickly.
3. Have the patient / client practice one or two repetitions to ensure proper form, and adequate balance.
4. 'On the signal go' the patient/ client rises to a full stand, then returns to a fully seated position, as many times as possible in 30 seconds.
5. If a person is more than half way up at the end of the 30 seconds, count it as a full stand.

-
6. One trial.
 7. Take post exercise vital signs.
 8. Document any modifications (chair height, assistance needed).

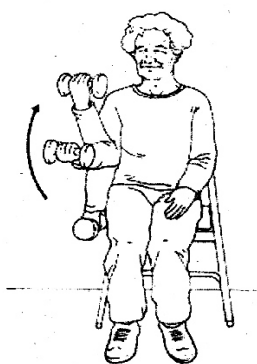
Scoring : The score is the number of completed chair stands in 30 seconds.

7.5.2 Arm Curl Test

Purpose :- Testing upper body strength

Equipment : 5 lb Weight & an 8 lb weight, stopwatch & a straight-back chair with no arms.

Women will curl a 5 lb. weight in this test and men will curl an 8 lb. weight for their test. It is extremely important to the accuracy of the test that you use the appropriate weight for men & women in this test.



Procedure :

- * Test assistant will tell to begin and will time for 30 seconds, using the stopwatch or a watch with a second hand.
- * Do as many curls as can in the allotted 30-second time period, moving in a controlled manner.
- * Do a full curl, squeezing lower arm against upper arm at the

top of each curl and returning to a straight arm each time.
Keep upper arm still.

- * Do not swing the Weight.
- * If started raising the weight again and are over halfway up when time is over, count that curl!

Scoring : The score is the total number of controlled arm curls performed in 30 seconds.

7.5.3 Chair Sit and Reach Test

Daily Benifit : Lower body flexibility is important for preventing lower back pain. It also plays a role in your balance, posture, in fall prevention, and in your gait, or walking. Lower body flexibility is important for maintaining an active, independent lifestyle.

Purpose : This test measures lower body flexibility.

Equipment required :- Ruler, straight back or folding chair, (about 17 inches / 44 cm high)



Procedure :

- # The subject sit on the edge a chair (placed against a wall for safety).
- # One foot must remain flat on the floor. The other leg is extended

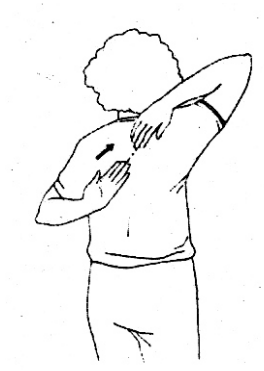
forward with the knee straight, heel on the floor, and ankle bent at 90°.

- # Place one hand on top of the other with tips of the middle fingers even. Instruct the subject to Inhale, and then as they exhale, reach forward toward 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.

7.5.4 Back Scratch Test

- * **Purpose :** This test measures general shoulder range of motion.
- * **Equipment required :** ruler or a yardstick.



Procedure : This test is done in the standing position.

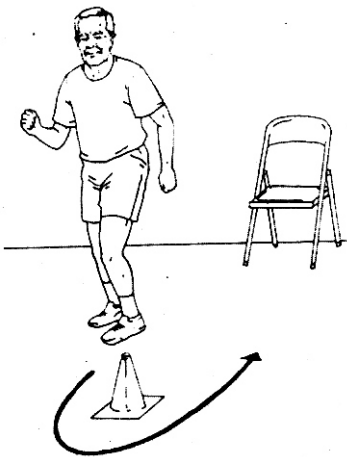
- * Place one hand behind the head and back over the shoulder, and reach as far as possible down the middle of back, palm touching body and the fingers directed downwards.
- * Place the other arm behind back, palm facing outward and fingers upward and reach up as far as possible attempting to touch or overlap the middle fingers of both hands.
- * An assistant is required to direct the subject so that the fingers are aligned, and to measure the distance between the tips of the middle fingers.
- * Stop the test if the subject experiences pain.

Score : If the fingertips touch then the score is zero. If they do not touch, measure the distance between the fingers tips (a negative score), if they overlap measure by how much (a positive score). Practice two times, and then test two times.

7.5.5 8-Foot Up And go Test

Purpose : - To measures power, speed, agility and dynamic balance.

Equipment required :- Stopwatch, straight back or folding chair (about 17 inches / 44 cm high), cone marker, measuring tape, area clear of obstacles.



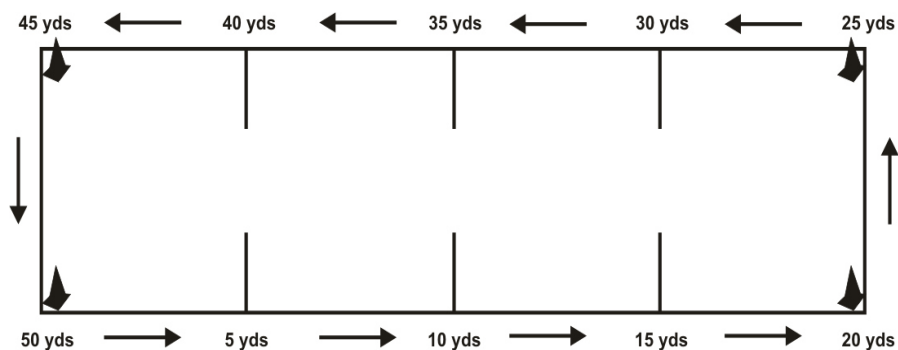
Procedue :

- * Place the chair next to a wall (for safety) and the marker 8 feet in front in of the chair.
- * Clear the path between the chair the marker.
- * The subject starts fully seated, hands resting on the knees and feet flat on the ground.
- * On the command, "Go," timing is started and the subject stands and walks (no running) as quickly as possible (and safety) to and around the cone; returning to the chair to sit down. Timing stops as they sit down.
- * Perform two trials
- * **Scoring :** Take the best time of the two trials to the nearest 1/10th second.

7.5.6 6- Minutes Walk Test

Purpose : This test measures aerobic fitness.

Equipment required : Measuring tap to mark out the track distances, stopwatch, chairs positioned for resting.



Procedure :

- * The walking course is laid out in a 50 yard (45.72m) 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.
- * Subjects are set their own pace (a preliminary trial is useful to practice pacing), and are able to stop for a rest if they desire.

Scoring : measure the distance walked in 6 minutes to the nearest meter.

UNIT - 8

Physiology and Sports

Key Points :-

- * Gender differences in physical & physiological parameters.
- * Physiological factors determining component of physical fitness.
- * Effect of exercises on cardio vascular system.
- * Effect of exercises on respiratory system.
- * Effect of exercises on Muscular system.
- * Physiological changes due to ageing
- * Role of physical activity maintaining functional fitness in aged population

8.1 Gender Differences in Physical & Physiological parameters

Gender is the state of being male & female through bio-logical division of an organism on the basis their reproductive systems.”

Physical Parameters

Parameters	Male	Female
Height	Taller	Shorter
Body Mass	More	Less
Body Fat	More	Less

lean Body Mass	Less	More
Limbs Length	Less	More
Arm Length	Less	More

Skeleton System

Head	Broader	Shorter
Face	Broader	Shorter
Protruding Chin	Bigger	Smaller

Organs

Stomach	Smaller	Bigger
Kidney	Smaller	Bigger
Liver	Smaller	Bigger
Appendix	Smaller	Bigger
Thyroid Glands	Smaller	Bigger

Physical Fitness Components :-

Strength	50% more	Less
Endurance	More	Less
Speed	More	Less
Flexibility	Less	More
Coordination & Agility	Less	More

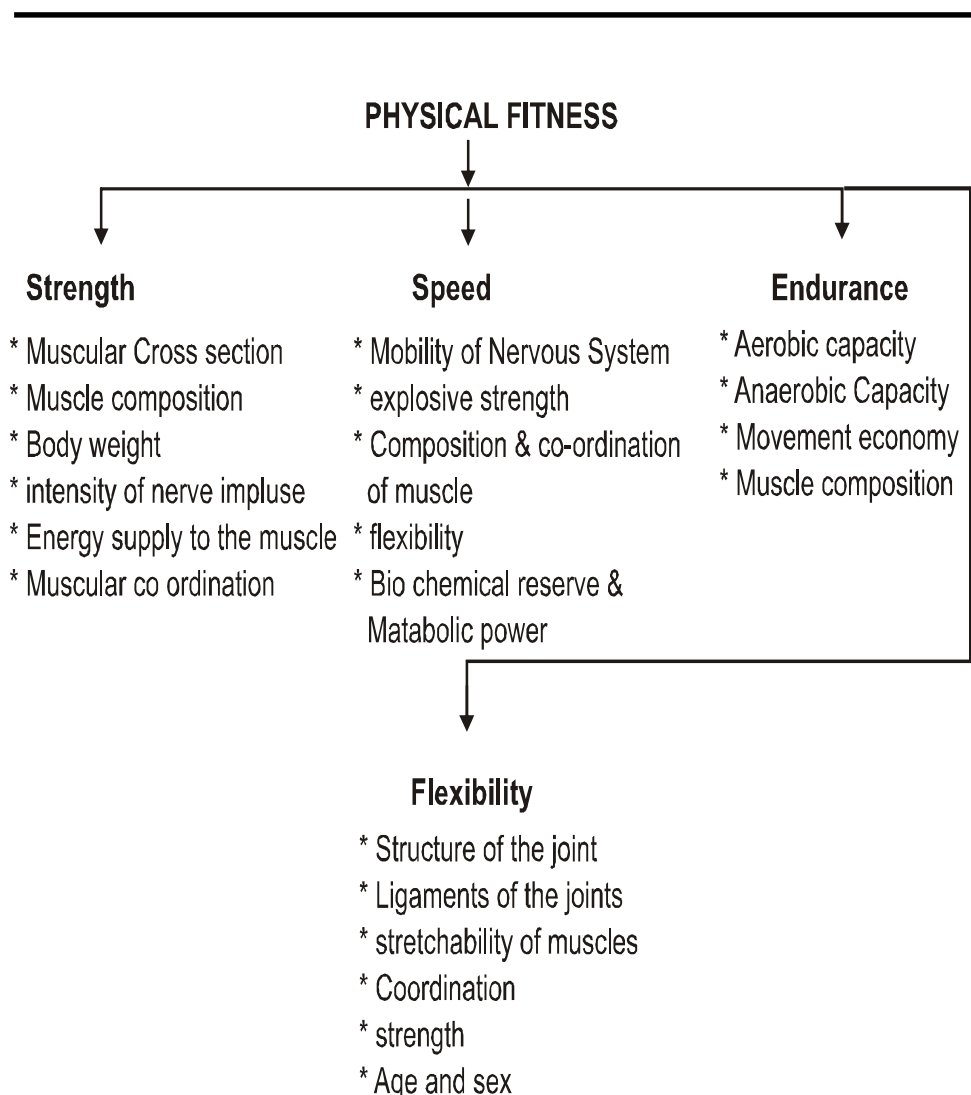
Physiological Components :-

Muscular System

Muscle, Mass & size	More	Less
Muscle's Composition	More	Less
Metabolic Power	Less	More
Tendon & bone attachment	More	Less

Parameters	Male	Female
Circulatory System		
Heart size	Bigger	Shorter
Blood composition	More (45% in Volume)	Less (42% in Volume)
Plasma	Less (54% in Volume)	More (57% in Volume)
Vital Capacity	More	Less
VO2 Max	More	Less
Lactate threshold	More	Less
Stroke Volume	More	Less
Level of cholesterol	More	Less
Recovery phase	More	Less
Blood Pressure	Less	More
Heart Rate	less (70-72 /Min.)	More (72-80 /min.)
Respiratory System		
Lung size	Bigger	Smaller
Alveoli	More	Less
Tidal Volume	More	Less
Tidal Volume	More	Less
Residual Value	More	Less
Gas Exchange	More	Less

8.2 Physiological factor determining components of physical fitness :- strength, speed, endurance, flexibility and coordinative abilities are the main factors of physical fitness. The physiological factor determining components of physical fitness are shown in the chart given blow.



8.3 (a) Effect of Exercise on Cardio-Vascular System

Cardio Vascular system means to deliver oxygen and nutrients to the body parts to Produce energy & remove waste material from it.

Effects of Exercise

Immediate effects

- Increase heart rate
- Increase breathing rate
- Increase blood flow in the body
- Increase blood pressure
- Increase cardiac output
- Increase in stroke volume

Long term Effects

- Decrease in basic heart rate
- Increase the efficiency of heart rate
- Increase the heart size
- Increase cardiac output
- Increase no of capillaries
- More effective blood distribution
- Increase blood volume
- Decrease cholesterol Level
- Fast recovery period
- Delay fatigue
- Increase in stroke volume

8.3

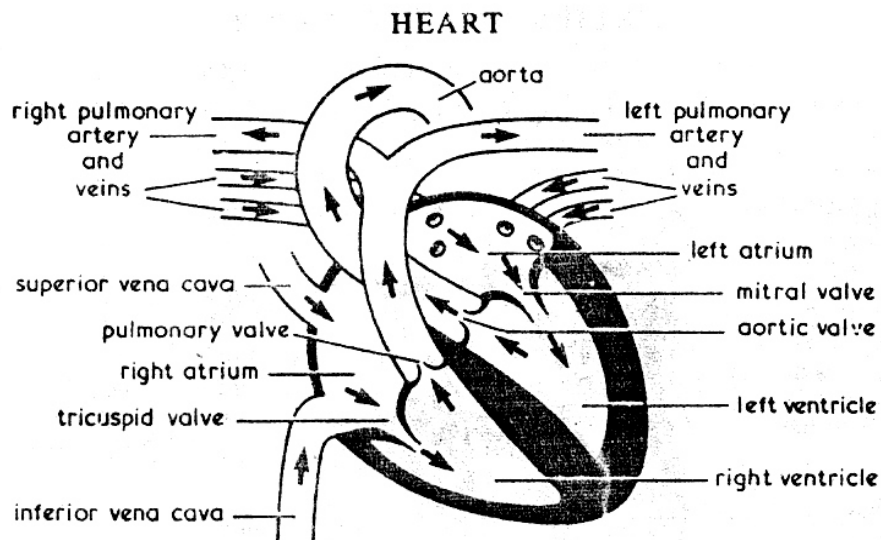


FIG. 9/2. —DIAGRAM OF THE CIRCULATION THROUGH THE HEART

8.4 Effects of Exercise on Respiratory System

“Respiratory system is a mechanism to take oxygen inside and throw away carbon dioxide”.

Respiration :- It is the process of oxygen supply to the cell for the Oxy-dative energy from the nutrients and transport of carbon dioxide and the waste material from the cell

Organ of respiratory system -

1. Nose
2. Pharynx
3. Trachea
4. Bronchi
5. Bronchioles
6. Lungs

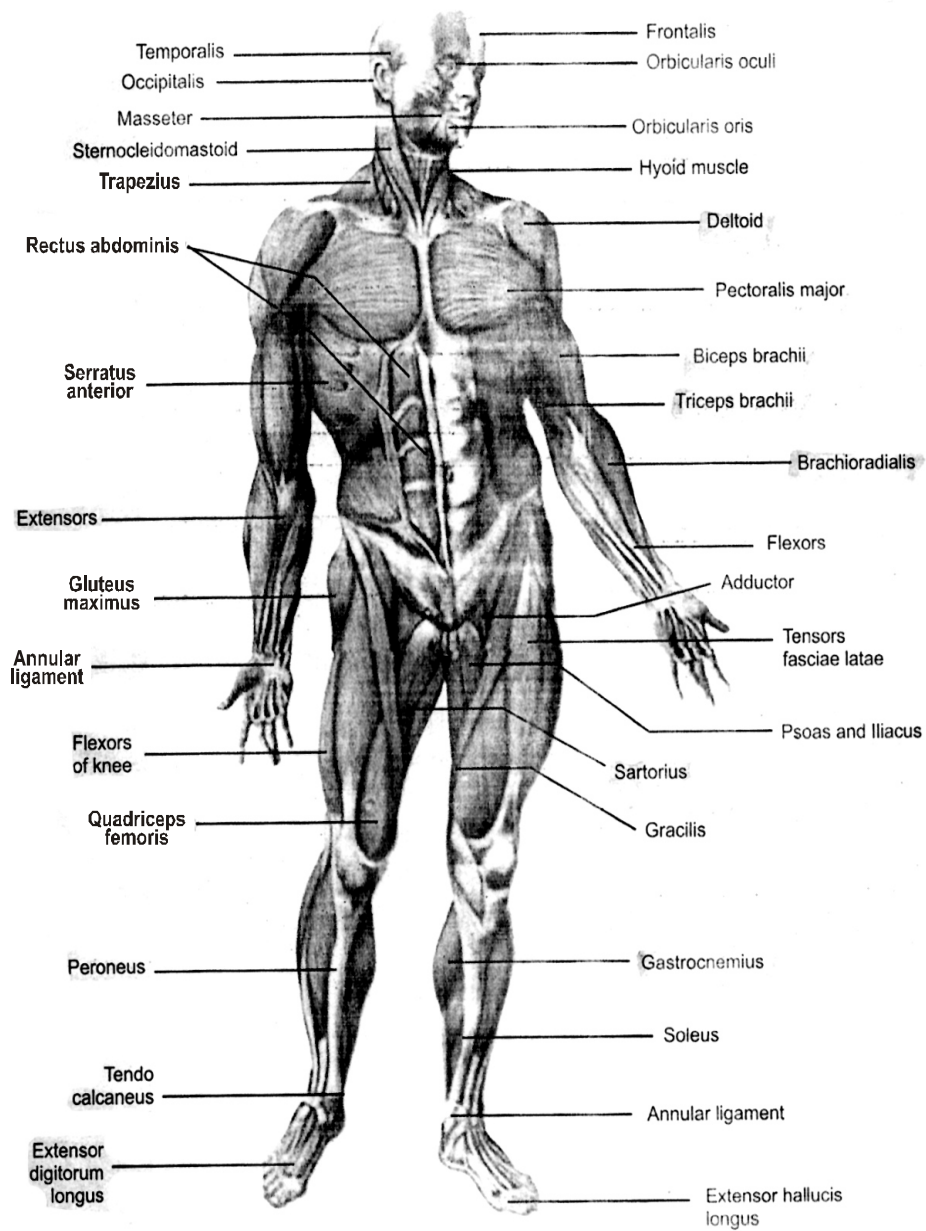
Effects of Exercise

-
- Improve tidal volume
 - Improve vital capacity
 - Faster recovery rate
 - Improve gas exchange capacity
 - Improve maximum oxygen up take
 - Improve aerobic capacity
 - Avoid second wind
 - Increase will power
 - Improve performance
 - Increase lung's capacity
 - Improve capacity for acclimatization.

8.5 (C) Effects of exercise on Muscular System

“Muscle is a specialized tissue, which enables the body and it's part to move and give shape to the body”.

MUSCULAR SYSTEM



Effects of Exercise

- Change in shape and size of muscle
- Muscle hypertrophy skeletal
- More energy supply to muscle
- Reaction time
- Capillarization
- Reduction in fat
- Muscular endurance
- Posture
- Controls extra fat
- Delays fatigue
- Increase food storage
- Strength and speed

8.6 Physiological Changes due to ageing

“Ageing is a gradual and continuous irreversible process that results in structural and functional alternation”.

Physiological Changes due to Ageing :-

- Sensory Organs

- a. Hearing
- b. Vision
- c. Taste & smell
- d. Touch & skin

- Urinal System

- a. Bladder
- b. Pelvic muscle weakness female
- c. Prostate- male
- d. Kidney

- Skeleton System

- a. Bones
- b. Joints

- Digestive system

- a. Dehydration
- b. Infection
- c. Enzymes
- d. Metabolism
- e. Abdomen

- Muscular System

- a. Muscle tissue

-
- | | |
|--------------------------------|----------------------------------|
| b. Muscle fibre | - Endocrine |
| - nervous System | a. Harmons |
| a. Brain | b. Body composition |
| b. Nerve | - General Characteristics |
| - Cardiovascular System | a. Skin |
| a. Heart arteries & veins | b. hair |
| blood circulation | c. Height |
| b. Lungs - Air sacs | d. Sleep |

8.7 Role of physical activities maintaining functional fitness in aged population :

- Reduce the loss of muscles mass
- Helps in maintaining bone density
- Reduce risk of cardio-vascular diseases.
- Improve flexibility & strength
- Enhance the lung capacity.
- Slowdown the brain ageing
- Improve the mental & social health
- Reduce the risk of age-linked diseases.
 - A. Diabetes
 - B. Obesity
 - C. Hypertension
 - D. Bad cholesterol
- Improve brain function.

Very Shrot Answer Questions (1 Mark Each)

Q.1 What is flexibility?

Ans. Flexibility is the range of movement of a joint. The range of joints varies significantly from joint to joint & depends on the surrounding tendons, ligaments & muscle tissues.

Q.2. what is ageing?

Ans. Ageing is a process of continuous & irreversible decline in the efficiency of various physiological functions.

Q.3 What is stroke volume?

Ans. Stroke volume is a volume, which the heart pumps out the blood in a stroke in aorta.

Q.4 Define oxygen intake?

Ans. It is the amount of oxygen, which can be taken by the lungs from the atmosphere.

Q.5 Define physical fitness?

Ans. Physical fitness is considered a measure of the body's ability to perform effectively & efficiently in work and leisure activities, to be healthy, resist hyperkinetic disease & emergency situations.

Q.6 What is cardiac output?

Ans. The total volume of blood, pumped by heart per minute, cardiac output = heart rate Stroke volume.

Q.7 What is oxygen uptake?

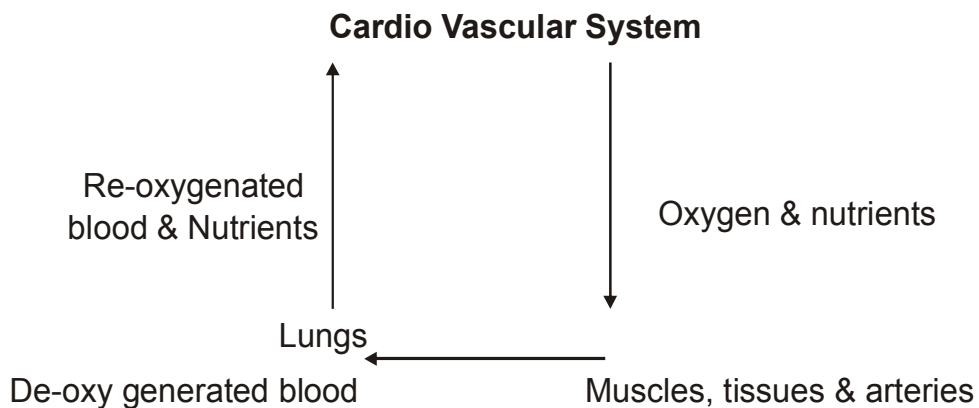
Ans. the amount of oxygen, which can be absorbed and consumed by the working muscle from the blood.

Q.8 What do you mean by physiology?

Ans. Physiology is the division of biology that deals with the functions and activities of living organisms & their parts as well as physical and chemical process i.e. Nutrition, movement & reproduction, which are the living activities.

Q.9. What is cardio-vascular system?

Ans. In this system heart and lungs send oxygen to various muscles, tissues & arteries and at the same time returns the de-oxygenated blood to the lungs to be re-oxygenated and return the fuel to the active tissues of the different parts of body.

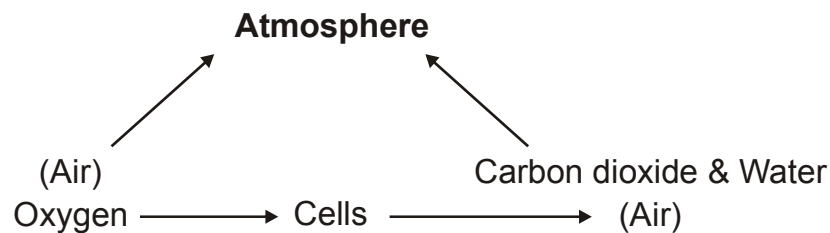


Q.10. Define Respiratory System ?

Ans. It is a system in which organs take oxygen inside and throw away carbon dioxide from the body.

Q.11. What is Respiration?

Ans. The process of Oxygen supplied to the cells and the transport of carbon dioxide from the cells is called respiration.



Q.12. Define Blood Vessels?

Ans. Blood vessels are, tube like structures in the body, in which, blood flows from heart to cell and vice-versa. Three types of blood cells arteries, veins & capillaries.

Q.13. What do you mean by circulatory system?

Ans. The body system, which specialized function ofr transporting Air, Nutrients, Waste Material, Harmons and Enzymes. It consists Heart, Blood vessels & glands.

Q.14. What is 'Trachea'?

Ans. Trachea is a hollow wind pipe, which permanently kept and is lined with ciliated epithelium tissues.

Q.15. What is the Tidal Volume?

Ans. it is the volume of Air, Ventilated with one normal inhalation during ordinary respiration.

Q.16. what is vital capacity?

Ans. It is the volume of air, that can expelled by the most forcefully expiration after the deepest inspiration.

Q.17. Whati is VO₂ max (maximum oxygen uptake)

Ans. it is the maximum amount of oxygen, utilized by the body in one mintute.

Q.18. Expalin Aerobic capacity?

Ans. It means perform activity with maximum use of oxygen to produce energy for that activity.

Q.19. Define total Lung volume?

Ans. It is the volume of Air, which, the lungs can accommodate after a deep inspiration.

Q.20. Explain Muscle Fibre?

Ans. The muscles tissue consists of specialized contractile cell.

The type of muscle fibre in

The body -- 1. Fast twitch fibres - White fibres.
2. Slow twitch fibres - (Red Fibres)

Q.21. What is myoglobin?

Ans. The myoglobin is a type protein present in muscle fibre to store oxygen which produces energy in emergencies.

Q.22. Define Anaerobic Capacity?

Ans. It means perform activity without the use of oxygen to produce energy for that activity within the body and it's resultant products are :-

Lactic Acid

Carbon dioxide

Water

Short Answer Type Questions (80 to 90 words) (3 marks Each)

Q.1 Differentiate between Aerobic and Anaerobic Metabolism?

Ans.

Aerobic Metabolism

1. Aerobic metabolism means
The body can convert nutrients
into energy with oxygen and it's

Anaerobic metabolism

Anaerobic Metabolism means the
body can convert nutrients into
energy without oxygen and it's

waste products Are:- Carbon dioxide and water.

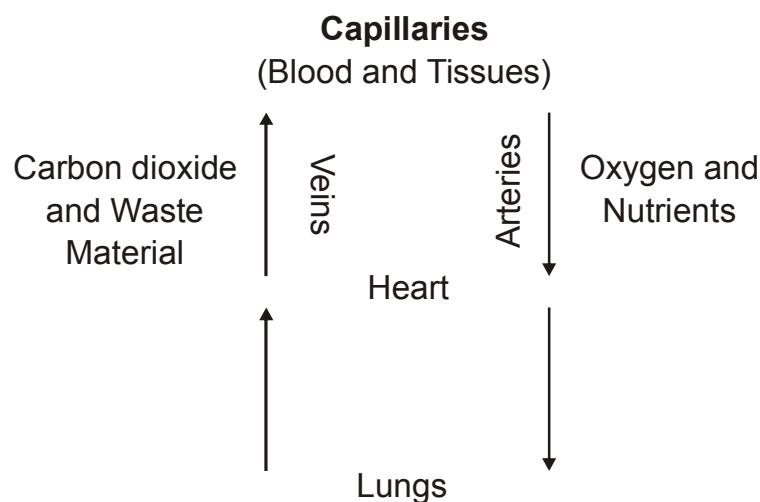
2. Aerobic Matabolism occur in the endurance activities.

waste products are:- Lactic Acid, water and carbon dioxide.

Anaerobic Matabolism occur in speed activities.

Q.2. What are capillaries?

Ans. Capillaries are the smallest and thinnest vessels in the circulation system. The wall of capillaries, made up of only one layer of cells. The interchange of gases and substance between the blood and the tissues take place here.



Q.3. Write the immediate effects of exercise on Cardio-Vascular system?

Ans.

1. **Increase in heart rate** :- When an individual starts exercise, his heart rate increases as per the intensity and duration of exercise.
2. **Increase in stroke volume** :- Stroke volume increases proportionally with exercise intensity. It is measured in ml/beat.

-
3. **Increase in cardiac output :-** Cardiac output increases proportionally with the intensity of exercise's is measured in ltr/ mintue.
 4. **Increases in blood flow :-** Cardio-vascular can be distribute more blood to those tissues which have more demand and less blood & those tissues which have less demand for exygen. The blood is moved away from the main organs such as lever, intestine and kidney in fact it is redirected to the skin to enhance heat loss.
 5. **Increase in blood pressure :-** During the exercise, systolic blood pressure can increase while diastolic blood pressure usually remains unchanged even during the intensive exercise.

Q.4. Differentiate between slow twist fibre and fast twist fibre?

Ans.	Slow twitch fibre (red fibres)	Fast twitch fibre (white fibres)
	The red fibres of muscles are mainly responsible for the endurance activities.	The white fibres of muscle are responsible for strength and speed activities.
	The red fibres are produced energy but the nutrients in the presence of oxygen only.	The white fibre are produced energy by the nutrients with-out the presence of oxygen.

Q.5. Write the effects of exercise in muscular system?

Ans.

1. **Increase in Muscle Mass :-** Through the regular exercise, the cells of the muscle are enlarged, which change the size and shape of the muscle.
2. **Control extra fat :-** Regular exercise controls extra fat of the body. Exercise burns the calories, which is taken in the form of fat. This increases the lean mass in the body.

-
3. **Delays fatigue :-** Regular exercise delays fatigue. This fatigue is mainly due to formation of carbon dioxide, lactic acid and acid phosphate. The accumulation of carbon dioxide, acid phosphate, lactic acid become less in a person who performs regular exercise.
 4. **Posture :-** Regular exercise helps in improving posture by improving postural deformities.
 5. **Strength and speed -** Regular exercise improve the strength and speed muscle cells. This is partially due to the hypertrophy of muscles and partially due to increase in the capacity of giving and receiving stimulus.

Q.6 Describe the effects of exercise on respiratory system?

Ans. The effect of exercise on respiratory system is closely linked with the effect of exercise on circulatory and muscular system. This means that the effect produced on respiratory system by training are improved lung capacity and gas exchange.

1. Improved tidal volume and vital capacity of lungs.
2. Improved aerobic and anaerobic capacity.
3. Avoid second wind.
4. Increased will power.
5. Unused alveoles become active during regular exercise activity, because much amount of oxygen is required in vigorous and prolonged exercise of daily routine. The passive alveoles becomes active.

Long Answer Type Question (150 to 200 words)
(5 marks each)

Q.1 Elucidate physiological changes due to Ageing?

Ans. The physiological changes, which take place mentioned below.

-
1. **Change in Nervous System :-** During ageing, reaction time and movement time slows down with increase in age. The brain wastes, the size of its network and its blood flow decreases with age.
 2. **Change in Gastro Intestinal System :-** With increase in age, there is reduction in the production of Hydrochloric Acid, Digestive Enzymes and Saliva. These changes may result in delayed emptying of the stomach, impaired swallowing. The breakdown and absorption of food may also be impaired. The liver becomes less efficient in metabolizing drugs and repairing damaged liver cells.
 3. **Change in Urinal System :-** As we age, the mass of the kidney decreases, which leads to reduction in blood filtration by the kidneys. The capacity of the bladders decreases and there is an increase in residual urine. This increases the chance of urinary infections.
 4. **The change in senses :-** With advance in age, the senses such as vision, hearing, taste, smell and touch may become less active. Vision and hearing are the most affected by ageing. The taste buds are reduced with age so they lose interest in food.
 5. **Change in Respiratory System :-** With the age, pulmonary function is impaired with advancing age. The airways and lung tissues become less elastic and less efficient. There is decreased oxygen uptake and oxygen exchange.
 6. **Change in fitness :-** The elasticity of tendons, ligaments and joint capsules decreases with ageing. The range of movement is restricted and muscle mass decreases as the age increases. This leads to decreased Flexibility, Endurance, Strength, speed with shortness of Breath, Blood flow, Enzymes etc.

Q.2. Explain the effect of exercise on Circulatory system?

Ans.

1. **Increase in heart size :-** Regular exercise develop the muscles of heart. It increases the size of heart along with the strengthening of heart. Heart becomes efficient in doing it's job.
2. **Decrease in cholesterol level :-** Regular exercise reduces the level of cholesterol in Our blood. The level of cholesterol in our blood is directly linked with blood pressure. Exercise decreases the level of low density protein and increases the level of high density lip protein. It means that exercise decreases the LDL (bad cholesterol) and increase HDL (good cholesterol)
3. **Faster adaptation to workload :-** Due to the regular exercise, the heart can adapt to working load quickly i.e. quick adjustment of heart according to body needs.
4. **Increase in no. and efficiency of capillaries :-** With the regular exercise, efficiency and no. of capillaries are increased with the increase of Muscle mass. The unused and new capillaries become efficient and nurish the various cells efficient and nurish the various cells effectively.
5. **Imporve the working capacity of cardio-vascular system:-** Regular exercise Imporve cardio-vascular system thus the blood travels faster through the blood vessels and increased circulation of blood makes healing faster.

Q.3 Discuss how physiological factors determine flexibility?

- Ans.1. **Muscle strength :-** The muscle should have minimum level of strength to make the movement, specially against the gravity or external force.
2. **Joint structure :-** There are different types of joint in human

body, some of the joints intrinsically have greater range of motion than others for example. The ball & socket joint of the shoulder has the greatest range of motion in comparison to the knee joint.

3. **Internal environment** :- Internal environment of athlete influences the flexibility. For example-warm bath increases body temperature and flexibility whereas 10 minutes outside stay in 10°C temperature reduces the body temperature and flexibility.
4. **Injury** :- Injuries to connecting tissues and muscles can lead to thickening or fibrosis on the effected area. Fibrous tissues are less elastic and can lead to limb shortening and lead to reduce flexibility.
5. **Age and gender** :- Flexibility decreases with the advancement of age. However it is trainable. It can be enhanced with the help of training as strength and endurance are enhanced. Gender also determine the flexibility. Females tend to be more flexible than male.
6. **Active and sedentary life style** :- Regular activities enhance the flexibility, whereas inactive individual loses flexibility due to the soft tissues and joints shrinking and losing extensibility.
7. **Heredity** :- Bony structures of joints and structure length and flexibilities of the joint capsules and surrounding ligaments are genetical and can not be altered by stretching programs.

Q.4. Elaborate the Role of Regular Exercise on Ageing Process?

Ans. Reduces the risk of Age Related Diseases :- Regular exercise reduces the risk of a number of health problems, many aged persons face. Such health problems are :-

1. **Diabetes, obesity, hypertension and heart disease** :- Regular exercise decreases the sugar level, decrease bad

-
- cholesterol, increase good cholesterol, decreases blood pressure and blood vessels stiffness.
2. **Increase in muscular strength :-** Ageing process does not hinder the individual ability to enhance the muscle strength. Regular exercise increases the strength of the muscles. As a matter of fact, exercise increases the size of muscle which ultimately increases muscular strength.
 3. **Reduce the loss of muscle mass :-** Muscle mass decreases with advancing age. Ageing has negative effect on metabolism. Regular exercise reduces the loss of lean body mass and drop in the metabolic rate. Regular exercise also reduces the accumulation of fats.
 4. **Enhances the capacity of lungs and hearts :-** Regular exercise enhance the working capacity of lungs and heart, it reduces the loss of electricity of muscle fibers of lungs and heart. It also plays a key role in keeping the lungs strong and increase oxygen uptake and oxygen exchange.
 5. **Maintaining the bone density :-** The bone density decreases with age. It usually leads to fracture and osteoporosis. Physical exercise helps to maintain bone mass and stimulate bone growth. The ageing persons can increase their bone density with the help of regular exercise.
 6. **Slow down the brain due to ageing :-** The regular exercise reduces the risk of mild cognitive impairment and builds new capillaries to supply the brain with more oxygen.
 7. **Improve mental health and mood :-** Regular physical activities can help to keep thinking learning and judgement skills sharpen. Aerobic and muscle strengthening activities can also reduce the risk of depression and may help to sleep better.

Q.5. Discuss the physiological factors, determine the strength as a component of physical fitness?

Ans.1. **Muscle size** :- Muscle strength directly depends on the crosssectional area of muscle. It is well known that bigger and larger muscle can produce more force. The force produced by the same size of muscles in males and females is approximately the same but males are found to be stronger because they have larger and bigger muscles in comparison to females.

2. **Body weight** :- There is a positive correlation between the body weight and strength individuals with then heavier body weight are stronger than the individual with the lighter weight.

3. **Muscle composition** : - The muscle composition is genetically determined and can not be changed by any type of training.

4. **Nerve impulses** :- The nervous system also play a role in muscle strength. The brain and nervous system has power to activate more motor units when they need to generate larger amount of force. Through the strength training, the body learns to recruit more motor units and increase these units.

5. **Age and gender** :- Age and gender is a factor which effects the muscle strength. Muscle strength decline with the age but it is primarily due to a decrease in muscle cross sectional area and decline in the amount of contractil tissues within the muscle fibres. Regular strength training limits loss of muscle strength with ageing. Men has greater absolute muscle strength than women.

Q.6. Describe the physiological factors which determine the speed as a component of physical fitness?

Ans. Speed is determined to a great extent by the genetic factors. The study of physiological Factors help to select the activity

for an individual.

1. **Mobility of the nervous System :-** The rapid contraction and relaxation of muscles is made possible by the rapid excitation and inhibition of the concerned motor centres. Nervous system can maintain this rapid excitation and inhibition for only for a few seconds. After which the excitation and inhibition spread to the neighbouring centres causing tension in the entire body. This results in decrease in speed. The mobility of the nervous can be trained only to a very limited extent.
2. **Muscle composition :-** The muscle, which has more percentage of fast twitch fibre, contract with more speed in comparison to the muscle which have lower percentage of slow twitch fibre. The muscle position is genetical and can not be changed by training.
3. **Explosive strength :-** For very quick and explosive movements, explosive strength is indispensable. It depends upon metabolic composition, muscle size & muscle coordination. The explosive strength of the muscles can be improved through training.

Q.7. Explain the physiological factors determine endurance as a component of physical fitness?

Ans. Endurance is very significant component of physical fitness, which is determined by the following physiological factors.

1. **Aerobic capacity :-** To perform an activity continuously energy is required by the muscles which can be supplied in the presence of oxygen. Therefore the ability of organism to maintain the adequate supply of oxygen to the working muscles for energy liberation is important for endurance performance. The aerobic capacity depends upon:

-
- a. **Oxygen intake :-** The oxygen intake depends on the vital capacity which further depends on lungs size, no of active alveoli, respiratory muscle and the size of the chest cavity.
 - b. **Oxygen transport :-** The oxygen transport depends on the amount of oxygen, which the blood has absorbed from the lungs and the ability of the circulatory system to carry this quickly to the working muscles. The amount of oxygen absorbed into the blood depends on the speed of blood flow through the lungs and on the blood haemoglobin. The concentration of blood haemoglobin can be enhanced by training. The transportation of oxygenated blood depends on the capacity of the heart. This capacity can be improved by training.
 - c. **Oxygen uptake :-** This depends on the rate of diffusion, which determines the speed of blood flow, temperature & partial pressure of oxygen in the blood and of carbon dioxide in the muscles. The speed and amount of oxygen consumption depends on the no. size & metabolic capacity of mitochondria and fortunately can be improved to some extent through training.
 - d. **Energy reserves :-** The aerobic capacity depends on the muscle glycogen & sugar level in the blood. This can be enhanced by the training.
2. **Anaerobic capacity :-** The working capacity of muscle in absence of oxygen is called anaerobic capacity more or less Anaerobic capacity is required in all kind of endurance activities. Anaerobic capacity is depend on the following factors
 - * **Phosphagen store :-** Means stronger of ATP and CP for producing energy.

-
- * **Buffer capacity** :- Means total storage of Alkali reserve in the body to fight against the effect of lactic acid is called buffer capacity.
 - * **Lactic Acid Tolerance** :- The ability to tolerate the higher concentration of lactic Acid is a significant factor in determining anaerobic capacity.
3. **Movement Economy** :- Energy may be saved if the movements are correct so the economical movements are necessary for endurance performance
 4. **Muscle composition** :- The slow twitch fibres of muscles are best for endurance activities.

UNIT - 9

Sports Medicine

Key Points :-

Concept & definition

Aims & scope of Sports medicine

Impact of surfaces & environment on Athletes

Sports Injuries - Classification, causes & preventive measures

Management of Injuries.

Soft Tissue Injuries

(Abrasion Contusion, Laceration, Incision, Sprain & strain)

Bone & joint Injuries

(Dislocation, Fracture : Stress fracture, Green Stick, Comminuted, Transverse & Oblique & impacted)

9.1 Concept and Definition

Sports medicine encompasses the range of study into the medicine of exercising people. This involves the assessment and management of sporting people, the prevention of injury through the application of sports science knowledge and the application of exercise physiology knowledge to our community at large.

Definition

It is practice of medicine in the the area of health and fitness

to diagnose, treat and prevent injuries resulting from sports activities.

9.2 Aim & Scope of Sports Medicine

Aims of sports medicine :-

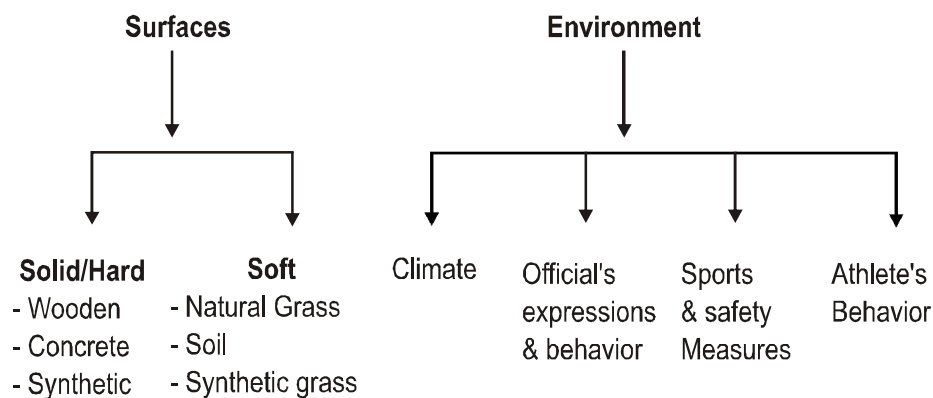
- a. To aware the sports person & athlete about the different kinds of injury in respect of different games.
- b. To concentrate on the causes of injury
 - Lack of warming up
 - Lack of techniques/ skills
 - Environment
 - Psychological factors
 - Physical fitness components.
- c. To provide adequate medical help - Different methods & equipment's of treatment - rehabilitation centres.
 1. Infra red rays
 2. Physiotherapy
 3. Thermal Treatment
 4. Electro therapy
- d. To knowledge of kinds of injury & their necessary precaution i.e. protective measures

Scope of Sports Medicine

- Athlete's nutrition
- Prevention of accidents in sports
- New methods of detecting doping.
- Methods of prediction of sports talent
- Sports & society
- Scientific promotion of sports & games

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- Equipments & facilities
 - Playgrounds
 - Psychological aspects
 - Specific fitness
 - Human anatomy & physiology
 - Sports & first aid
 - Sports injury rehabilitation
 - Female & sports
 - Sports & humatology
 - Study of optional load for different ages
 - Swimming pool
 - Research

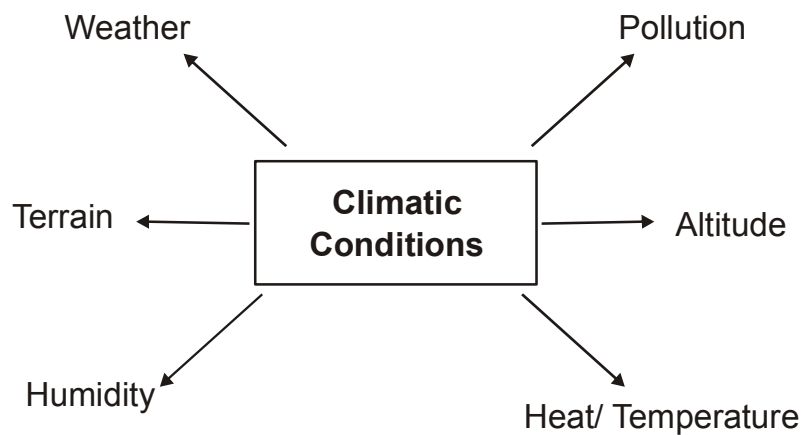
9.3 Impact of Surfaces and Environment on Athletes



Surface variation can lead to different effects on player performance in all sports and on the behaviour of balls in sports such as baseball and soccer.

The effect a field has on player's safety and player's performance, as well as on ball performance, can be termed the playing quality of a field. Fields that are hard can be dangerous to players, while a soft, spongy field can create early fatigue in the leg muscles of a

player. Similarly, uneven, bumpy, partially covered playing surfaces can cause the ball bounce and roll to be unpredictable and can also adversely affect footing.



Temperature

Hot : A human being can only tolerate a variation of around 4°C in internal body temperature without physical and mental performances being impaired.

Following are the heat related illness:-

- * Heat Cramps
Painful muscle spasms
Direct pressure and stretching
- * Heat Exhaustion
Profuse sweating, cold skin, flu-like symptoms, dizziness, rapid pulse, shallow breathing, headache
Get ot of heat, force fluids, refer to physician
- * Heat Stroke
No sweating, dry skin, very hot high temperature, bright red skin, unresponsiveness.

Call doctor or transport immediately, this is a life threatening condition; cool body quickly, treat for shock.

Cold :- Exercising in the Cold

- * the excessive loss of body heat can lead to a generalized vasoconstriction and conditions such as hypothermia, frostbite, and increased blood pressure.
- * Strong wind can accelerate heat loss.
- The windchill index which is presented on the following next provides guidelines for determining 'Exercise is Safe'.
- * Tips to consider before exercising in the cold.
- Wear several layers so that garments can be removed or replaced as needed.
- Allow for adequate ventilation of sweat.
- Wear garments made of materials that allow the body to give off body heat.
- Replace body fluids in the cold just as in the heat
- Monitor body weight over several days.

High Altitude :

High altitudes, both air pressure and oxygen is reduced. This lowers the 'partial pressure of oxygen at these elevations. In these environment, you cant' take up oxygen from the air quite as well.

Exercising at Higher Altitudes :-

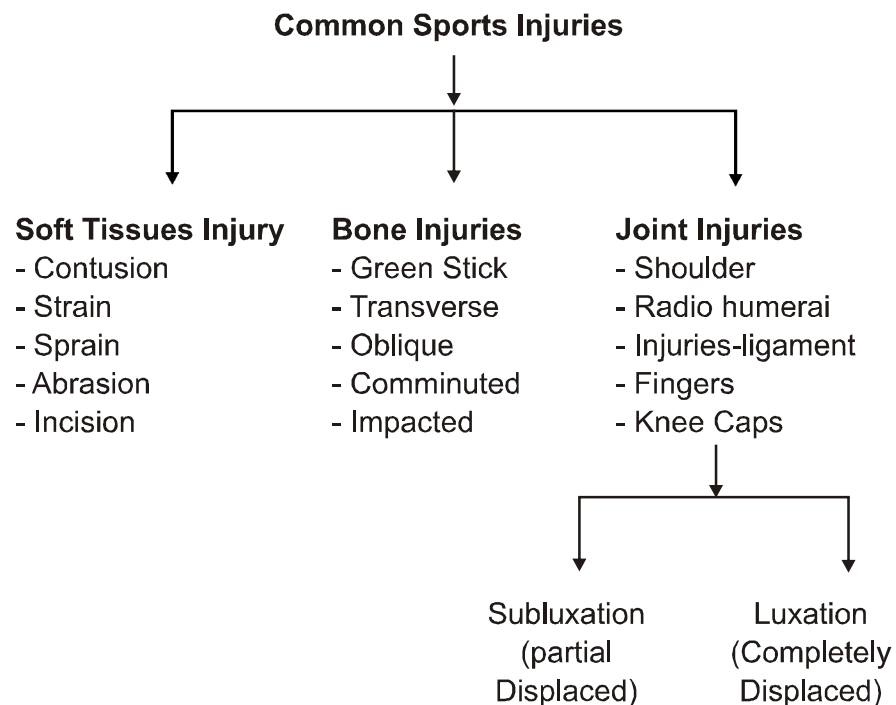
- * At moderate to high altitudes the partial pressure of oxygen in the air is reduced.
- * Acclimatization (physiological) adaptation to an unfamiliar or unaccustomed environment) begins in a couple weeks, but it may take several months to fully acclimatize.

-
- Gradually increase exercise intensity over several days.
 - Increase warm up and cool down periods
 - Take frequent exercise breaks at a lower intensity.

9.4 Sports Injuries Classification, Causes and Prevention.

“Sports injuries” are injuries that happen when playing sports or exercising. Some are from accident. Other can result from poor training practices or improper gear some people get injured when they are not in proper condition. Not warming up or stretching enough before you play or exercise can also lead to injuries. The most common sports injuries are:

9.4 1, Sports Injury



9.4.2 Causes of sports injury :-

Intrinsic Risk Factor	Extrinsic Risk Factors	
<ul style="list-style-type: none">- Physical preparation- Lack of proper training fitness level- Improper warming up & cooling down- Over use of muscles- Muscles imbalance- Individual variables :-<ul style="list-style-type: none">a. Gender & ageb. Nutritionc. Fatigued. Posture deformities	<ul style="list-style-type: none">- Coaching<ul style="list-style-type: none">a. Poor techniquesb. Lack of knowledge- Skill- Rules & regulations- Surrounding- Environment- Equipment- Facilities	<p>Environmental Factors</p> <ul style="list-style-type: none">a. Climateb. Playing Surfacesc. Preventive Measuresd. Medical facilities

9.4.3 How to preven sports injuries?

- * Warming up, stretching and cooling down.
- * Undertaking training prior to competition to ensure readiness to play.
- * Including appropriate speed work in training programe so muscles are capable of sustaining high acceleration forces.
- * Including appropriate stretching and strengthening exercises in weekly training programs.
- * Gradually increasing the intensity and duration of training.
- * Maintaining high levels of cardiovascular fitness and muscle endurance to prevent fatigue.
- * Allowing adequate recovery time between workouts or training sessions.
- * Wearing protective equipment, such as shin guards. Mouth guards and helmets.
- * Pre participation - medical check up.
- * Ensuring the playing surface and the sporting environment

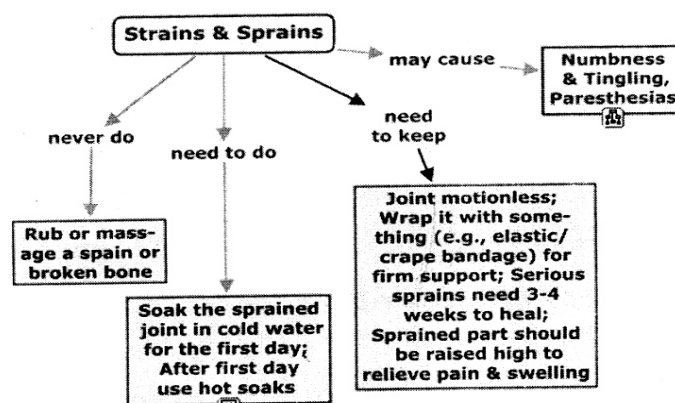
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- are safe and clear from any potentially dangerous objects.
 - * Wearing appropriate footwear that is well fitted and provides adequate support and traction for the playing surface.
 - * Drinking water before, during and after play.
 - * Avoiding activities that cause pain.

9.5 Management of Soft Tissue Injury

Types of Soft Tissue Injuries

Types of injury	Structure injured	Possible cause
Soft tissue		
Sprain	Ligament	Excessive movement forcing the Point past its maximum range of motion, or external violence such as a side push on the knee during a football tackle
Strain	Muscle or tendon	Overstretching of muscle or tendon generally during sudden acceleration or deceleration
Contusion (bruise or haematoma) or a cork	Muscle, tendon, skin	Direct blow from a collision with a player or piece of equipment, or from a heavy fall
Open wound -cut, abrasion, laceration	Skin	Direct blow from a collision with a player or piece of equipment.

9.6 Muscle Injury (Sprain Strain & Contusion)



Sprains and strains are common injuries to the musculoskeletal system. Although these two words are often used interchangeably, they are different types of injuries.

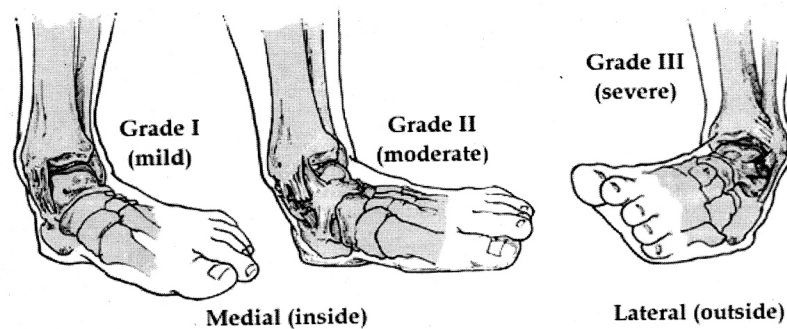
Severity of sprains and strains

A physician categorizes sprains and strains according to severity.

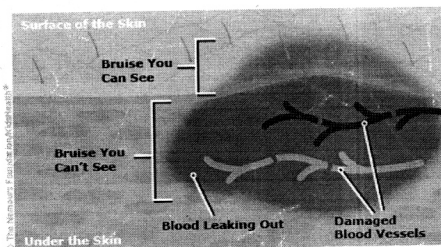
Grade I (mild) sprain or strain involves some stretching or minor tearing of a ligament or muscle.

Grade II (moderate) sprain or strain is a ligament or muscle that is partially torn but still intact.

Grade III (severe) Sprain or strain means that the ligament or muscle is completely torn, resulting in joint instability.



CONTUSION



Skin Injuries :-

Abrasion :-

It is an injury, which is caused when skin is scrapped or rubbed by friction.

It causes severe pain, sometimes bleeding.

Laceration / Wound

It is cut over the skin caused due to severe impact of object or the sharp edge.

Incision

An incision wound is a cut in the skin caused by a sharp object such as a knife, broken glass, scissors or surgeon's scalpel, Incision wounds are 'neat' and the edges of the skin are usually smooth.

Treatment

For most skin injuries the common management steps that should be followed are :

1. Reduce the dangers of infection (for example, by wearing gloves)
2. Control bleeding with rest, pressure and elevation.
3. Assess the severity of the wound.
4. Clean the wound using clean water, saline solution or a diluted antiseptic.
5. Apply an antiseptic to the wound (for example, savlon or Betadine) after ensuring that the person is not allergic to the antiseptic to be used.
6. Dress the wound with a sterile pad and bandage.
7. If necessary, refer the person to medical attention.

9.7 Hard Tissue injury (Bone & joint)

Injuries to the bones of the skeleton may be referred to as hard tissue injuries. Hard-tissue injuries include fractures and dislocation.

Type of Injury	Structure injured	Possible cause
Hard tissue Fracture	Bone	Direct trauma such as a blow, indirect trauma such as falling on an out-stretched hand
Dislocation Subluxation	Joint	Excessive movement of the joint.

Fracture

A hard tissue injury is also called a “fracture” and is defined as a “loss of continuity in the substance of a bone”. Hard tissue injuries, also known as “fractures” are commonly referred to as “broken bones”. or perhaps “cracked bones” in the case of stress fractures and hairline fractures.

Causes :

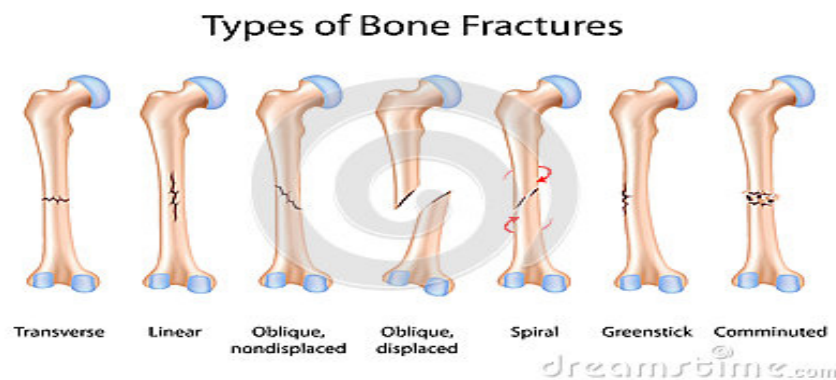
Hard tissue injury does sometimes happen during sporting events, especially in the case of certain more “extreme” sports such as downhill skiing, some equine sports and even motor sports. Hard tissue injuries may be caused by :

- * Contact/ impact with another player , e.g. an opponent in a tackle.
- * Contact with an object used during the activity e.g. a hard ball such as cricket ball striking a hand or face.
- * Contact with a hard playing surface e.g. due to a hard fall onto frozen ground or even solid ice in ice-skating.

Signs & Symptoms

- * feeling the bone “break” (in the case of the casualty himself/herself)
- * hearing the sound of a breaking bone
- * abnormal body shape in the affected area e.g. a finger or toe at an obviously unusual angle - that is not normal for that person.
- * pain and tenderness in the immediate vicinity of the injury.
- * Swelling in the vicinity of the injury.
- * Visible protruding broken bone - in the case of a severe open fracture.

Types of Fracture :



- * Greenstick fracture : an incomplete fracture in which the bone is bent. This type of fracture occurs most often in children.
- * Transverse fracture : a fracture at a right angle to the bone's axis.
- * Oblique fracture :- a fracture in which the break is at an angle of the bone's axis.
- * An impacted fracture is one whose ends are driven into each other. This commonly occurs with arm fractures in children and is sometimes known as a buckle fracture.
- * Stress fractures - Pain caused by repeated stress to the bone over time.
- * Comminute Fracture : a fracture in which the bone fragments

into several pieces.

First aid for Fracture

- * Depends on type & location of fracture

For open fractures

- * Control bleeding before treatment
- * Rinse and dress the wound

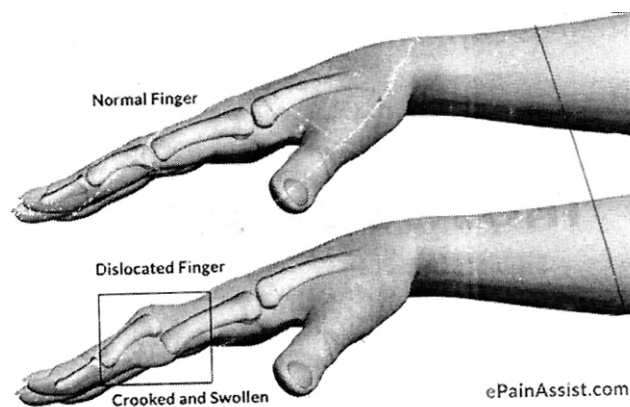
For open / closed fractures

- * Check the breathing
- * Calm the person
- * Examine for other injuries
- * Immobilize the broken limb
- * Apply ice to reduce pain / swelling
- * Consult a doctor

Dislocation

A dislocation is a separation of two bones where they meet at a joint. Joints are areas where two bones come together.

A dislocated joint is a joint where the bones are no longer in their normal positions.



Causes :

Caused by contact sports, high impact sports, and sports resulting in excessive stretching .

Most common dislocated joints are in the hand followed by the shoulder knees, hips, and elbows are less common.

Signs and symptoms :

A dislocated joint may be

- * Accompanied by numbness or tingling at the joint or beyond it
- * Intensely painful, especially if you try to use the joint or put weight on it.
- * Limited in movement.
- * Swollen or bruised.
- * Visibly out of place, discoloured, or misshapen.

First aid

1. Don't delay medical care : Get medical help immediately
2. Don't move the joint. Until you receive help splint the affected joint into its fixed position. Don't try to move a dislocated joint or force it back into place. This can damage the joint and its surrounding muscles, ligaments, nerves or blood vessels.
3. Put ice on the injured joint. This can help reduce swelling by controlling internal bleeding and the build up of fluids in and around the injured joint

**Very Short answer type Question
(1 mark each)**

Q.1 What is sports injury?

Ans. "Sports injuries" are the types of injuries that occur during participating in sports/ competition, training sessions or sports activities?

Q.2 How to classify sports injury?

Ans. 1. Soft tissue injuries :- The injury of muscles, tendons, ligaments.

2. Hard tissue injury :- The injury of bones & joints.

Q.3 What is soft tissue injury?

Ans. A soft tissue injury is the damage of muscles, ligaments and tendons throughout the body.

Q.4. Write types of soft tissue injury.

Ans. Types of soft tissue injuries include.

- Bruises (haematoma)
- Sprains (ligaments)
- Strains (tendons)
- Lacerations (skin)
- Tendonitis (tendons)

Q.5 What is Sport Medicine?

Ans. Sports medicine is a branch of medicine that deals with physical fitness, treatment and prevention of injuries related to sports related to sports and exercise.

Q.6. What is abrasion?

Ans. it is an injury, which is caused when skin is scrapped or rubbed by friction. It causes severe pain sometimes bleeding.

Q.7 Define sprain?

Ans. Sprain is a sudden stretching of ligaments of as joints & associated with the pain & de-coloration into tissues. For example Ankle, Elbow, knee.

Q.11 what do you mean by fracture?

Ans. A fracture is a broken bone. It can range from a thin crack to a complete break. Fracture caused by a direct blow to the bone either in a fall or a kick.

Q.12 Define stress fracture.

Ans. Pain caused by repeated stress to the bone over time.

Q.13. Define shoulder dislocation.

Ans. A dislocated shoulder joint is a joint where the bones of shoulder are no longer in their normal positions.

**Short Answer type Questions (80-90 words)
(3 marks each)**

Q.13 Explain concept of sports medicine?

Ans. Sports medicine encompasses the range of study into the medicine of exercising people. This involves the assessment and management of sporting people, the prevention of injury through the application of sports science knowledge and the application of exercise physiology knowledge to our community at large

A fundamental concept in sports medicine is the use of active rehabilitation techniques that result in the safe and timely return of the injured athlete to participation in his or her sport. Coaches as well as athletes expect sports medicine physicians to use all available clinical tools to effectively rehabilitate the injured athlete.

Q.14 What are the soft tissue injuries ? Explain any two.

Ans. Soft tissue injuries are the most common injury in sport. Soft tissue refers to tissues that connect, support, or surround other structures and organs of the body.

Types of soft tissue injury.

1. Contusion 2. strain 3. sprain 4. Abrasion 5. Bruises.

1. Sprain is a stretched or torn ligament. Ligaments are tissues that connect bones at a joint falling, twisting, or getting hit can all cause a sprain. Ankle and wrist sprains are common. Symptoms include pain, swelling, bruising and being unable

to move your joint . You might feel a pop or tear when the injury happens.

2. **Strain** is a stretched or torn muscle or tendon. Tendons are tissues that connect muscle to bone. Twisting or pulling these tissues can cause a strain. Strains can happen suddenly or develop over time. Back and hamstring muscle strains are common. Many people get strains playing sports. Symptoms include pain, muscle spasms, swelling and trouble moving the muscle.

Q.15. What is dislocation? define any two.

Ans. A dislocation occurs when 2 bones are out of place of the joint that connects them. Dislocation may also cause injury to nerves and blood vessels. Joints that become dislocated and later heal are more likely to become dislocated again.

Types of Dislocation includes.

1. **Shoulder dislocation** :- The shoulder joint is the most frequently dislocated major joint of the body. In a typical case of a dislocated shoulder, a strong force that pulls the shoulder outward (abduction) or extreme rotation of the joint pops the ball of the humerus out of the shoulder socket. Dislocation commonly occurs when there is a backward pull on the arm that either catches the muscles unprepared to resist or overwhelms the muscles.
2. **Hip dislocation** : It occurs when the head of the thighbone (femur) is forced out of its socket in the hip bone (pelvis). It typically takes a major force to dislocate the hip. Car collisions and falls from significant height are common causes and as a result, other injuries like broken bones often occur with the

dislocation.

Q.16. What are the common causes of fracture?

Ans. Please see causes in fracture for answer.

Q.17. What are the types of fractures? Define any two types.

Ans. For answer please see types in fracture.

**Long Answer type Question (150 to 200 words)
(5 marks each)**

Q.18. Write down Aims and objectives of sports medicine.

Ans. AIM : Aim of sports medicine is to deal with the improvement of general well being and health of the population through promotion of an active lifestyle. In addition, medical care of all people who exercise or involve sports activities and diagnosis, treatment, prevention, rehabilitation and functional evaluation following to injuries or illnesses resulting from amateur (Recreational) or professional participation to physical activities, exercises and sports of the general interest in sports medicine.

“The main objective of sports medicine is to restore a patient’s functioning to the highest level possible”.

The other objectives are :-

1. Preventive health care -
 - a) Maintenance of fitness
 - b) Detection of disorders.
 - c) Functional Evaluation
2. Scientific promotion of games and sports-
 - a) Planning of training programs

-
- b) Evaluation of training programs
 - c) Injury prevention
 - d) Psychological counselling and guidance

3. Sports Medical Services :-

Sports medicine services may also be extended to prevention of obesity, cardiac illness, cardiac rehabilitation, prevention and control of diabetes.

Q.19. Explain importance of sports physician in sports.

Ans. The sports medicine physicians are specially trained for total care of athletes and active individuals.

Sports medicine physicians take care of people who have sports injuries. These individuals may be athletes, or they may be regular people. One does not have to be an athlete or even play a sport to have a sports injury. Someone running down the street who trips and sprains their knee is considered to have a sports injury, even if they are not an athlete and were not participating in running as a sport.

There's a long list of conditions that they can help with. They include.

- * Acute injuries such as ankle sprains, joint injuries, dislocations and non surgical fractures.
- * Overuse injuries including stress fractures, tendonitis and osteoarthritis
- * Traumatic brain injuries.
- * Helping athletes with acute illnesses (mononucleosis, asthma)
- * Nutrition
- * Exercise prescriptions for people who want to become more active

-
- * Injury prevention
 - * “Return to play” decisions for injured or ill athletes
 - * Pre participation physical examinations
 - * Exercise promotion.

Q.20. How you will prevent injuries in sports?

Ans. See how to prevent sports injury?

Q.21. Explain impact to surface on players.

Ans. See impact of surface on players for the answer.

Q.22. By reading paragraph try to answer question given below:

My name is Shyam, Once we were playing football in the summer of June. Time was around 11.30 am. suddenly my team mate Raju fall down and was unconscious. His body was very hot, skin was hot red and dry and having rapid pulse rate. It was the signs of heat stroke. I told Pratap to call ambulance and carried Raju near cooler to reduce heat, removed his clothing and also tried to bring down his temperature with cold sponge. Pratap tried to give him water but I immediately stopped him. After some time ambulance came and we took Raju tonearby. Hospital. All my friends were looking at me proudly because my awareness saved Raju’s life.

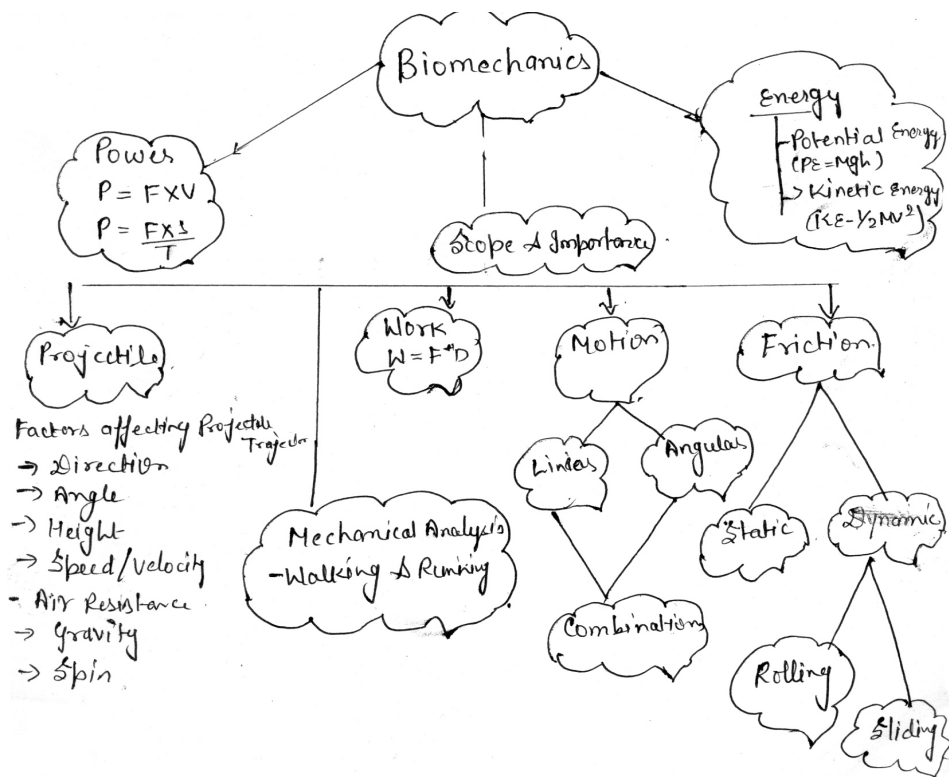
- Q.1 What happen to Raju when he was playing football?
- Q.2 How Pratap come to know that it is Heat stroke?
- Q.3 What were the signs of Heat stroke?
- Q.4 What was the first step Shyam took?
- Q.5 What first aid Shyam gave to Raju?

Chapter-10

BIOMECHANICS & SPORTS

Key points:

- * Projectile & Factors affecting projectile trajectory
- * Angular & Linear movements.
- * Introduction to work, Power and Energy.
- * Friction
- * Mechanical Analysis of walking and Running



Biomechanics and Sports

Introduction :- It is branch of science which deals with the forces related to the body movement.

- * Biomechanics is derived from greek words, “Bio & mechanics” “Bio” refers to life or living things & “mechanics” refer to the field of physics or the forces that action bodies in motions.
- * Biomechanics is defined as systematic study of mechanics of body joints.
- * According to Wikipedia “Biomechanics is the study of the structure & function of biological systems of living beings.”
- * **Biomechanics is the study of force & and their effects on living systems.**

Scope of biomechanics in sports

1. Performance of sports
2. Management of sports injuries
3. Rehabilitation
4. Sports mastery

Need & importance of Biomechanics in sports

- I Improves performance in sports
- II Improvements in techniques
- III Development of improved sports equipments
- IV. Improve in training techniques
- V. Prevent sports injuries.
- VI. Helps in understanding human body
- VII. Knowledge of safety principles
- VIII. Helps in research works
- IX. Creates confidence in players
- X. Helps in maintaining healthy body.

10.1 (A) Projectile & Factors affecting Projectile Trajectory

(i) Vertical Directions

(ii) Horizontal Directions

- Speed of Release
- Angle of Release (Trajectory of Relax)
- Height of Release

10.1 (B) Factors affecting projectile trajectory (Page 181)

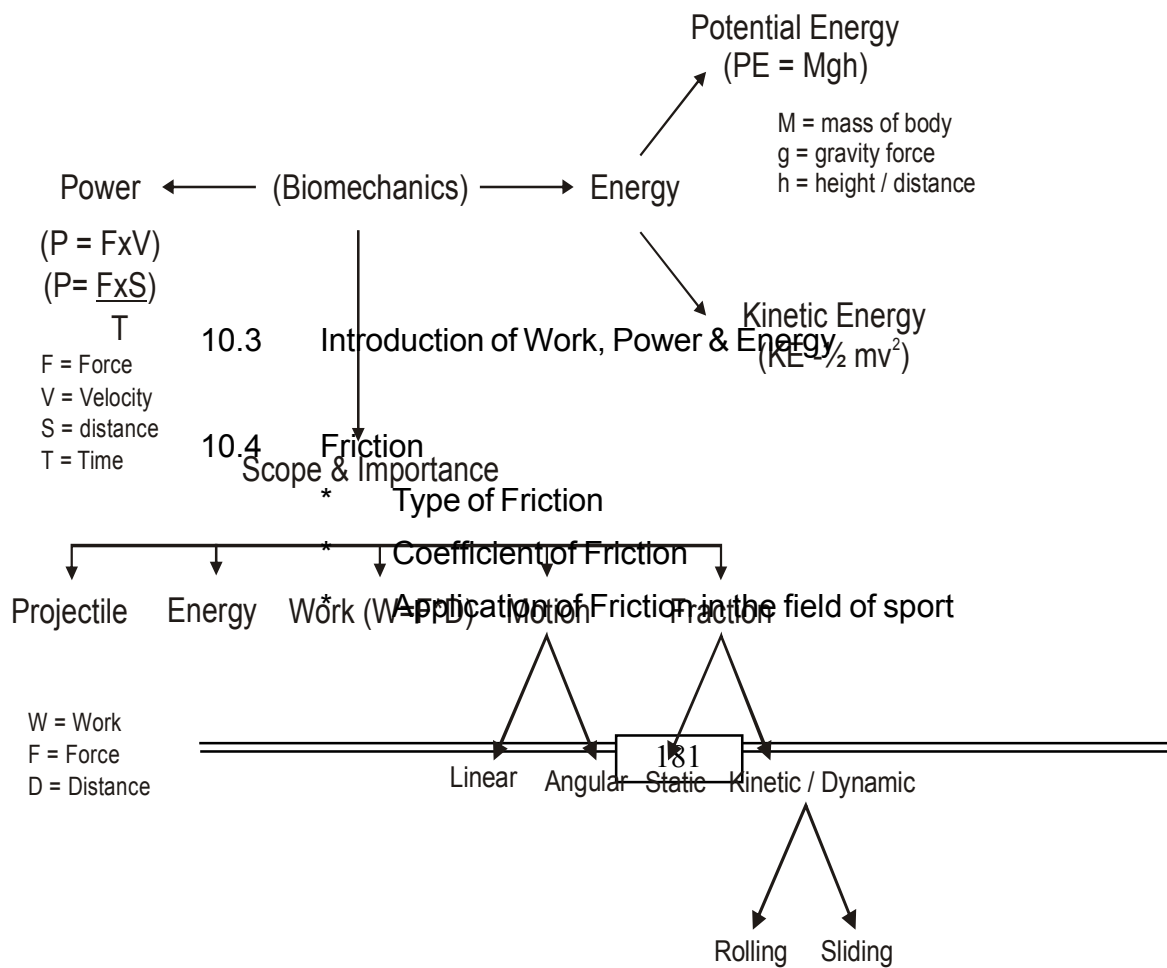
- Direction
- Angle
- Height
- Speed / velocity
- Air Resistance
- Gravity
- Spin

10.2 Motion (Movement)

Linear Motion

Angular Motion

Combination Motion



10.5 (A) (i) Mechanical Analysis of walking

A Stance phase

- i Heel strike
- ii Early flat foot
- iii Late flat foot
- iv Heel rise
- v Toe off

B Swing phase

10.5(B) (i) Running

A Stance phase

- i Initial contact/float stage / Braking
- ii Absorption stage
- iii Midstance stage
- iv Propulsive stage

B Swing Phase

- C Upperbody & Arm Mechanics in running

10.5 (C) Differentiate-Running and walking

Very Short Answer Type Question (1 Mark Each)

Q.1 What do you mean by sports Biomechanics?

Ans. Sports Biomechanics is the study of forces and stresses of human movement & their effect on athletics. performance and safety.

Q.2 What is power?

Ans. The Rate of doing work or using energy is called power. Ex

Kicking a football or lifting the weight.

Power= Work done/Time taken to do work.

Q.3 Define work?

Ans. Work refers to an activity involving a force and the Movement in the direction of force. It can also be defined as “the work done by a constant force as the product of force and the distance moved in the direction of the force”.

Work Done = Constant force x Distance moved in the direction of the force.

Q.4 Explain Gravity?

Ans. Gravity is the force of attraction exerted by the earth towards its centre on a body or an object.

Q.5 Define trajectory?

Ans. The flight path followed by a projectile is called it's trajectory.
Ex. Throwing a ball into air.

Q.6 Explain one of the most important difference between the Mechanical analysis of walking and running?

Ans. In running a time comes when both the feet are off the ground which is called float phase, while in walking one foot is always in contact with the ground.

Q.7 What is air resistance?

Ans. Resistance is a force, which created by the contact is between the two surfaces. When a projectile moves through the air, the force applied by the air that opposes the motion of the porjectile is called air resistance.

Q.8 Define velocity?

Ans. The displacement covered by an object per unit time is called velocity.

Ex. Time taken in 100m by an athlete.

Velocity = distance / Time

Q.9 What is Energy?

Ans. It is the capacity to perform a work.

Q.10 What is friction?

Ans. Friction is the force that opposes the relative motion of one surface over another.

EX. Ball stops after covering a distance.

Short answer type questions (80 to 90 word) 3 Marks Each.

Q.1 What is friction? Discuss various types of friction in sports.

Ans. Friction is the force that opposes relative motion between the two surfaces that come in contact. Friction always acts in the opposite direction of the applied force.

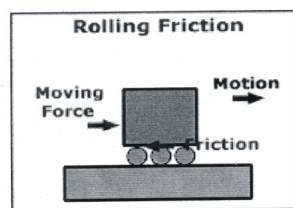
Types of Friction :-

1. **Static Friction-** The opposite force that comes into play when one body tends to move over the another surface, but the actual motion has not yet started.

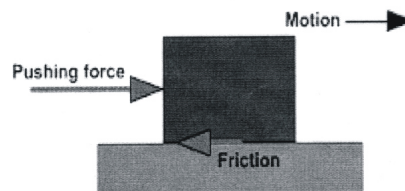
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2. “Static friction is the friction that is present when two bodies are static. This kind of friction can stop from moving on a path.

Dynamic friction- The opposing force that comes into play when one body is actually moving over the surface of another body. Dynamic friction may be of two types.

1. **Rolling friction-** The opposing force that comes into play when one body is actually rolling over the surface of another body.
For example, hockey / cricket ball is hit.



Rolling Friction



Sliding Friction


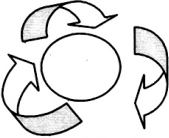
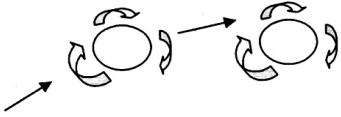
2. **Sliding friction-** The opposing force that comes into play when one body is actually sliding over the surface of the other body. For example-Ice skating.

Q.2 Differentiate between Linear and Angular motion?

Or

Describe the two type of motion in sport?

Ans. Motion means “a change of position of a body and consists of the upsetting the equilibrium of a body”.

LINEAR MOTION	ANGULAR MOTION
<p>When a body moves in a straight line, from one point to other in the same direction, is called Linear motion.</p> <p>Linear Motion is measure in feet, meters, km etc.</p> <p style="text-align: center;">→ → → → →</p> <p>Linear Motion is two types:</p> <p>1) Curve linear motion :- When body travels on a curved path. Exp. shot put</p> <p style="text-align: center;">  </p> <p>2) Rotatory motion:-It is the movement which occurs when the axis of the body fixed, causing it to move around that particular point when the force is applied to it Example:- While running leg is fixed with hip joint but move forward with rotator motion.</p>	<p>When a body rotates it turns about an axis, this rotation of the body is called angular motion.</p> <p style="text-align: center;">  </p> <p>It is measured in degrees.</p> <p>Angular motion is of two types.</p> <p>1. Visible Axis:-It is that type which can be seen for Example – Hammer throw.</p> <p>2. Invisible:- An imaginary axis is that which cannot be seen. The axis is the centre of the gravity of the body. For Example—A ball rotated in the air.</p> <p style="text-align: center;">  </p>

Q.3 What is energy? Explain about kinetic energy & Potential Energy.
Or

Differentiate between kinetic energy & Potential energy?

Ans. The energy is the capacity to do work. There are two types of

Energy:- Kinetic Energy:- It is defined as energy possessed by a body as a result of motion.

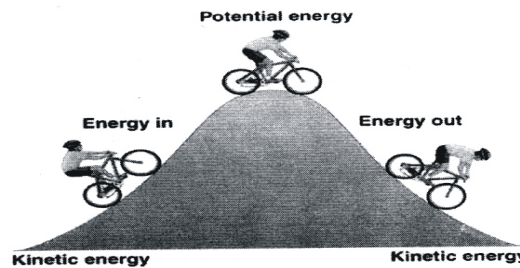
For Example:- If a javelin is in linear motion at its fullest speed, its kinetic energy will be more. When it is slow, it loses its kinetic energy. When it touches the ground, it has no kinetic energy. Kinetic energy also depends on the mass or a thing.

Kinetic Energy = $\frac{1}{2} \text{ mass} \times \text{velocity}$ ($\frac{1}{2} mv^2$)

Potential Energy:- It is energy which is stored up in a body because of its position.

For Example:- When a basketball is thrown upward, it gains in height. The movement of a ball comes to an end. It means the ball gets potential energy whereas kinetic energy goes away, when the basketball after reaching a certain height stops, its kinetic energy reduces to zero and the basketball has only potential energy.

PE = Mass x Gravitational Force x Height of the body from the ground (mgh).



Q.4 Differentiate between Running and walking?

RUNNING	WALKING
<p>I. Running is a process, in which both feet are off the ground.</p> <p>II. There is a double swing phase and the swing phase is longer.</p> <p>III. The linear and angular velocity of lower limbs is faster.</p> <p>IV. Running requires greater range of motion.</p>	<p>I. Walking is a process, in which at least one foot remains in contact with the ground.</p> <p>II. There is longer stance phase whereas swing phase is shorter .</p> <p>III. The linear and angular velocity of lower limbs is slower.</p> <p>IV. Walking requires lesser range of motion.</p>

Q.5 Is friction advantageous or disadvantageous in the field of games and sports? Give your Comments with examples.

Ans. Friction is usually called necessary evil. It means it is essential in the life and we cannot do any work without it.

Advantage of friction:-

- a. **Keeps the object at position :-** by friction, the object can be placed at position and shaped.
- b. **Helps to move:-** Friction forces help to move the object Ex: running or walking. With friction of feet/ shoes on the surface, helps to speed.
- c. **Frictional force helps** to move the object in the speed. For Example :- Spikes are used by the athletes to run fast.
- d. **Hold or grip an object:-** With the help of friction the ridges of skin of our fingers and palm enable us to grab hold objects. For example- In badminton the players use grip to hold it.
- e. **Produce heat:-** The law of conservation of energy states that the amount of energy remain constant. Thus, the energy that is due to friction in trying to move the object is really convert into heat energy.

Disadvantages of friction:-

- a. **Wear and tear of object:-** due to friction, there is wear and tear of object. Lubrication is used to allow the parts to move easier, moreover, prevents wear and tear.
- b. **Wastage of Energy:-** Excess of friction means extra energy, thus energy is being wasted.

-
- c. **Slow down the speed:-** In the roller skating, Rolling shoes and smooth surface are used to minimize friction.
 - d. **Makes movement difficult :-** Friction can make the job more difficult when one has to move the other object. Excess friction can make it difficult to slide a box across the floor, walk through deep snow.

Q.5 Mr. Vinay is a physical education teacher in a govt. school and he was a renowned national level long jumper during his teenage. Mahesh is also a long jumper & his landing is improper. So he lost his position. Mahesh went to Mr. Vinay to seek help Mr. Vinay gave him proper scientific technique tip to follow correct body posture while landing & also motivated to utilize the same jump consistent practice. After the one year of training Mahesh won gold medal in the Inter Zonal Athletic Meet.

- I. What was the problem facing by Mahesh body?
- II. State the qualities of Mr. Vinay as a coach?
- III. Explain the role of coach in the life of a sports man?

- Ans.(i) He was facing problem in landing technique of Long Jump/ Mahesh was facing the problem of improper Landing in his long jump event so he didn't win any medal in the athletic meet.
- (ii) Mr. Vinay has following qualities.
- 1. Good motivate, 2. Dutifulness, 3. Knowledge of scientific techniques or mastery in skill, 4. Helping attitude, 5. Good co-ordination.
- (iii) As a coach he can play in two different areas :-

-
- i. Information feed back, implimentation in respective field of skill.
 - ii. Suggest, refer, engage with field experts.

Long Answer Type Questions (150 to 200 words) (5 mark each)

Q.1 What is projectile ? Explain the factors affecting projectile trajectory

Or

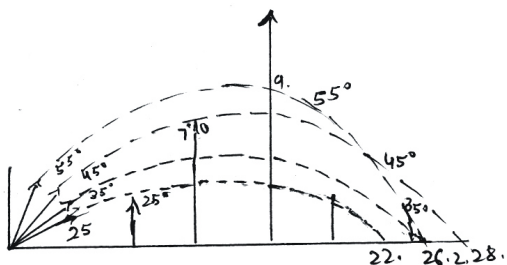
Write in brief that how angle of projection, height of releas speed of release, gravity and air resistance affect projectile trajectory.

Ans. An object thrown into the space either horizontally or an acute angle under the action of gravity is called a projectile. There are force which act on a projectile-gravitational force and air two resistance. Air resistance of an object varies greatly and it depends on the object's particular shape and the atmoshperic conditions in which the object is released.

Trajectile - The path followed by a projectile.

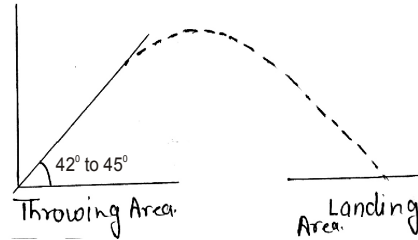
The factor affecting Projectile Trajectory are mentioned below.

1. **Angle of projection:-** An object which is projected at different angles covers different distance. When it is projected or released at angle of 25° , making it a parabolic path and coves lesser distance. When it is released at angle of 42° & 45° , makes a parabolic path and covers. Maximum distance. So the distance covered by an object (Shot Put, Hammer, Javelin, Discus etc. depends on the angle of release of projectile.

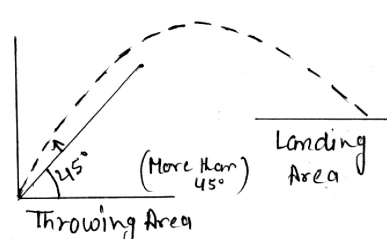


2. **Projection height relevant to the landing surface:-**

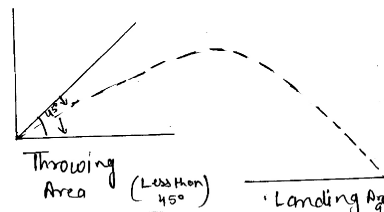
If the projection height and landing surface are equal the thing should be release/thrown at an angle of 42° to 45° it cover maximum distance.



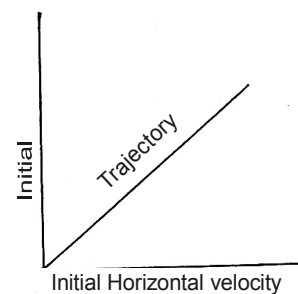
If the level of landing surface is more than projection height the angle shall be increased i.e. should be more than 45° . So thing are cover a maximum distance.



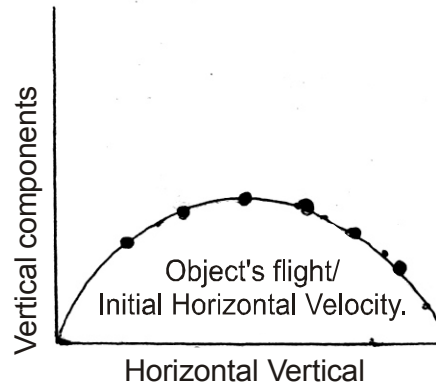
If the level of Landing surface is less than projection height the angle of projection should be decreased. I.e. should be less than 45° . The things are cover maximum distance. So the distance of horizontal depends upon the relevancy of projection height and landing surface.



3. **Initial velocity:-** The distance covered by on object depends on the initial velocity of the projectile. If the initial velocity is more, the object covers maximum distance. And if the initial velocity is less the object covers less distance.

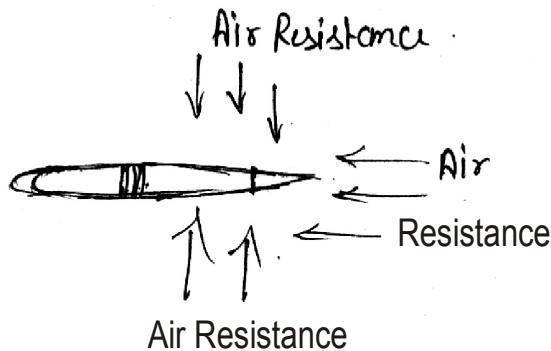


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4. **Gravity:-** It is the force of attraction exerted by the earth towards the object's. A Leaner object, if projected will have longer elivation in companison to a light weight object with the same force. Gravity affects a projectile as it decreases the height of the force of gravity acts on the object to stop its upward movement and pulls it back to earth. Limiting vertical component of the projectile.



5. **Air Resistance:-**

When a projectile moves through the air, it is slow down by air resistance, Air resistance decrease the horizontal component of projectile. The effect of air



resistance is very small but it increase the horizontel component of air resistance acting on a projectile mass surface of the object. Following factors - Surface of the object volume, mass & speed related to the amount of air resistance of a projectile.

6. **Spin:-** The amount and direction of spin acting on a projectile

will directly effect the distance travelled or covered by a projectile.

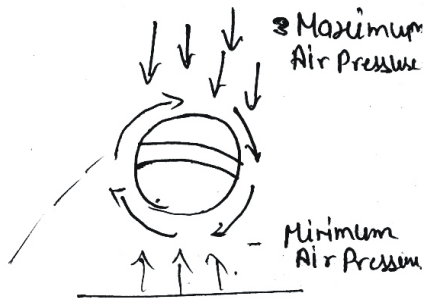
The main reason behind this fact is the air pressure acting on the object.

- Upper air pressure is maximum on the object.
- Lower air pressure is maximum on the object.

Q.2 Discuss the mechanical analysis of walking in details?

Or

With the help of mechanical analysis of walking, state how it can enhance or develop the performance of an athlete? Explain the phases of mechanical analysis of walking?



mechanical analysis of walking helps to improve the players and it also instrument for better performance.

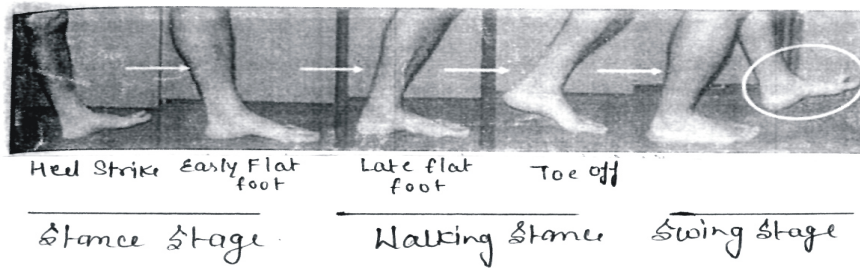
Analysis of Walking divided into two phases :-

1. **Stance phase** :- This is the Period, when the foot is on the ground. It is the part of walking that it consists of maximum percentage of walking. Both the feet have a contact with the ground for a period of time. The stance phase of walking is divided into five stages.

- * **Heel strike:-** This stage begins when the feet first touche the ground and continuous until the complete foot is on the ground i.e. early flat foot stage.
- * **Early Flat Foot:-** The starting of this stage is that movement when the complete foot is on the ground and early flat foot stage

occurs when the body's centre of gravity passes over the top of the foot. The centre of gravity of the body is located approx. in the pelvic area of the lower spine while walking. The main purpose of this stage is to allow the foot to act as a shock absorber.

- * **Late Flat Foot:-** An athlete comes into late flat foot stage when his body's centre of gravity passes in front of 'neutral' position. This stage lasts when the heel lifts off the ground. During this stage the foot needs to go from being a shock absorber to being a rigid lever which can help to propel the body in forward direction.
- * **Heel Rise:-** This stage starts when the heel begins to leave the ground. The foot functions as a rigid lever to move the body in forward direction. During this stage of walking, the ground forces that go through the foot are very significant.
Toe-off : - When the toes leave the ground completely. This stage continues until the beginning of swing phase.
- 2. **Swing Phase:-** It occurs when one foot is on the ground and other one is in the air swing phase in walking is then the stance phase. It is divided into three phases.
- * **Initial swings:-** This phase sees the hip extended to 10° and then going onto flexion and knee flexed to $40-60^{\circ}$ and the ankle changing its position from the flexion to neutral.
- * **Mid Swing:-** This phase sees the hip extended to 30° the knee flexion till 60° and extended approx to 30° and ankle becomes dorsiflexed.
- * **Terminal Swing:-** This phase is the hip flexed till 30° and knee is locked extension and foot changes its position from dorsiflexed to neutral.



Q.3 What are the different phase of running cycle?

Ans:- Running as essential part of living beings. Running is important in sports also. A good runner will not only be able to defeat it's opponents in running, but would also be able to gain very good takeoff velocity that would help to take a higher or longer jump.

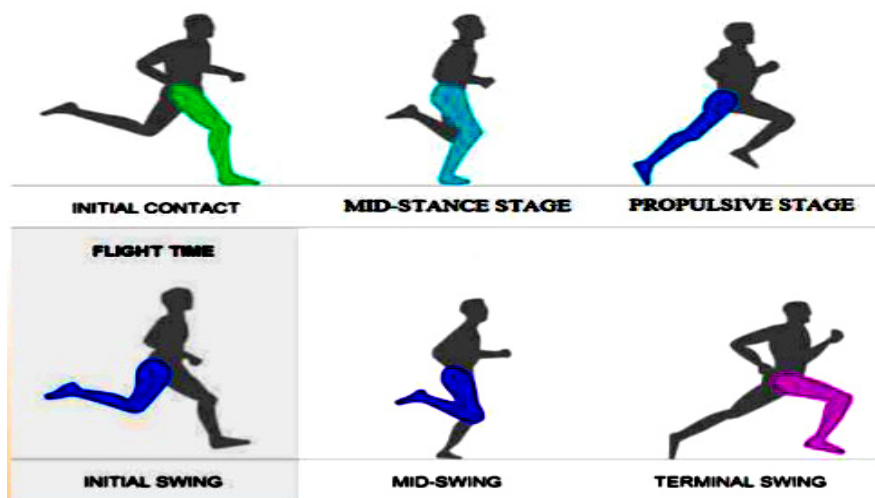
Different phases of running are mentioned below.fkfkfkfk

Running style /phases .	Sprinting	Fast Running-	Jogging
Initial contact	This phase sees the front of the foot the sprinter making contact with the ground. Their heel might or might not touch the ground later depending on their personal running technique.	This phase sees the middle of the foot or the heel of fast runner make contact with the ground .	This phase sees the full foot or the heel of the jogger make contact with the ground
Mid - stance	This phase is very quick and the sprinter's foot is usually in the same position as in the phase of initial contact	This phase is very quick and the fast runner will spend this phase in mid stance – as he pushes through with this foot	in comparison to sprinters and fast runners who use their feet and ankle to move in to the next phase joggers .tend to move their centre of gravity forward to do the same .

Propulsion	This phase sees the hips of sprinter extended back ready to propel him forward for take-off .his arms simultaneously swings at full power to help him	The runner receives propulsion through the big toe with his hips extended back and knee slightly bent .	The jogger will receive propulsion through the big toe .but if the hip of jogger are not fully extended back ,then the propulsion is received from the other toes .The arms of the joggers only move a small amount .
Swing	The non-supporting leg of the sprinter swings high with the knee at almost at an angle of 90	The knee of the non-supporting leg of the faster runner will be lifted , although not as high as that of a sprinter.	The knee of your non-supporting leg of the jogger remains low and only slightly bent ,

Upper body & Arm mechanics in Running - The upper body action provides balance & promotes efficient movement. The balance is maintained by the arm & upper body effectively working in the direct opposition to the legs. The arm & upper body produce a propulsive force during absorption stage. The arm & upperbody also counter balance in mid-section.

Contact Time

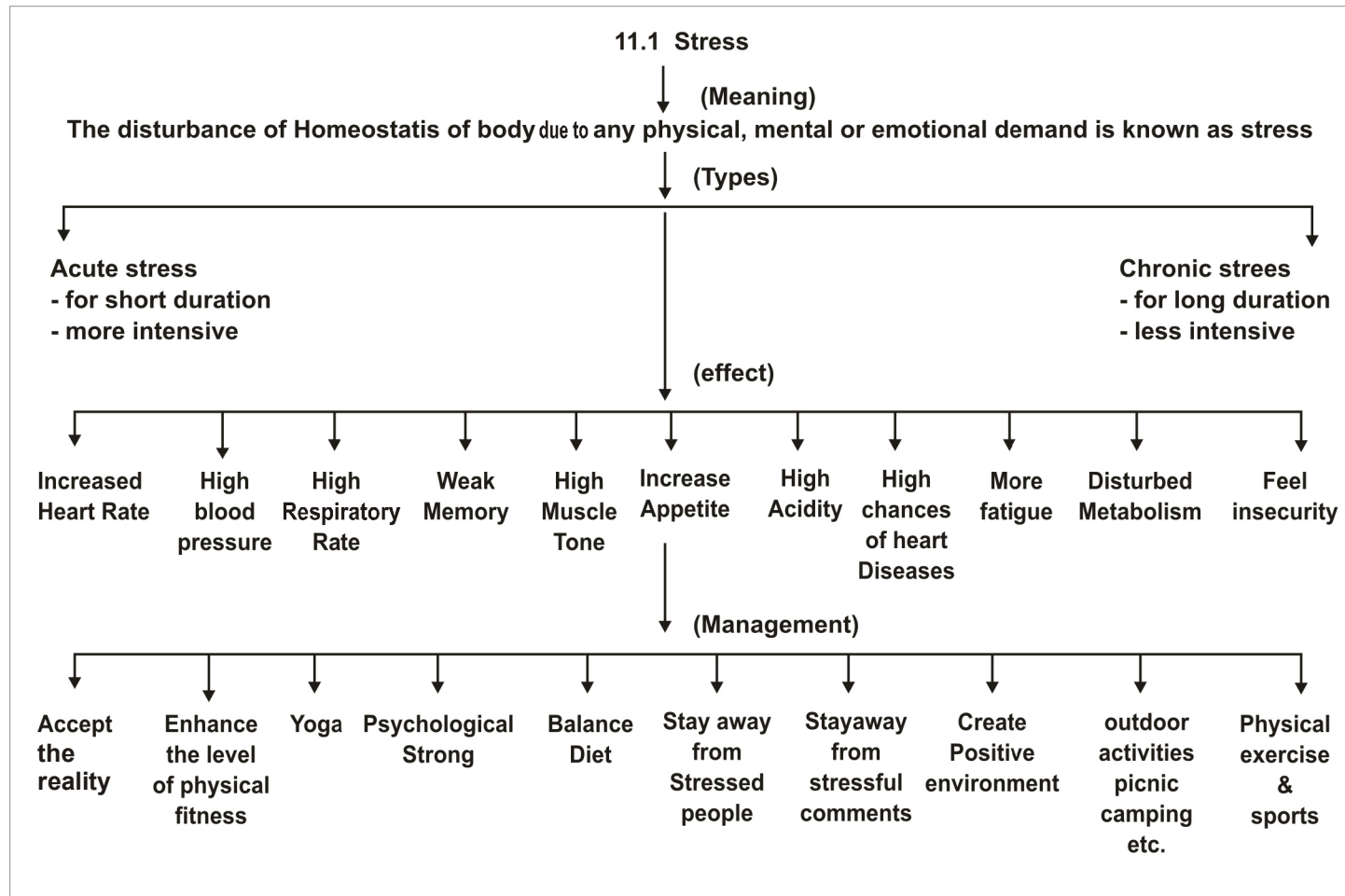


UNIT - 11

Psychology and Sports

Key Points :-

- * Understanding Stress - Meaning, definitions, types, effects & mangement
- * Anxiety - Meaning, Definitions, effect & management
- * Coping strategies - Problem focused and emotional focused
- * Personality - Meaning, definations its dimensions and types, Role of sports in personality development.
- * Motivation - meaning its types & techniques.
- * Self esteem & body image
- * Psychological benefits of exercise.

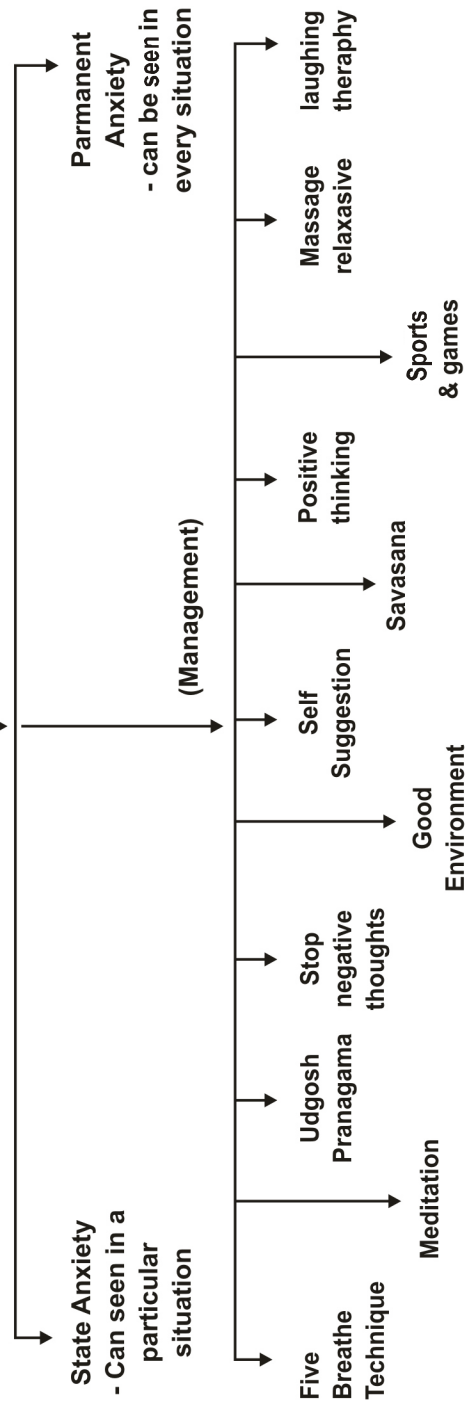


11.2 Anxiety

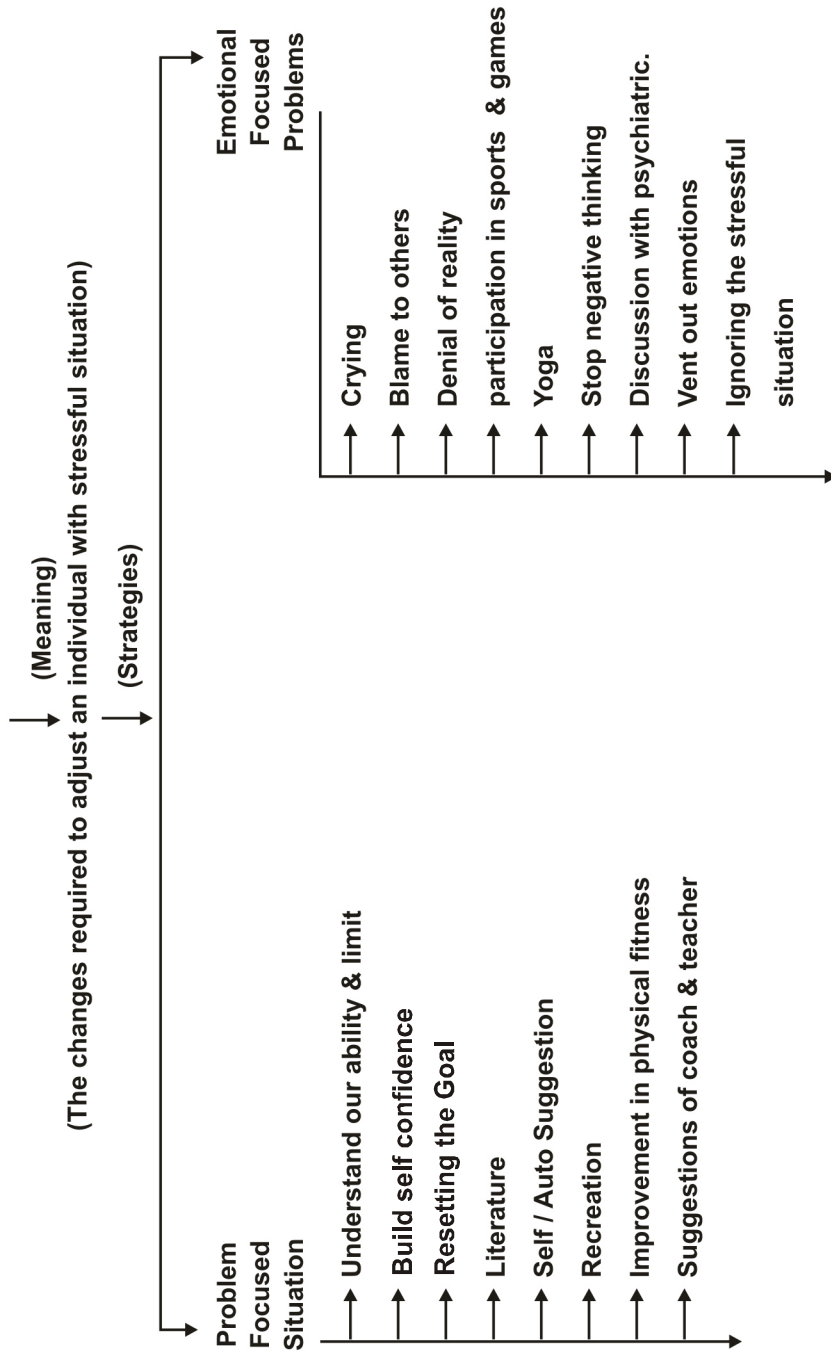
(Meaning)

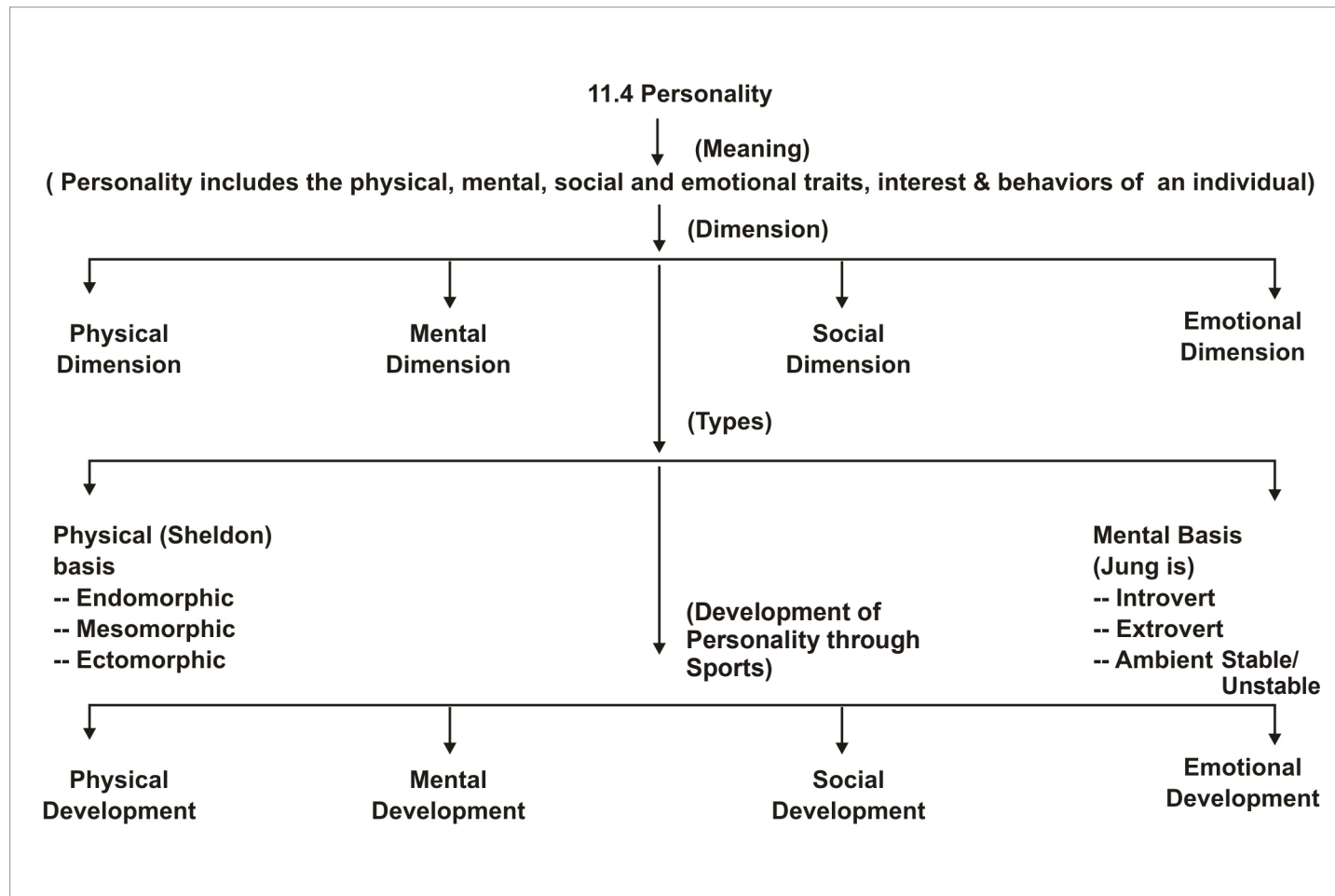
(it is the state of fear that limits our physical & mental abilities to carry out normal function.)

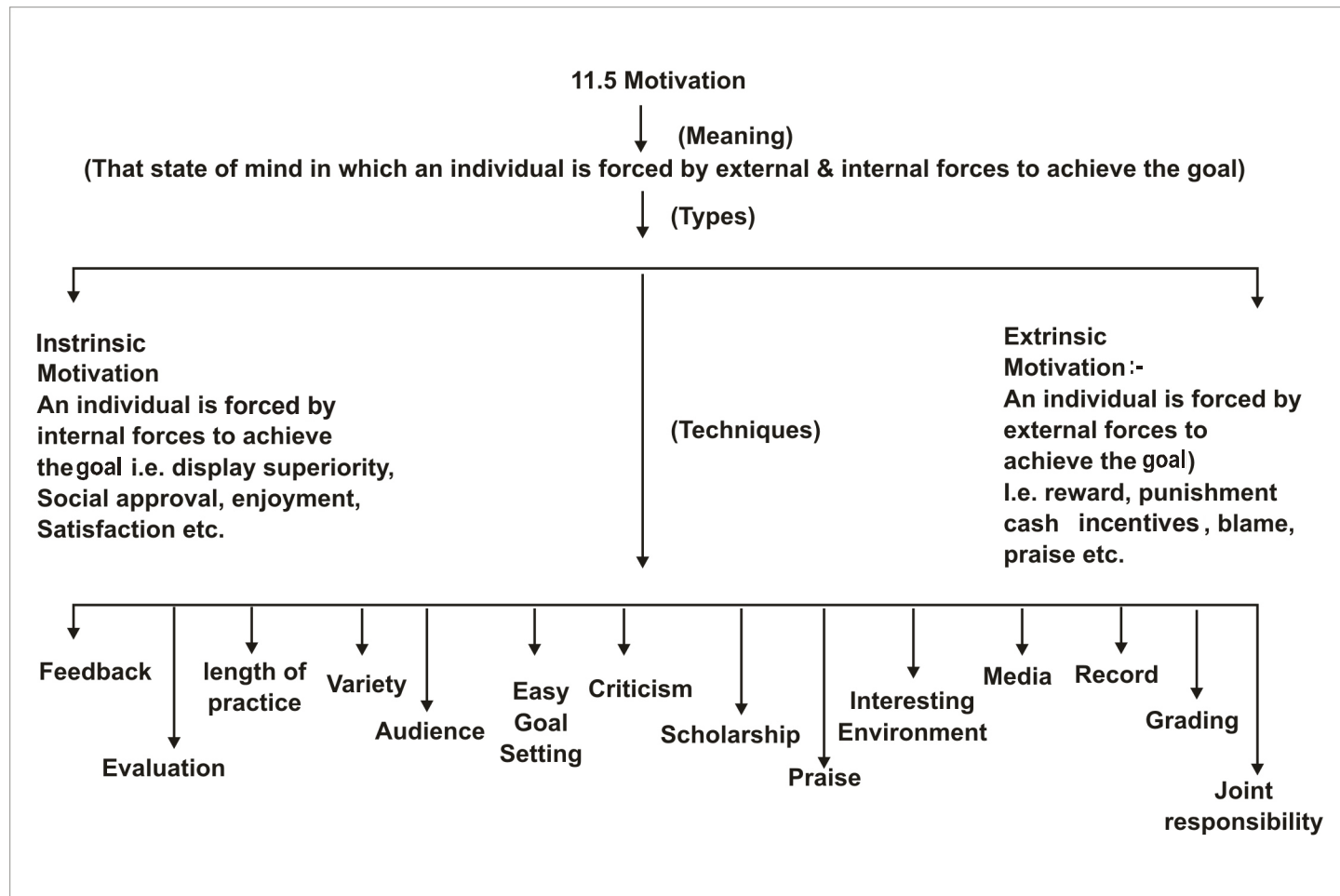
(Types)

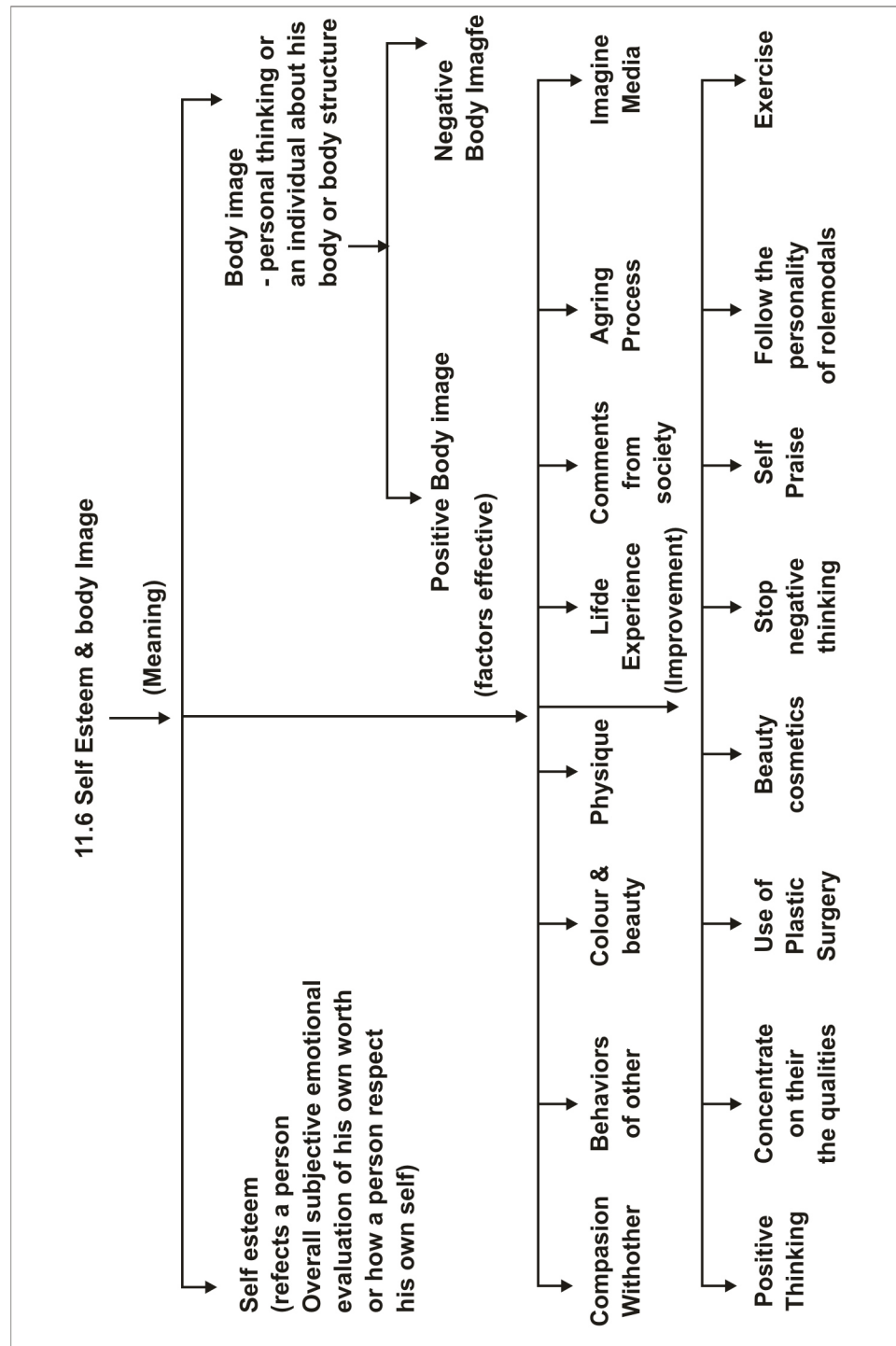


11.3 Coping strategies

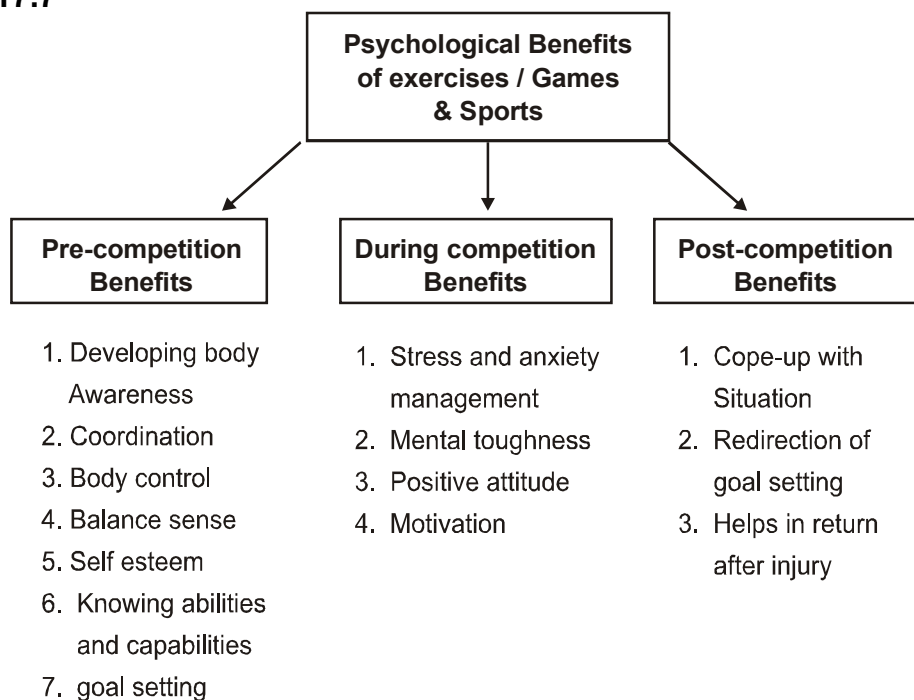








17.7



Very Short Question Answer (1 marks)

Q.1 What do you understand by stress?

Ans. It is the state in which homeostatis of our body get disturbed due to any physical, mental and emotional demand.

Q.2 Write the types of stress.

Ans.1. acute Stress :- That type of stress generate for very short period but the intensity of the stress is very high. It causes less harm.

2. Chronic Stress :- That type of stress generate for long time period but the entensity of stress is low. It is more harmful.

Q.3. What is anxiety?

Ans. it is the chronic fear that limits our physical & mental capabilities.

Q.4. Write the types of anxiety.

Ans.

- i) State Anxiety : that type of anxiety generate in a particular situation.
- ii) Parmament (trait) Anxiety :- that type of anxiety always associated with an individual in all the situation that is more harmful than the state anxiety.

Q.5 State coping strategies?

Ans. Coping strategies means behavioural changes & phychological changes, those are required to adjust an individual in the stressful condition.

Q.6 What do you understand by personality?

Ans. The word personality is taken by the latin word “persona” which means “the mask”. So personality is mask that is worm by an individual to deal by the society or the environment. Personality covers all the physical, mental social, emotional, Interest & behavioural qualities of an individual.

Q.7 Define the personality?

Ans. “It is the most characterstics integration of an individual’s structure, mode of behaviour, interest, attitudes, capacities, aptitudes, and abilities.

“Personality is the sum total of all biological innate disposition inpulses, tendencies, appetites and instincts of the individual and disposition and tendencies acquired by experience”.

Q.8 Explain word motivation?

Ans. The word motivation is derived from the latin word “movere” which means to move so in the condition of motivation an

individual is moved by internal & external forces towards the goal.

Q.9 What is self esteem?

Ans. Self esteem means how an individual & respect him self after the evaluation of their various qualities capabilities.

Or

“Self esteem is a person’s overall sense of self worth or personal value”.

Q.10 Explain body image?

Ans. An individual perspection about ones’ body structure is known as body image.

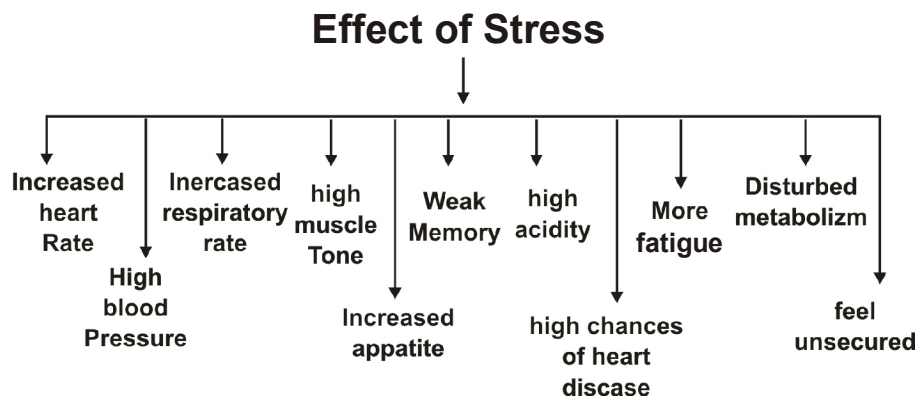
Or

“Picture of body in mind, which may or may not match body’s shape, size, height and weight”.

Short Answer Type Questions (3 Marks)

Q. Explain the effects of stress on an individual?

Ans. Stress is a condition which can distrub the normal physical & mental health of a person.



Q.2 Write about problem focused coping strategies?

Ans.

- i To understand their capabilities & accept the reality.
- ii Build up the self confidence
- iii Reset the goal
- iv Information seeking
- v Self analyses the stressful situation
- vi Recreation
- vii Development of physical fitness
- Viii Seeking social support - Teachers, coaches, trainers or experts etc.
- ix Evaluation - pros & cons of situation.

Q.3 Briefly state about emotion focused coping strategies?

Ans. i Crying

- ii Sharing the problem with other
- iii Blame to other
- iv Denial of reality
- v Spend more time in sports & games
- vi Recreation
- vii Stop negative thinking
- viii Take advice from the psychiatrist
- ix Vent out of emotions
- x Ignore the stressful situation / Avoidance
- xi Yoga
- xii Brooding

Q.4. Classify personality?

Ans. Physical basis (sheldon)

- i) Endomorphic - Fatty, round, cheerful, short height.
- ii) Mesomorphic - Strong build up, tall, properly Shaped body,

cheerful.

- iii) Ectomorphic - Thin, long, depressed.

Mental basis

- i) Extrovert : high self confidence, social, friendly, make more friend, confident, responsive, lively, leader.
- ii) Introvert :- Poor Self confidence, talkative, busy in own moody, unsocial, pessimist, quiet, rigid.
- iii) Ambivert :- Moderate confidence level, makes few friend. It has the mix qualities of extrovert & introvert.

Q.5 Explain the types of motivation?

Ans. Motivation are two types.

- a. Intrinsic motivation :- motivation an individual is forced by his internal forces to achieve the goal. Intrinsic motivational state “an individual is motivated by their own desire not by any external factor” i.e. enjoyment, satisfaction, to show mastery over skills, to display superiority or to get social approval, fame etc.
- b. **Extrinsic Motivation** :- motivation an individual is forced by the external forces to achieve the goal such as prize, praise, scholarship, grade, job, money etc.
In the extrinsic motivational state “an individual is motivated by some external factors.

Q.6 Write the types of Body Image?

Ans. Body images are of two types :

- a. **Positive body image** :- an individual has a realistic perception of their body. He accept & enjoy all his physical traits of his body such as shape, colour, tone of muscle etc.
- b. **Negative body image** :- accept & enjoy an individual is not

satisfied from his body image. He does not the trait of his body such as height, shape, colour, performance etc.

Long Answer Type Questions (5 marks)

Q.1 How can you manage stress?

or

Discuss the techniques of stress management.

Or How can you reduce the stress?

Ans. Stress consists of bodily changes product by physiological, Psychological condition that tend to upset the homeostatic balance. Some below mentions Techniques have positive effect on reducing stress.

1. **Accept our capabilities & limits** :- an individual has to accept his own capabilities & his limit. Look for the upside in a situation that whereeven the most stressful circumstances can be an opportunity for learning or more personal growth. When he accept the reality. he know very well up to which level he can performance things beyond his performance level will not give him stress.
2. **Physical fitness** :- Effect of stress can be minimised by increase the level of physical fitness of an individual. The goal of stress management is to use strees advantageously, not to eleminate all from one's life. Too little or too severe stress lowers the performance.
3. **Yoga** : By the yogic exercises, the level of the stress can be minimised such as pranayanes, dhyan, savasana etc.
4. **Psychological strong** :- The level of stress & it's bad effects can be minimised in an individual by make him psychological strong and taking advice of guidance counsellor if required.
5. **Balance diet** :- Balance diet help an individual to avoid the

stress condition and to minimise the effect of stress. We have to take plenty of water, minerals & vitamins to avoid the stressful condition or to minimize its effects.

6. **Avoid the company with stressful people :-** To avoid stress it is necessary to avoid the company with people who are already living with stress.
7. **Environment :-** If we make the environment according to our interest then only & we will be able to enjoy the environment which can be made interesting by including the various things such as music, Audience etc.
8. **Exercise :-** Exercise plays a vital role to reduce stress in our body by producing hormones which are helpful for us to keep ourself away from the stress.
9. **Avoid stressful thoughts :-** Stressful thoughts should be avoided, to reduce the level of stress.
10. **Relaxation techniques :-** Deep Breathing, pranayam, etc. can be used to relax our body to minimize the stress.
11. **Self / Auto suggestions :-** help to self suggestion or self counselling minimize the stress eg: all is well, Yes I can.
12. **Busy Attitude :-** Aloneness can increase the level of stress because in the alone condition we can not share our views / thoughts about the stress or the source of stress. So to avoid the stress or to minimize the bad effects of stress, keep ourself busy by various life skills.
13. **Load :-** Our daily life load such as training, homework, duties, etc. can increase stress. To change or modify the load/ task can reduce the stress.
14. **Education :-** Education helps an individual to understand the stress, When an individual gets all the knowledge about the stress then. It is easy to manage the level.

Q. Explain the techniques to manage the level of anxiety?

Or

How to minimise the anxiety from an individual?

Ans. Anxiety is a personal feeling of apprehension accompanied by an increased level of Physiological arousal there are some anxiety management techniques which help to deal with a threat.

1. **Five breathe technique** :- In this technique an individual relax his body in 5 deep breath. In each breath he relax one part of the body. This technique can be used in standing, sitting or lying.
2. **Meditation** :- Meditation is also good to control the level anxiety. meditation helps to control the level of arousal & anxiety.
3. **Udghosh Pranayam** :- In udghosh pranayam we concentrate on the sound "om". with help of udghosh pranayam we can relax our nervous system which minimise & relax from anxiety.
4. **Self suggestion** :- self suggestion make an individual psychological strong which is helpful to control the anxiety.
5. **Positive thinking** : If we think positive then we can tackled the various kind of load easily. We feel happy in the every situation of the life and that type of attitude is easily control anxiety.
6. **Participation in sports & Game** :- Participations in sports & game activities can control anxiety because activities help to divert the attention.
7. **Confidence** - Self confidence will remove the anxiety. Because confidence help to realise actual or real concepts of fear or feel.
8. **Laughing therapy** :- In laughing therapy we laugh artificially. During the laughing our body release good hormones. These hormones are good to control the level of anxiety.

-
9. **Savasana** :- Doing the savasana our Nervous system, our major & minor muscles group get relax properly which is useful to control negative thinking.
 10. **Massage** :- Various kinds of massages are used to relax our body physically such as kneading, rolling, hacking etc. Physical relaxation is good to control anxiety.
 11. Health, enjoyable, interesting environment always relax body & mind. Good environment motivate to develop the positive attitude, which help to control anxiety.
 12. **Lifestyle** : A healthy life - style, balanced diet, healthy habbits, positive attitudes help to achieve the aim without any problem or anxiety.

Q.3 What are the dimensions of personality explain in details?

- Ans. Physical Dimension :- Personality is the physical appearance of an individual. If an individual has good appearance long height, proper shape body, strong muscles will be counted as good personality. The First impression of an individual personality his body and intellectual abilities.
2. Mental Dimension :- An individual as good mental ability then only his personality will be counted as good personality e.g. there are many intellectual persons whose personality is counted as good personality although they not have good physique but they have extra ordinary mental & intellectual qualities.
 3. Social Dimension :- A good personality is sociable & socialising. The social qualities like character, morality, eltiquittes, manners, work ethics, friendlliness, good attitude, helpful nature, cooperation, sympathy & kinds etc. qualities or traits & essential for sound personality.
 4. **Emotional Dimension** :- Emotion dimension is related to

emotional stability. To have emotional stability is essential aspect of one's personality. It means that one must have proper control over various emotions such as fear, anger disgust, distress, amusement or happiness etc. in different situation. For example many sportsmen those have not good emotional control their personality will not be counted as good personality although they have good physical, mental & social base.

Q.4 "Participation in sports resultant as all round development of personality". Justify the statement?

Or

Explain the role of physical education & sports in the development of the personality?

Ans. Personality, "Personality is that qualifying which permits a prediction of what a person will do in a given situation".

* Personality of an individual consists of four dimensions such as physical, mentale, intellectual, social & emotional. Sports & games play a vital role in the development of all aspects of personality in the following ways :-

1 **Physical development :-** When an individual participate in the sports & games, he goes through various kinds of exercise activities & Training programme. These training programme & exercise make him physically good. His physique becomes strong & ultimate and his appearance become attractive & impressive. Physical base is the 1st dimension of personality which can be easily develop through the games & sports

2. **Mental Development :-** Mental capabilities & intelligence can be improved with help of participation in sports & games. We learn many techniques, tactics, skills, rules & regulation,

fitness exercises learning of all these, improve the mental motor coordination.

3. Social Development :- When an individual participate in various training programme, tournaments, he comes in the contract of various peoples such as our team mates, other team members, coaches, officials, audience etc. From there he learns a lot of good social qualities like co-operation, courtesy, fair play sportsmanship, tolerance, sympathy, brotherhood, obedience of rules & regulations to remain in discipline, respect, self respect etc.
4. Emotional development :- when an individual participate in games & sports he deals many situation-wanted & unwanted, make him/her emotionally strong. A sportsmen to learn to tackle & behave in very stable manners in any situation. By these participation, stable emotion all personality develop in various situation is in loving situation.

Q.5 Explain the factors effecting body image & self esteem?

Or

How body image & self esteem can be improved?

Ans. A body image - includes the picture of body that have in the mind which may or may not match body's actual shape, size, height & weight. Self esteem; is the value & respect of self as a person.

- i. Factors effecting body image & self esteem.
- ii. Puberty & development.
- iii. Media Image.
- iv. Experiences of life
- v. Physical development & physique
- vi. Mental abilities.
- vii. Comments received from the society - family & school.

-
- viii. Natural Ageing Process.
 - xi. Life style.

Methods of improvement

- i. To think positive
- ii. Always think about our abilities not about weakness
- iii. To Plastic surgery can be used to improve beauty.
- iv. To Beauty cosmetics help to improve beauty.
- v. To Stop negative thinking always think positive
- vi. To Self praise make us psychological strong
- vii. To follow the role model personalities of the society.
- viii. To Daily exercise & balance diet.
- xi. Change out life style

Q.6 Explain the psychological benefits of the exercise.

Or

Elucidate the psychological effects of regular exercise on an individual?

Ans.- "Psychology means study of human behaviour in different situations". Regular exercises are important to develop the good concept towards the life. i.e.

- 1 Reduce depression
- 2 To Improve the mental abilities.
- 3 To Make psychological strong.
- 4 To Enhance the learning abilities
- 5 make personality attractive.
- 6 Boosts the memory & decision abilities
- 7 Improve the growth & development process
- 8 Enhance self esteem.
- 9 Improve the motor learning process.
- 10 Improve the abilities of coping indifferent unwanted situation.

-
- 11 help to control & release the emotions.
 - 12 help to control the anxiety.
 - 13 reduces stress.

Q. Explain the techniques of motivation.

Ans. "Motivation is the general level of arousal to action in an individual".

Following mention techniques of motivations are applied on sportsperson, which can enable them to achieve the top position in the field of sports & games.

- 1 **Evaluation** :- evaluation make & aware the sportsmen from his abilities & motivate him/her for higher position.
2. **Variety** :- Variety in the training programme make the practice & developments more interesting and always to motivate the sportsman to perform better to best.
3. **Role of spectators** :- The presence of Audience/ spectators help to sportsman to perform in dynamic form too.
4. **Criticism** :- Criticism for the poor performance of athlete to motivate to perform better.
5. **Cashprizers, scholarship etc** :- Good incentive to the sprotspersons always motivate & strives hard to achive better in the competitions which helps to win the laurels for their society.
6. **Latest equipments** :- Use of latest equipments in training make the training more interested & motivated the athlete to achieve the goal.
7. **Practice session** :- By reducing the length of practice an athlete is motivated to be continue in their training & to achieve the goals.
8. **Resetting of Goal** :- Resetting of goal from easy to complex

-
- motivate an athlete to continue in training to achieve the goals.
9. **Awards :-** Awards for good performance of athlete motivate him to do better.
 10. **Praise :-** Praise given by the society for the performance of athlete always motivate athlete to do better perform.
 11. **Positive environment :-** Environment make more interesting by including music audience etc. & interesting environment help to perform better.
 12. **Role of Mass Media :-** When the performance of an athlete is telecasted by media he is motivated to perform well so get praise from the society.
 13. **Record :-** Record always aware an athlete his current performance & his past performance comparison which help to motivate him to perform better.
 14. **Jobs :** On the basis of achievement and educational qualifications, outstanding sports persons should be offer good jobs. There are various department. Police, bank, railways, Air India etc. Offer good jobs. This opportunity is also a motivated force.
 15. **Feed back :-** With the help of feedback an athlete can be easily educate negative factors from his performance & try to overcome to perform better.
 16. **Sharing responsibilities :-** sharing responsibilities always help to develop and motivate an individual to perform well.

UNIT - 12

Training In Sports

Key Points :-

- * Strength - Definition, Types and methods of improving strength- isometric, isotonic and isokinetic.
- * Endurance - Definition, types and methods of develop endurance continuous training, interval training and fartlek training.
- * Speed- Definition, types and methods of develop speed- Acceleration run and pace run.
- * Flexibility - Definition, types and methods to improve flexibility.
- * Coordinative Abilites - Definition and types.

Introduction :- Sports performance are to be achieved in sports competition.

Training :- "Preparation for doing some task in proper manner"

- B. When we take part in games and sports we try to perform our best and our performance directly depends upon many **factors:-** strength, endurance, speed, flexibility and coordination abilities.
- C. Sports training is done for improving these factors and ultimately our performance.
"Sports training means planned preparation of sportsman with the help of various exerises". A systematically training improves the athlek's fitness level.

12.1 : **Strength** : When an individual exerts muscular force agains resistance in games and sports, it is called his or her strength.

- * Strength, as the amount of force a muscle or muscles group

exert. strength is measured in pounds.

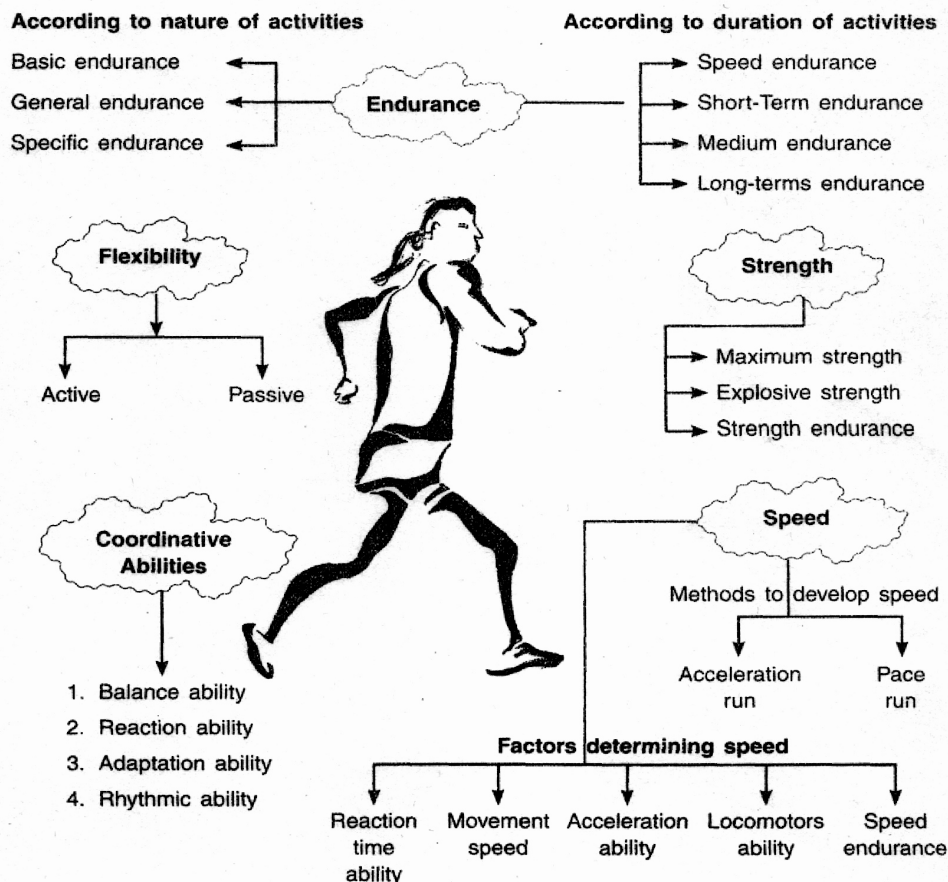
Type of strength - Static & Dynamic strength.

12.2. When an individual perform under the condition of fatigue for a long time, it is called his or her endurance.

12.3. In games and sports when an individual perform & movements quickly, it is called his or her speed.

12.4 **Flexibility** is the range of movement of the joints of a sportsperson.

12.5 The ability of an individual to do various related activities smoothly and efficiently is known as coordinative ability.



VERY SHORT ANSWER TYPE QUESTION (1 MARK EACH)

Q.1 What is speed?

Ans. It is the ability of an individual to cover a unit distance in minimum time.

Q.2 Define is strength?

Ans. It is the ability of an individual to overcome or act against resistance.

Q.3 What do you mean by endurance?

Ans. It is the ability of an individual to resist the fatigue for long time.

Q.4 Write the meaning of flexibility?

Ans. It is ability of an individual to move his or her joints effectively through of full range.

Q.5 What is coordinative ability?

Ans. it is the ability of an individual to perform a sequence of movements smoothly and accurately

Q.6 What do you mean by Speed endurance?

Ans. It is the ability of an individual to perform body movement with high speed to resist fatigue in activities. Example - 400 mt race.

Q.7 What is strength endurance?

Ans. Strength endurance is the ability to develop sustained contraction force of muscles one time.

Q.8 Define is acceleration?

Ans. It is the ability of an individual to reach & achieved speed from in shortest period of time.

Q.9. Explain is explosive strength?

Ans. It is the ability of an individual to overcome resistance with high speed.

Q.10. What is reaction ability?

Ans. it is that ability of an individual to react effectively and quickly to a signal.

It is two types :-

1. Simple / General reaction ability
2. Complex reaction ability

Q.11. Define movement speed?

Ans. it is the ability of an individual to do movement in minimum time. It depends upon techniques explosive strength, flexibility & coordination abilities.

Q.12. What is the meaning of sports training?

Ans. Sports training is a planned and controlled process in which, For achieving a goal, changes in complex sports motor performance.

Q.13. What are pace races?

Ans. Pace races mean running the whole distance of a race at a constant speed. In pace races, an athlete run the race with uniform speed. Example - 800mt, 1500mts.

Q.14. What do you mean by adaptation ability?

Ans. It is the ability to adjust or change the movement effectively on the basis of changes or anticipated changes in the situation. Because in the most of the sports players have to play as per the circumstances.

Short Answer type Questions (80 to 90 words) 3 Marks each

Q.1 Describe fartlek Training Method?

Ans. It is another method to develop the endurance ability. This method was developed by swedish coach "Gosta Holmer" in 1930, so it is also known as "Swedish play" or "Speed play" (changes her/ her pace. Himself/ herself according to surrounding (hills, river, forest, mud etc.)

This method helps in development of strength and endurance of the sports person. Athlete changes his / her speed according. So it is self-disciplined in nature. The heart rate fluctuate between 140 - 180 beats/ minute/ Fartlek training involves varying our pace throughout our run. Alternating between fast and slow pace.

“Fixed distance in fixed time by variable of movement/ pattern/ place of running”.

Q.2 Briefly explain the types of endurance.
or

“Endurance is one of the most important factor for high performance in games & sports” Explain

Ans. Endurance - As the result of a physiologic capacity of the individual to sustain movement over a period of time.
Endurance in sports are of different types. These are as follows -

1. **Basic endurance** :- is the ability of an Individual to do the Movement in which large no. of body & muscles involve at slow pace for a duration such as Walking, Jogging, Swimming at a moderate speed.
2. **General Endurance** :- is the ability of an individual to resist fatigue satisfactorily caused by different type of activities.



-
3. **Specific Endurance** :- is the ability of an individual to complete the task without any fatigue. It's requirement is depends upon the nature of activity (games and sports) Requirement of specific endurance of a boxer is different from that of a Wrestler

Speed Endurance :- is the ability of an Individual to perform a movement with high speed to resist of fatigue in activities upto 45 seconds.

In short term endurance - * Short term endurance is needed to resist fatigue in sports activities lasting from 45 seconds to 2 minutes. Ex. 800 m race.

The medium term endurance :- is the activity lasting from 2.min to 11 minutes. Ex. 1500 & 3000 mts.

Long term Endurance - is needed for those sports which require more than 11 minutes time ex. 5000m to 1000m cross country race.



- Q.3 Discuss the types of speed in details? Or Elucidates the methods of improving speed ? Or Briefly explain the methods for improving speed?

Ans. Speed as the capacity of an individual to perform successive movement of the same pattern at a fast time. Speed is the product of genetic & environment factors. Genetic factors set limit of speed but environmental factors are also play a vital role. In fact following mentioned methods are usually adopted for the development of speed & these method help to training many organic system & motor components.

Pace run :- Pace run means running the whole distance with a constant speed. Generally 800mt and above races are included in pace races. An athlete can run a distance of 300m. at full speed but in longer races such a 800mtr. Or above, he must conserve his energy by reducing the speed. Ex-If there is a runner of 800m race. His best time is 1 minute 40 seconds. So he should run first 400 m in 49 seconds and next 400m in 51 seconds. This procedure is called pace race or pace run.

Acceleration Run - Acceleration run are usually used to develop speed indirectly by improving explosive strength, technique, flexibility and movement frequency. It is the ability of a sprinter to achieve high speed from a stationary position. For direct improvement of acceleration speed a sprinter should do 25-30 mt. sprint of 6-12 times. The maximum speed should be achieved within 5-6 sec. sufficient intervals should be provided between the repetitions..

Q.4. What do you mean by flexibility? Explain types of flexibility?

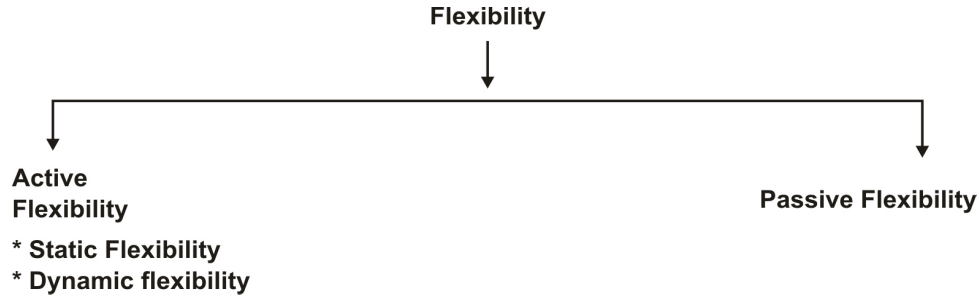
or

What is the difference between active & passive Flexibility?

Or

Elaborate the methods of improving flexibility.

Ans. Flexibility is the range of movement of the joint of a sports person.



1. **Active flexibility :-** The ability of an individual to do the joint movement for a longer range without any external help. Active flexibility is always greater than passive flexibility. Ex. doing any stretching exercise without external help.

It is two kinds :-

- * **Static Flexibility :-** It is usually required by a sports person when he remains in static position e.g. Diving, sitting, lying, etc.
- * **Dynamic Flexibility :-** It is needed for walking and running its increase by static stretching.

-
2. **Passive Flexibility** :- the ability to do joint movement with a greater range with an external help of partner. This flexibility is largely determined by joint structure, stretch ability of the muscle and ligament. Passive flexibility helps in the development of active flexibility.

Q.5 Sandeep is making a handball team for which he designed a training program. During the training programme he noticed few player are very good shooter but they were lacking stamina or endurance were getting tired very easily.

Now Sandeep tried to enhance the endurance level of these players by different methods.

- Q1. The player were lacking with which component in them?
* Which components were lacking in the players.
- Q2. To develop the capability to resist the fatigue in the players which type of training will you suggest?
3. What are components required for football or handball players to perform better.

Ans.

1. They were lacking of stamina or endurance.
2. I'll suggest to continuous & interval training to develop the motor components.
3. Endurance, speed, strength, and coordination components are important for football or handball players.

Long Answer type question (150 to 200 words)
(5 marks each)

Q.1 What are the methods for developing strength?

or

Write the difference between isometric, isotonic and Isokinetic

exercises.

Ans. Strength - is the capacity of the whole body or of any of its parts to exert force.

There are two types of strength - Dynamic & static strength
Following mention methods are used to improve strength.

1. **Isometric Exercise** : The word isometric is comprised of 2 words “iso “same” and “metric “length”. Means when we do these exercises work done cannot be observed. These exercises require less time and equipments and can be carried out anywhere. These exercises are useful for maintaining strength in case of injury.

Eg. Archery, weight lifting, gymnastic are the examples of isometric movements.



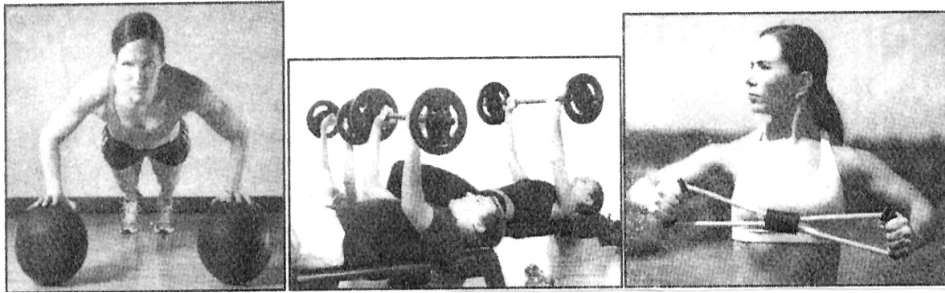
Work done = Force X Distance moved

but distance moved is 0, therefore work done is zero.

2. **Isotonic Exercises** :- “Iso” Means ‘same’ and ‘tonic’ means ‘tension’.

In these types of exercise when we do movements it can be observed directly. The lengthening and shortening of muscles can be seen and called eccentric Contraction and concentric contraction accordingly. Ex. When we throw a ball, jump, run, weight training, these type of contraction occurs. These

Type of exercise is widely seen in games & sports. We can do these exercise with equipment or without equipment. These increase and length of th muscles and are good for conditioning in sports.

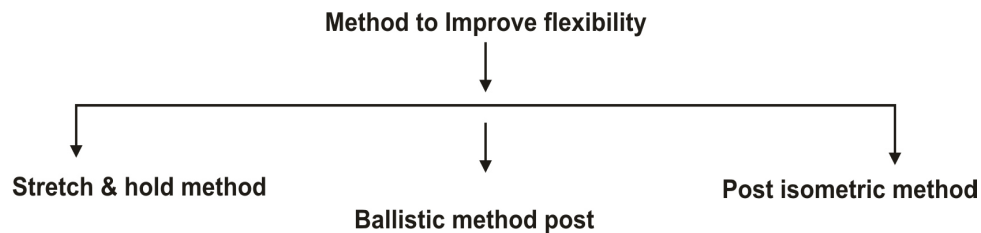


3. Iso-Kinetic Exercises -- “Iso” - ‘Same’ “and’ kinetic - motion’. These exercises were introduced by j.j. perrine in 1968. These exercise are done by specially design machine and are combination of isotonic and Iso-metric exercises. These exercises develop strength of muscles. These type of movements are usually not applied in games and sports except water sports, skating, climbing, running etc.



- Q.2 What are the methods to develop improve flexibility? Explain
or
What is the difference between ballistic method and post 0
Isometric method?

Ans. Flexibility means the ability to execute movements with greater amplitude or range.



To maintain flexibility in games and sports stretching Exercises should be done. By following methods, one can improve their flexibility.

- * **Stretch & hold method** - We stretch our joint to maximum limit and hold it for a few seconds before returning to the initial Phase. The holding period must be not more than 3 to 8 sec. The method is also use for improving passive flexibility.
- * **Ballistic Method** - In this method the stretching exercises are done in a swing, so this is called the ballistic method. A proper warm - up should be done before these exercise. Due to or stretching of the muscle can be done in a rhythm.
- * **Post - Isometric Method** - This method is based on the principle of proprio- Ceptive nuro- muscular facilitation means, If a muscle is controted maximally for a few seconds, then often the contracted maximally for a few second. Then after the contraction if remains in a Static position for a few Seconds for 6-7 seconds and gives very low resistance to that Stretch. The duration of the stretch should be increased up to 8-10 second and repeated 4-8 times for each muscle group.

Q.3 What are coordinative abilities in sports? Describe the type of coordinative abilities?

Ans. Coordinative abilities are those abilities which stabilized and generalized pattern of motor control. These abilities help the sportsman to do a group of movements with better quality and effect.

Coordinative abilities primarily depend upon the central nervous system. In sports, the coordinative abilities are under :-

1. Differential ability
2. Orientation ability
3. Coupling ability
4. Reaction ability
5. Balance ability
6. Rhythm ability
7. Adaptation ability

* **Differential ability** : It is the ability to determine the position of the body & its parts in time & space in relation to gravity, object. This ability to achieve a high degree of accuracy & economy of separate body movements phases in a motor action.

* **Orientation ability** :- It is ability of a person to adjust himself as per the time and condition of place. This ability has difference importance in each game. Ex. Play ground.

* **Coupling ability** :- it is the ability of a player to move his physical organs in order to do his activities. For example. Coordinative between hands and eyes, feet and eyes etc. Ex. in volleyball the smasher smashes the ball according to the lift of the ball and blockers coordinating the movements of his hands head and feet.

* **Reaction ability** :- It is the ability to react immediately ro

quickly and effectively to a signal. Two types :- Simple & complex reaction Ability.

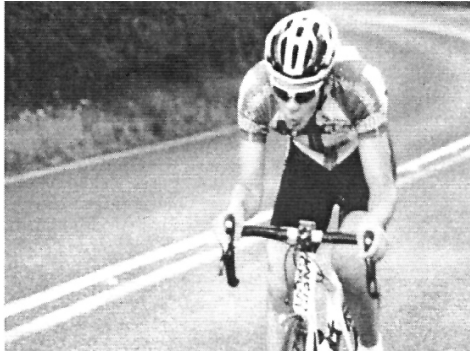
- * **Balance ability** :- As the ability to maintain balance during the complete body movement & to regain balance quickly after the balance disturbing movement.
- * **Rhythm ability** :- to observe or perceive the rhythm of a movement & to do the movement with external rhythm - music or express.
- * **Adaptation ability** to adjust or change the movement effectively on the basis of changes or anticipated changes in the situation.

Methods to improvement of coordinatin abilities :-

1. Practicing physical exercise.
2. Correct and conscious movement
3. Additional means to improve motor sense
4. Variation in exercises
5. Degree of difficulty

Q.4. Differentiate between the continuous method and interval method? Describe its advantages.

Ans. 1. **Continuous Medhodo** :- in this type of method, the exercise is done for a long duration without taking rest. We do the exercise for a long duration. So the intensity of work is low. The heart rate during the exercise for a sportsman should be between 140-160 beats per minutes. For fast continuous method the heart rate of an athlete should be increased about 175 - 180. Min. Its duration of exercise should be more than 30 minutes. Ex. running walking, cycling, cross-country race etc.



Advantages :

1. Doing work continuously in spite of being tired strengthens the will to work.
 2. According to this method increases the red blood cells in muscles.
 3. In this method the working efficiency of heart and lungs gets enhanced.
 4. In this method Glycogen in muscles and liver gets increased.
 5. Player develop self discipline and self confidence. Apart from this their will power also gets enhanced.
2. **Interval Method :-** This method is very effective for developing endurance for track runners. Intervals are given to the athlete in between the repetition for recovery. The recovery period for athlete varies from person to person. The heart should go up to 18 beat/ min. and when the heart rate comes down to 120-130 beats/ min again the repetition/ work starts. The training load should be given again after checking the heart rate of the athlete.

Ex. Middle distance race, foot ball, hockey etc.

Advantages :-

1. if an athlete perform these exercise in proper way then it will help to improve the working capacity in short time.
2. This method has a positive effect on both respiratory system and circulatory system.
3. The trainer can observe a players easily. The player in short time can enhance his endurance.
4. The player comes to learn about the effect of his training.
5. If the player mistake in executing the coach/ trainer can give him useful suggestion during recovery time. Thus, the players morale may be boosted.

Typology For Question Paper

A	B	C	D	E	F	G	H	I	J	K	L	M	N
		UNIT1	UNIT2	UNIT3	UNIT4	UNIT5	UNIT6	UNIT7	UNIT8	UNIT9	UNIT10	UNIT11	total
REMEMBERING MARKS 20	V.S.A.		1(Q2)								1(Q1)		
	S.A.					3(Q12)							20
	L.A.							5(Q20)	5(Q21)			5(Q22)	
UNDERSTANDING MARKS 07	V.S.A.									1(Q3)			
	S.A.							3(Q13)	3(Q14)				7
	L.A.												
APPLICATION MARKS 18	V.S.A.		1(Q8)	1(Q7)	1(Q4)			1(Q5)			1(Q6)		
	S.A.		3(Q15)										18
	L.A.						5(Q23)				5(Q24)		
HOTS MARKS 18	V.S.A.				1(Q9)						1(Q10)		
	S.A.			3(Q16)						3(Q17)			18
	L.A.				5(Q25)							5(Q26)	
CREATIVE MARKS 07	V.S.A.							1(Q11)					
	S.A.	3(Q19)								3(Q18)			7
	L.A.												
TOTAL		3	5	4	7	3	5	10	8	7	8	10	70

~01 Mark-11 Questions, 03 Marks-08 Questions & 05 Marks-07 Questions.

* Abbreviation used: V.S.A.- Very Small Answer, S.A.-Small Answer & L.A.-Long Answer.

#The details under Columns A, B & N will remain unchanged. However, the weightage given to various units as shown above may not remain the same.

\$The question paper shall compulsorily include 01 Value Based Question.

Classes XI & XII

Points	A		B		C		D		E	
	60 M (In Sec)	100 M (In Sec)	Long Jump (In M)	Standing Broad Jump (In M)	Vertical Jump (In M)	Push-ups (In no.s)	Bent Knee Sit-ups (In no.s)	Overhead Backward Basketball Throw with both the Hands (In M)		Shot Put 7.260 kgs (In M)
10	07.50	12.00	05.50	02.50	40	40	45	16.00	07.50	09.00
9	07.70	12.30	05.20	02.35	38	38	42	15.50	07.00	09.20
8	08.00	12.70	04.90	02.15	35	35	38	14.50	06.50	09.50
7	08.30	13.10	04.60	01.95	32	32	34	13.50	06.00	09.80
6	08.60	13.60	04.30	01.75	28	29	30	12.50	05.50	10.10
5	08.90	14.20	04.00	01.50	25	25	25	11.50	05.00	10.50
4	09.30	15.00	03.80	01.25	23	21	22	10.50	04.50	11.00
3	09.70	15.50	03.60	01.00	20	17	19	09.50	04.00	11.50
2	10.10	16.50	03.30	0.80	18	14	15	08.50	03.50	12.20
1	10.50	17.50	03.30	0.60	16	10	10	07.50	03.00	13.00

- Each student will have to choose five items for test of choice.
- One item for test must be chosen from 'A'; one from 'B'; one from 'C'; one from 'D' and test item number 'E' is compulsory for all.

Classes XI & XII

Points	A		B			C		D		E
	60 M (In Sec)	100 M (In Sec)	Long Jump (In M)	Standing Broad Jump (In M)	Vertical Jump (In M)	Modified Bent Knee Push-ups (In no.s)	Bent Knee Sit-ups (In no.s)	Overhead Backward Basketball Throw with both the Hands (In M)	Shot Put 04.00 kgs (In M)	Shuttle Run 4 × 10 M (In Sec)
10	9.0	14.0	4.0	2.00	28	25	30	12.00	07.50	10.50
9	9.2	14.3	3.7	1.85	26	23	27	11.50	07.00	10.70
8	9.5	14.7	3.4	1.65	23	20	24	10.50	06.50	11.00
7	9.8	15.1	3.1	1.45	20	18	21	09.50	06.00	11.30
6	10.2	15.6	2.8	1.25	17	16	19	08.50	05.50	11.60
5	10.6	16.2	2.5	1.00	15	14	15	07.00	05.00	12.00
4	11.0	17.0	2.2	0.80	13	12	12	06.00	04.50	12.40
3	11.5	17.5	1.9	0.60	10	10	10	05.00	04.00	12.80
2	12.0	18.5	1.6	0.50	08	07	07	04.00	03.50	13.50
1	12.5	19.2	1.3	0.40	06	04	04	03.50	03.00	14.50

- Each student will have to choose five items for test of choice.
- One item for test must be chosen from 'A'; one from 'B'; one from 'C'; one from 'D' and test item number 'E' is compulsory for all.

Physical Education (Theory)

Time allowed : 3 hours

M.M. 70

General Instructions:

- * The question paper consists of 26 questions.
 - * All questions are compulsory.
 - * Answer to questions carrying 1 mark should be in approximately 10-20 words.
 - * Answer to questions carrying 3 mark should be in approximately 30-50 words.
 - * Answer to questions carrying 5 mark should be in approximately 75-100 words.
-

- | | | |
|-----|---------------------------------------------------------------------------------|---|
| 1. | What is 'Seeding' in Fixture of Tournaments? | 1 |
| 2. | What do you mean by Adventure Sports? | 1 |
| 3. | What is 'Bulimia'? | 1 |
| 4. | Suggest two exercises for correcting flat foot. | 1 |
| 5. | What is Food Intolerance? | 1 |
| 6. | Explain the term 'Menarch'. | 1 |
| 7. | What test would you suggest to measure upper body strength for aged population? | 1 |
| 8. | What do you mean by 'Cardiac Output'? | 1 |
| 9. | What is Laceration'? | 1 |
| 10. | To cover the maximum distance at what angle an object should be released. | |
| 11. | Explain 1 : 1 ratio breathing exercise for reducing anxiety. | 1 |
-

-
12. What is Endurance? How endurance can be developed through Fartlec method? 1+2=3
13. What are the causes of Bad Postures ? Write in brief. 3
14. What do you understand by Food myths? Discuss briefly about various Food myths. 3
15. Draw a fixture of 6 teams on league basis following the cyclic method. 3
16. Your school is organising 'Run for Unity', explain the responsibilities of accreditation, technical and finance committee. 3
17. Write briefly, what is the role of physical activities in improving the quality of life. 3
18. Group of young children were undergoing training for a major competition. Training was targeted to develop selected abilities and preparing for a competition. Some of the team-mates tried to convince other fellow team-mates to use certain medicine which one boys did not agree. Other team-mates tried to convince him for the sake of the team but he firmly denied and convinced them that it is against the rules of the game.
- (i) What are the disadvantages for a child to use such banned substance?
- (ii) What value the boy has shown by refusing to use banned substance?
- (iii) What personality trait he had shown by refusing to his team-mates?
19. Leaders can be trained through physical education. Justify for answer. 5

-
20. Elucidate the meaning of motor development in childhood. Discuss in detail about various factors affecting motor development.
 21. Discuss in detail about the AAPHER Motor Fitness test specifically mentioning the various items in this test battery and its administration. 5
 22. Discuss in detail about Female Athletes Triad. 5
 23. Explain in detail about the effects of regular exercise on Respiratory system. 5
 24. What do you mean by coping? Discuss in detail about the problem focused and emotion focused coping strategies. 5
 25. What is the impact of high altitude on Athletes? What measures would you suggest to reduce its impact.
 26. What do you mean by the term Energy? Discuss about kinetic and potential energy with suitable example from sports.

Physical Education (Theory)

Time allowed : 3 hours

M.M. 70

General Instructions:

- * The question paper consists of 26 questions.
 - * All questions are compulsory.
 - * Answer to questions carrying 1 mark should be in approximately 10-20 words.
 - * Answer to questions carrying 3 mark should be in approximately 30-50 words.
 - * Answer to questions carrying 5 mark should be in approximately 75-100 words.
-

1. What is 'Deeding' in a fixture for Tournaments? 1
Ans. In seeding strong team/players are arranged in fixture in a manner so that they do not meet each other in the first round.

2. What do you mean by Adventure Sports? 1
Ans. An extreme sport involving strenuous physical activity with an element of fear, thrill, life risk and pleasure, e.g. bungee jumping, river rafting.

3. What is 'Bulimai'? 1
Ans. Bulimia is an eating disorder under psychological condition in which a person overeats uncontrollably/ and follows this with behavior designed to prevent weight gain, e.g. over exercising and playing.

-
4. Suggest two exercises for correcting flat foot. 1
- Ans. Exercise for correcting flat foot
- (i) Picking up marbles with toes.
 - (ii) Place a towel under the feet and the towel with toes towards body.
 - (iii) Sand walk
 - (iv) Perform up and down the heels
 - (v) Walking on the /heels/ on inner and outer side of feet.
 - (vi) To perform Vajrasana
 - (vii) Jumping on toes/ skipping rope.
5. What is Food Intolerance? 1
- Ans. A sensitivity to, or an inability to digest, a particular food, ingredient or substance, which means that it should be excluded from the diet.
6. Explain the term 'Menarche'. 1
- Ans. Menarche is first menstruation and the commencement of cyclic menstrual function in female. It usually occurs between 9 to 17 years of age.
7. What test would you suggest to measure upper body strength for aged population? 1
- Ans. The Arm Curl Test to measure upper body strength for aged population?
8. What do you mean by 'Cardiac Output'? 1
- Ans. Cardiac output is the volume of the blood pumped by the heart, measured in liters per minute. It is a product of stroke volume and heart rate.

-
9. What is 'Laceratio'? 1
Ans. A laceration is an irregular and jagged wound from a sharp object or sports equipment.
10. To cover the maximum distance at what angle an object should be released. 1
Ans. An object should be released at the angle of 45° .
11. Explain 1 : 1 ratio : breathing exercise for reducing anxiety?
Ans. It means a breath of ; I would be of equal part inhalation and exhalation only.
12. What is Endurance : How endurance can be developed through fartlek method.? 1+2=3
Ans. Endurance is the ability to sustain an activity over a longer period of time, under the condition of fatigue. Endurance can be developed through fartlek method are as follows.
- (i) Endurance develops through continuous & interval Training; fartlek combines both training.
 - (ii) Endurance develops according to duration of activity; fartlek can vary from aerobic walking to anaerobic sprinting.
 - (iii) Endurance develops according to nature of activity; fartlek can change it according to the surrounding.
 - (iv) Endurance develops under the condition of fatigue; self discipline plays a vital role in Fartlek training method.
 - (v) Fartlek training keeps the heart rate up allowing an athlete to get good cardio-vascular endurance.
 - (vi) Due to the sprinting interval, it makes the body versatile.
 - (vii) It is not rigid but flexible in nature.

Q.13. What are the cause of bad Posture? Write in brief. 1x3=3

Ans. Causes of bad posture are as follows

1. Hereditary/ Congenral
2. Improper diet/ Low cutritional diet.
3. Muscle weakness/ Poor core stability
4. Joint stiffness/ Very high toned muscle.
5. Accident / Diseases
6. Lifestyle/ Fashion.
7. Lack of education / awareness of correct posture.
8. Delicacy and imitation.
9. Bad habits
10. Obesity
11. Fatigue
12. Lack of rest and sleep
13. Lack of proper exercise.
14. Unsuitable furniture poor ergonomic.
15. Poor way of carrying weight.

Q.14. What do you under stand by food myths? Discuss briefly about various food myths. 1+2=3

Ans. Food myths mean a agendary story about food with or without a determinable basic of fact or a natural explanation. What to eat, when to eat, and how often to eat are such questions which usually confuse.

Some food myths and as follows:

1. Potatoes make you are
2. Drinking water in between your meals will mess up your digestion.
3. Fat free products will help you in losing weight
4. Egg increases cholostrol level.
5. The peel of fruits & vegetables contains no nutrients.

-
6. Having milk immediately after eating fish.
 7. Starve yourself if you want to lose weight.
 8. Eating ghee after pregnancy.
 9. Exercise makes you to eat more.
 10. It's necessary to have Carbohydrate - load before races.
 11. All sports drinks are the same.
 12. Supplements are necessary for maximum performance.

Q.15 Draw a fixture of 6 teams on league basis following the cyclic method.?

3

Ans. Total number of teams (N) = 6

$$\begin{aligned}\text{Total number of matches} &= \frac{n(n-1)}{2} = \frac{6(6-1)}{2} \\ &= \frac{6 \times 5}{2} = \frac{30}{2} = 15\end{aligned}$$

$$\text{Number of rounds} = N-1 = 6-1 = 5$$

Fixtures

1 Round	2 Round	3 Round	4 Round	5 Round
6.1	5.1	4.1	3.1	2.1
5.2	4.6	3.5	2.4	6.3
4.3	3.2	2.6	6.5	5.4

(Give 1½ marks for computation only; 3 marks for fixture of both)

Q.16 Your school is organizing 'Run for Unity' explain the responsibilities of accreditation, technical and finance committee.

1x3=3

Ans. **Responsibilities of accreditation committee.**

1. Management of accreditation during the activity.
2. Registering all participants with an operational role.
3. The production and distribution of the validation pass.
4. Assigning the access rights and privileges to which a participant is entitled.

Responsibilities of technical committee.

1. To ensure that the field of play is safe for competitors and officials.
2. To apply (not interpret) the Rules without fear or favour.
3. To ensure the quality and technicality of equipment.

Responsibilities of finance committee.

1. Budgeting and financial planning.
2. Financial reporting.
3. Monitoring of internal controls and accountability policies.

Q.17. Write briefly, what is the role of physical activities in improving the quality of life. 1x3=3

Ans. Role of physical activities in improving the quality of life as follows :

1. Boost mental wellness
2. Improve physical wellness
3. Boosts energy level
4. Promotes enthusiasm and optimism.
5. Counters anxiety and depression.
6. Helps manage stress.
7. Release tension.
8. Improves self - image
9. Delays or prevent chronic illness & diseases.
10. Delay aging

Q.18 Group of young children was undergoing training for a major competition. Training was targeted to develop selected abilities and preparing for a competition. Some of the team mates tried to convince other fellow team mates to use certain medicine which one boy did not agree. Other team mates

cried to convince him for the sake of the team but he firmly denied and convinced them that it is against the rules of the game.

- (i) What are the disadvantages for a child to use such banned substance?
- (ii) What values the boy has shown by refusing to use banned substance?
- (iii) What personality trait he had shown by refusing to his team mates? 1x3

- Ans.
- (i)
 - Complication like stroke, psychosis and even death
 - Sexual dysfunction
 - Increased heart rate and blood pressure.
 - (ii)
 - Respect and follow the rules of the game.
 - Sportsmanship
 - Morality & Ethical
 - (iii)
 - Firm
 - Honest
 - Strong Willpower

Q.19. Leader can be trained through physical education, Justify your answer. 1x3=3

Ans. Leaders can be trained through physical education are as follow:

1. Appointing as a leader or captain of a team.
2. Assigning challenging duties to draw out the qualities.
3. Allowing : student to officiate in intramural competition.
4. Appoints the student as member/ incharges for various school committees.
5. Entrusting the responsibility of organizing and conducting games.

Q.20. Elucidate the meaning of motor development in childhood.
Discuss in detail about various factors affecting motor development. 1+4=5

Ans. Motor development refers to changes in children's ability to control their body's movements like walking, jogging, running, climbing, jumping, throwing etc.

Factors affecting motor development

1. Growth of the child
2. Gender
3. Biological factors
4. Environmental factors.
5. Immunization
6. Nutrition
7. Cultural factors
8. Physical activities
9. Opportunities
10. Sensory impairments.
11. Postural deformities.
12. Obesity.

Q.21 Discuss in detail about the AAPHER Motor Fitness Test specifically mentioning the various items in this test battery and its administration.

Ans. AAPHER motor fitness test batteries :

1. Pull-ups (Boys) / Flexed - Arm Hang (Girls)
2. Flexed - Leg sit - ups
3. Shuttle Run
4. Standing Long Jump
5. 50 yard Dash
6. 600 yard Run - Walk

Q.22 Discuss in detail about Female Athletes Triad? 5

Ans. Female Athletes Triad

1. Anaemia
2. Osteoporosis
3. Amenorrhoea

Q.23. Explain in detail about the effects of regular exercise on Respiratory System.? 5

Ans. Effects of regular exercise on Respiratory System are as follows :

1. Increase in ideal air capacity
2. Increase in vital air capacity
3. Increase in residual air volume
4. Increase in size of lungs and chest.
5. Increase the blood circulation to the respiratory organs.
6. Improved gas exchange capacity.
7. Strengthens diaphragm and muscles.
8. Unused alveoli become active.
9. Increase in endurance.
10. Decrease in rate of respiration.
11. Avoid second wind
12. Prevention from disease.
13. Faster recovery rate

Q.24. What do you mean by coping? Discuss in detail about the problem focused and emotion focused coping strategies?

Ans. Coping is expending conscious effort to solve personal and interpersonal problems, and seeking to master, minimize or tolerate stress or conflict.

* Problem focused coping strategies :-

Problem focused coping targets the causes of stress in

practical ways which tackles the problem or stressful situation that is causing stress, consequently directly reducing the stress it includes the following methods used to manage the stressful situations.

1. Analyses the stressful situation.
2. Taking control
3. Talk to your coach or teacher.
4. Information seeking.
5. Know your limits.
6. Stop worrying about the stressful situation you can't change.
7. Reset your goal.
8. Improve physical fitness.
9. Anticipate the problem.
10. Build self - confidence

* Emotion focused coping strategies :-

Emotion-focused coping involves trying to reduce the negative emotional responses associated with stress as embarrassment, fear, anxiety, depression, excitement and frustration. It includes the following technique used to manage the stressful situations.

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1. Using drugs.
2. Denial of reality
3. Meditation, e.g. mindfulness
4. Blame
5. Vent out of emotions.
6. Mentally disengaging from stressful situation.
7. Keeping yourself busy to take your mind off the issue.
8. Distracting yourself (T.V. eating etc.)
9. Praying for guidance and strength.
10. Crying.

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11. Building yourself up to expect the worse.
 12. Ignoring the stressful situation.
 13. Avoidance.

Q.25. What is the impact of high altitude on Athletes? What measures would you suggest to reduce its impact? 3+2=5

Ans. **The impact of high altitude on Athletes :-**

At high altitude the availability of oxygen to the body is less than at sea level. At high altitude the body is forced to produce a greater number of R.B.Cs to transport oxygen in an attempt to meet the oxygen deficiency. At high altitudes athletes may experience sun burns, snow blindness. In fact exposure to the altitude may also result in functional disorder as mountain or altitude sickness.

Measures to reduce the impact of high altitude:-

1. The most important being slow ascent so that your body can adjust to conditions at the right pace (acclimatize)
2. If you develop symptoms of altitude sickness is to stop your ascent and rest at the same altitude.
3. If your symptoms severe do not improve, or they are getting worse, you need to descend to a lower altitude.

Q.26. What do you mean by the term energy? Discuss about kinetic and potential energy with suitable example from sports. (1+2+2=5)

Ans. Energy is the capacity to do work.

Kinetic Energy :-

The energy an object has because of its motion is called K.E.

* The kinetic energy of a moving object depends on its speed

e.g. If a Javelin travels with maximum speed then it has more K.E. and when touch the ground, it has no K.E.

- * The kinetic energy also depends on the mass of the objects e.g. if a shot of 16 lbs and a shot of 8 lbs travel at the same speed, the 16 lbs shot has more K.E. than the 8 lbs shot.

Potential Energy :-

P. is the energy stored in an object because of its position or condition on Archery, when you stretch a bow; it acquires the ability of releasing an arrow with speed. It means that the stretched bow also has P.E. The more it's stretched, the greater, the greater the speed with which it can release the arrow. It has the P.E. because of its stretched condition.

Physical Education (Sample Question Paper)

Time allowed : 3 hours

M.M. 70

General Instructions:

- * Question paper consists of 26 questions.
- * All questions are compulsory.
- * The answer to one mark question should be of 20-30 words.
- * Answer to three marks question should be of 80-90 words.
- * Answer to 5 marks question should be of 150-200 words.

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|-----|--------------------------------------------------------------------------------------|---|
| 1. | What is a stock resources? | 1 |
| 2. | What do you mean by gross & fine motor development? | 1 |
| 3. | What is the need for testing in seniors? | 1 |
| 4. | Differentiate between macro & micro nutrients. | 1 |
| 5. | What do you mean by ideal sports ideology? | 1 |
| 6. | Why is the friction important for sports persons? | 1 |
| 7. | Briefly explain the objectives of specific sports programmes in the field of sports? | 1 |
| 8. | What is high altitude sickness? | 1 |
| 9. | Define balance ability? | 1 |
| 10. | What is personality? | 1 |
| 11. | What is an abnormal curvature of spine at front termed as? | |
| 12. | Write the changes in the phases of the running cycle? | 1 |
| 13. | What precautions should be taken while mountaineering? | 1 |

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14. Briefly discuss about the sociological & psychological aspect of sports participation.
 15. Naman's grandfather was facing age related health problem specially high blood pressure, obesity, high blood sugar. Naman consulted his physical education teacher regarding his grandfather's problems because once he had discussed this topic in the class. His teacher will meet his grandfather & suggested regular exercises or walking for atleast an hour. He started regular exercises after few months his grandfather's problems reduced.

On the basis of passage, answer the following questions:

1. What are the common age related health problem?
 2. What values are shown by the Naman?
 3. What professional values are shown by his physical education teachers.
- Q.16. Define & classify the fixture? Draw a round robin league fixture for 5 teams?
- Q.17. Discuss any three types of coordination abilities?
- Q.18. In sports such as boxing and wrestling, the players tend to lose weight sharply. Explain the pitfalls of dieting.
- Q.19. Describe any three techniques of stress management?

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- Q.20. Discuss any five long & immediate effects of exercise on cardio vascular system.
- Q.21. What are bone injuries? Discuss the types, causes and prevention of fracture.
- Q.22. What is projectile? Explain the factors affecting projectile trajectory.
- Q.23 Enlist the various committees responsible for sports in India & their responsibilities 5
- Q.24. How can individuals contribute towards conservation of environment? Elucidate safety measures? 3
- Q.25. "How can physical activities be correction measures for common postural deformities" Explain?
- Q.26 Explain how do physical activities affect quality of life.?