

CHAPTER-1

PLANNING IN SPORTS

Q.1- What is the planning ?

Ans: Planning is the primary function of management. It is essential because planning sets the basis for organizational structure and evaluation. It is important to establish a sound planning foundation. Such an approach depends on the organization's view of sports and its role in the community. This view or philosophy can often be ascertained by examining the overall goals and purposes of the organization.

Q. 2- Write any five objectives of planning ?

Ans: (i) Planning enables to become proactive rather than reactive to clarity in organizational purposes and direction.

(ii) It initiates and influences outcomes in favour of the organization.

(iii) It exerts more control over its destiny deciding where it wants to be in the future.

(iv) It adopts a systematic approach to change and reduce resistance to change.

(v) It improves Financial performance and helps use resources effectively.

Q. 3 – Write down various committees responsibilities ?

Ans: (i) Publicity committee

(ii) Reception committee

(iii) Transportation Committee

(iv) Boarding and lodging committee

(v) Ceremony committee

(vi) Committee for officials

(vii) Ground equipment committee

(viii) Refreshment committee

(ix) Announcement committee

(x) Committee on entries and programmes

Q.4- What do you mean by tournament ?

Ans: Tournament are essential and most important part of physical education curriculum. It is the series of sports in which a team finally wins and rest of the teams lose the matches. Before organising a tournament, it is very important to prepare a god plan. There are various methods to organize a tournament. To select the best method depends upon various factors such as what is the number of participating teams. Nowadays tournaments are held according to set rules and regulations.

Q.5 – What is importance of tournament ? Explain in brief ?

Ans: **Importance of Tournament:** Tournaments are important in the field of sports. The tournaments are not only significant to the players but to the coaches and physical education teachers also.

- (i) Development of sports skills: By participating in tournaments sportspersons do not develop only technical skills of the sports but also the tactical skills.
- (ii) Helpful in selection of players: On the basis of tournaments, good players can be selected by observing their performance in a tournament.
- (iii) Popularity and publicity of sports: Tournaments are helpful in publicizing the sports. It creates interest in that sport.
- (iv) A source of recreation: Sports tournaments provide ample recreation to the spectators.
- (v) Development of social qualities: Social traits such as tolerance, sympathy, cooperation, group cohesion etc, are developed among participants through sports tournaments.
- (vi) Development of national and international integration: Sports tournaments are helpful in developing national integration as well as international unity and brotherhood.

Q.6 – Enlist the various types of tournaments ?

Ans: There are four types of tournaments, which are mentioned below:

1. Knock-Out Tournament
2. League or Round Robin Tournament
3. Combination Tournament
4. Challenge Tournament.

Q. 7 – What is the Knock-out Tournament ?

Ans: In this tournament only the victorious team is allowed to play further matches until one team emerges as winner. In this type of tournament a team which is once defeated automatically gets eliminated from the tournament. It means that second opportunity is not given to the defeated team. Opportunities are given to the winning teams or players.

Q. 8 – Briefly explain the advantages and disadvantages of knockout tournament ?

Ans: **Advantages of Knock-out Tournaments:**

- (1) Minimum number of officials are required in organizing such type of tournaments
- (2) Owing to less number of matches, it requires less time to complete the tournament.
- (3) The knock-out tournaments are less expensive because the team, which gets defeated, is eliminated from the competition.

Disadvantages of knock-out Tournament:

- (1) Spectators may not have enough interest in the final match.
- (2) There may be many chances of elimination of good teams in the first or second round. So, good teams may not reach into the final round.
- (3) There are maximum chances of weak teams to enter into the final round.

Q.9 – What is League or round robin tournament ?

Ans: In league tournament, each team plays with every other team atleast once if it is single league tournament but in case of double league tournament each team plays match with every other team atleast twice. In such type of tournaments, every team plays without any consideration of winning or defeat in a match.

Q.10 – Briefly explain about types of league tournament ?

Ans: League Tournament is of two types:

(a) Single League Tournament

In single league tournament, each team plays with every other team once and number of matches is determined with the help of this formula:

$$\frac{n(n-1)}{2}$$

Here ‘n’ means the number of teams participating in a tournament, for example, if 10 teams are taking part in a tournament, the number of total matches will be held as given below:

$$\frac{10(10-1)}{2} = \frac{10(9)}{2} = \frac{90}{2} = 45 \text{ matches}$$

(b) Double League Tournament

In double league tournament every team plays with every other team twice.

The number of matches is determined with the help of this formula:

$$n(n-1)$$

If 9 teams are taking part in a double league tournament, the total number of matches will be held as given below:

$$N(n-1) = 9(9-1) = 9(8) = 72 \text{ matches}$$

Advantages of League tournament

- (1) A team need not wait to win other for playing a match.
- (2) Appropriate opportunities are available to the players to improve their performance.
- (3) The spectators also get good opportunity to watch the game for many days. Only strong or deserving team gets victory in the tournament

Disadvantages of League Tournament:

- (1) It is costly and requires more time.
- (2) It requires more arrangements for sports officials and teams.
- (3) Most of the teams become psychologically down due to their defeat again and again. In such a situation, these teams become unable to show good performance.

Q.11 – What is Combination Tournament ?

Ans: Combination tournaments are conducted when the matches are to be played on group basis or zonal basis. As a matter of fact, these tournaments depend on the suitability of the activity, the number of participating teams and the areas and distance from which they come to participate.

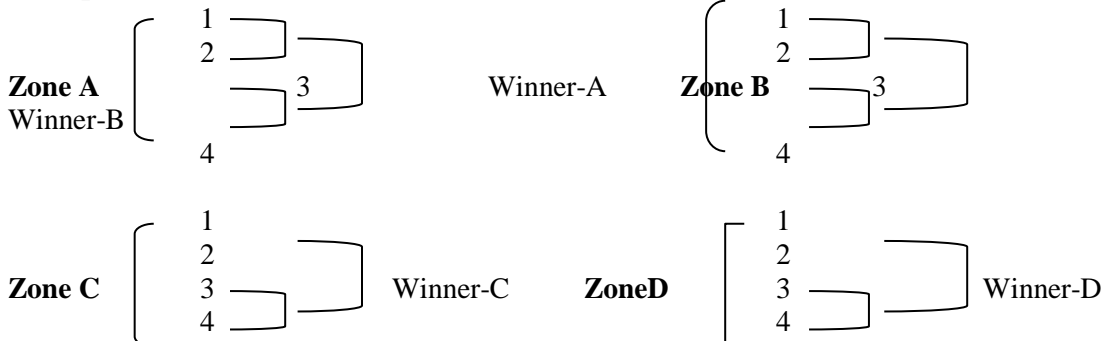
Q.12 – Briefly explain about types of combination tournament ?

Ans: There are four type of combination tournament:

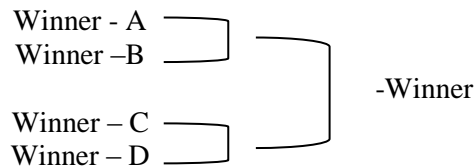
- (1) Knock-out cum knock-out
- (2) League cum League
- (3) Knock-out cum League
- (4) League cum Knock-out

1. **Knock-out cum knock-out:** - In this type of tournament the total number of teams are divided in four equal zones. First of all the teams of each zone play on knock-out basis. In this way, a team becomes the winner from each zone. All the four winner teams again play their matches on knock-out basis. The team that wins in the final becomes the winner of inter zonal tournament.

Example Zonal Tournament on knock-out basis



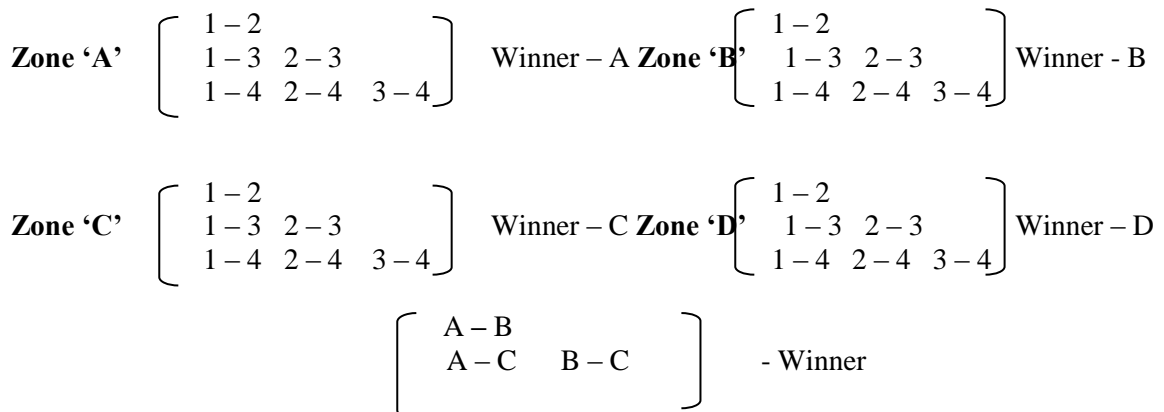
Inter Zonal Tournament on Knock – out basis



2. **League Cum League**

In this type of tournament total number of teams are divided in four zones. All the teams play their matches in their respective zones on league basis. One team from each zone becomes the zonal winner. It is called zonal or group tournament. After that all the zonal winner teams again play the matches on league basis and one team becomes the winner of inter zonal or group tournament.

Example. Group or Zonal Tournament – On League Basis

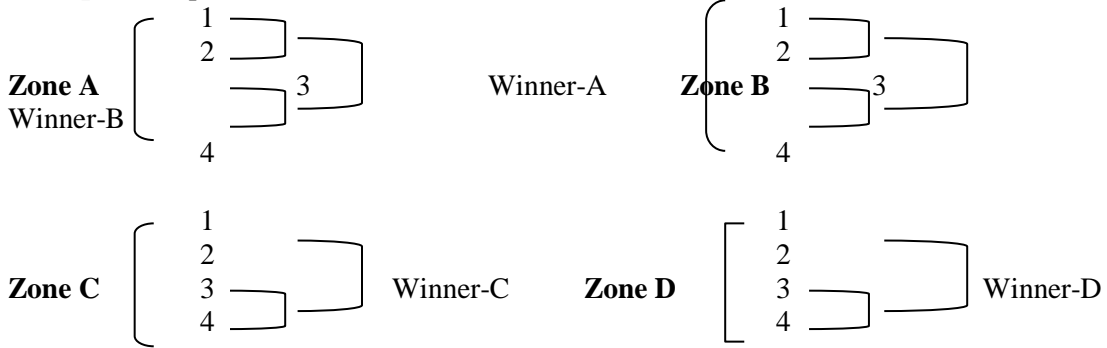


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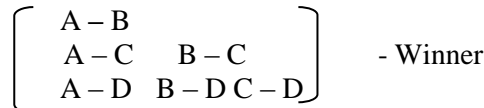
3. **Knock-out cum League**

All the teams are divided in four zones. First of all the teams play their matches in their respective zones on knock-out basis and one team becomes the winner from each zone. After that the four winner teams again play their matches on league base and one team becomes the winner of inter group or zone tournament.

Example: Group or Zonal Tournament on knock-out basis



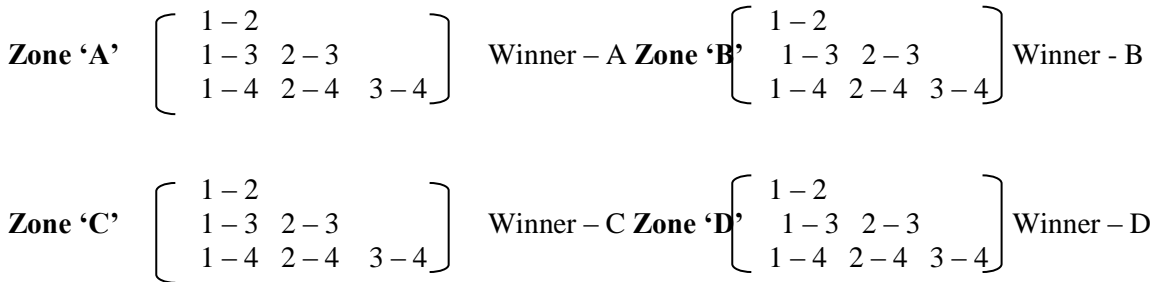
Inter Group or zonal tournament on League Basis



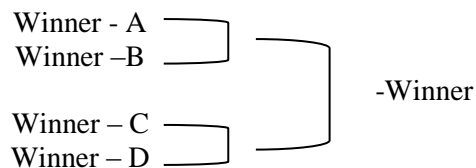
4. **League cum Knock-out Tournament**

All the teams are divided into four zones. All the teams play their matches in their respective zones on league basis. One team from each zone or group becomes the winner. It is called zonal tournament. After that the four winner teams play their matches on knock-out basis and one team becomes the winner of inter group or zonal tournament.

Example: Group or Zonal Tournament on League Basis



Inter Group of Zonal Tournament on Knock-out Basis



Q. 13 – What is bye?

Ans: A bye, in sports and other competitive activities, most commonly refers to the practice of allowing a player or team to advance to the next round of playoff tournament without playing.

Q. 14 – What is seeding?

Ans. Seeding is done to overcome the drawback of single knock out tournament. Seeding is the procedure by which good teams place their fixtures in such way that stronger teams do not meet each other at very beginning of tournament. Seeding can be done only if the standards of teams are known before the tournament.

Q.15 - What is special seeding ?

Ans: In this form of fixtures the seeded players are brought straight away to quarterfinals or semifinals. Though the method is unfair yet the outstanding players can't stay for a longer period at a particular place. In this form of draw the other formalities of draws are not taken as seriously as in knock out tournament.

Q. 16 – What do you mean by Intramural ? Elucidate the significance of Intramural.

Ans: In simple term, Intramural means “ A game for each and each for a game”, Intramural competitions are the competitions conducted within the students of the same institution. Or in the other words, these activities are organized only for the students of a school or campus. No student of other school can take part in these activities. Intramural competitions are the best means to motivate all the students of an institution for participating in the games and sports.

Significance-

1. Intramurals are very significant for physical, mental, emotional and social development of students.
2. These programmes also lay stress on moral and ethical values of students.
3. Intramurals are necessary for the development of health of children.
4. These programmes are also important to calm down the fighting instinct of children.
5. These programmes refresh the children and make them agile.

Q. 17 – Explain any six objectives of Intramural.

- Ans: 1. To provide opportunities for the students to organize and conduct competitions.
2. To provide an experience to participants in competitive sports.
3. To provide an opportunity for leadership and fellowship.
4. To provide an opportunity to develop group spirit.
5. To provide an atmosphere for joy, fun and pleasure of playing one's favourite game in a competitive situation.
6. To provide an opportunity to maintain better physical and mental health through recreative and competitive situation.

Q. 18 – What do you mean by extramural ? Elucidate the significance of extramural.

Ans: Extramural competitions are inter-college, inter-school, inter-institution competitions separately for each game and sport. The intramural programme takes pride in allowing its participants to take part in extramural competitions at state, regional national and international levels in various sports and games.

Significance

1. Through extramural completions, the standard of sports performance can be enhanced. Especially the losers can make strenuous efforts to improve their sports performance in next extramural competition.
2. Extramurals are essential to provide appropriate knowledge of new techniques of sports. The teams, which do not have appropriate as well as advanced techniques of various sports and games, can get such knowledge by participating in extramurals.
3. Extramural competitions enhance the chances for the students of various schools to participate in sports. May schools, who do not take part in such competitions, are motivated and consequently such schools tend to participate in extramurals.
4. Extramurals are essential for making and implementing the programmes of physical education more effective. Extramurals also help in broadening the base of sports.

Q. 19 – Explain any five objectives of extramural.

- Ans: 1. To Develop brotherhood, fraternity and friendship among participating institutions.
2. To enhance the participation opportunity to talented students to develop and exhibit their potential fully and achieve excellence.
3. To bring laurels to the institution by registering victory in highest number of events.
4. To encourage social interaction amongst teams.
5. To provide fun, recreation and joy to the greatest possible manner.

Q. 20 – What do you mean by Specific sports programmes ? Explain any three.

Ans: Specific sports programmes are such programmes of sports which are not usually related to completions. These sports programmes have various objectives such as creating awareness among people regarding unity, health and diseases like AIDS, Swine flu, etc. and raising funds for charitable institutions or organizations. Such programmes may be organized for the promotion and maintenance of health among people.

1. Health Runs
2. Run for Fun
3. Run for Unity

Health Runs

Health runs are organized almost every part of the world. In India, health run is organized in almost every state to make people health conscious. Health run does not require any specific preparation. Health runs are organized by health department, sports department or social organizations. Usually their purpose is to ameliorate the standard of health in a country along with the raising of funds for charity.

For health runs the requirement is only a pair of shoes and light clothes, there is no competition in it but registration of participants is performed in advance. The date and time is also fixed will in advance. There is no age limit in health runs and the distance course of running is also fixed up.

Run For Fun

These kinds of runs are organized by the various organizations for the people of all ages. Run for fun is more related to have fun and frolic during running. Run for fun is a friendly race that involves either road running or cross country running taking part for their own enjoyment and recreation rather than competition. It is organized to raise funds for a charity. The sponsors only deduct the organizational expenditure. Run for the fun can include novel categories such as wearing costumes and age categories for adults, teenagers and children.

Run For Unity

Run for fun is organized by different nations by their central governments, state governments, sports federations and institutions etc. to create a feeling of unity among the people. The purpose of run for unity may be national and international integration. It may be in the form of relay race of long distance. Every participant runs some distance. In the form of relay, they feel united. It may be in the form of marathon race as it is usually organized in Mumbai. A lot of people participate in this race from corporate world, film stars and marathon runners from other countries. The cash prize is given to the first three position holder. Such runs promote harmony, peace and solidarity among people of different religions.

CHAPTER-2SPORTS AND NUTRITION

Q.1 – What is nutrition ?

Ans: Nutrition is a branch of science which refers to all the processes by which an individual gets his food. Nutrition is defined as the science of food and its relationship to health.

Q.2 – What is balanced diet ?

Ans: A balanced diet is that which contains a proper amount of each nutrient. A balanced diet is the diet that contains adequate amounts of all the necessary nutrients required for healthy growth and activity.

Q.3 – What are macro-nutrients?

Ans: Those nutrients which are needed in the body in large amount like carbon, hydrogen and oxygen elements are called macro-nutrients. To take these nutrients, we take lots of carbohydrates, proteins, etc.

Q.4 – What is micro-nutrients?

Ans: Those nutrients which are required in less quantity or in traces like zinc, sulphur and copper are called micro-nutrients.

Q.5 – Describe the non-nutritive components of diet.

Ans: Water is an important element of balanced diet. It makes up to almost 70% of our body weight. Life process cannot occur without water. Functions:

- (i) In the digestive system, water helps to break down complex food metabolism.
- (ii) Water transports foods, wastes and gases through the body.

(iii) It keeps body cool through transpiration.

Q.6 – What do you mean by anorexia nervosa? Explain the causes and management of anorexia in detail.

Ans: Anorexia nervosa is a psychological disorder in which a patient has a distorted body image and an irrational fear of becoming overweight; therefore, they deliberately try to lose weight.

Anorexia is of two types: purging type of anorexia and Restricting type of anorexia.

- (a) **Purging type of anorexia:** Body weight is reduced due to vomiting or by taking laxatives.
- (b) **Restricting type of Anorexia:** Due to restricting calories, individual's body weight is lost.

Causes of anorexia: There may be various factors, and some of them are mentioned below:

Social Factors: Social pressures to remain thin can lead to anorexia. If an individual wants to participate in gymnastics or modeling, these professions demand to remain thin. In some cases, parents criticize their children's bodies and appearance. This act of parents can lead the children towards anorexia.

Biological factors: Biological factors are also cause of anorexia. If a female with anorexia has an offspring, that offspring is many times more likely to develop anorexia.

Psychological factors: The affected people with anorexia are usually perfectionists. They do what they are told. They excel in every thing they do and focus themselves on pleasing others. But on the other hand they feel helpless inadequate and valueless. They never feel good enough.

Symptoms of Anorexia

1. The individuals with anorexia are usually afraid of gaining weight.
2. They follow dieting strictly despite being thin. They eat only-calorie foods. They avoid taking fats and carbohydrates in their diet.
3. Such individuals just pretend to eat. They hide or throw away food to avoid eating. They make excuses to get out of meals. They can be heard of saying that they had a huge lunch or dinner or they are having some digestive problems.
4. The individual also with anorexia usually refuse to eat in public places or party. If they eat, they eat in ritualistic ways e.g., chewing food and spitting it out etc.
5. There is a rapid and drastic weight loss of the affected individual without any medial cause. The weight loss may be up to 15 percent of body weight.
6. Such individuals have a feeling of fat however they are underweight. They have a feeling that they have excess fat deposited on their abdomen, hips and thighs.
7. The affected individuals with anorexia usually take diet pill, laxatives or diuretics. At any cost they remain eager to reduce their body weight.
8. They want to burn their calories more and more. Hence they do excessive exercise. Even when they are injured or ill, they definitely continue their exercise programme.

Prevention of Anorexia

Following points can be taken care of for prevention of anorxia:

1. They should say no to teasing or the teenagers should have concept that it is wrong to say hurtful things about another children's body sizes.
2. Fitness comes in all sizes. We must provide the knowledge to children about their genetics and body size.
3. Stay away from the persons, places and activities which are related to anorexia.

Management and Treatment of Anorexia

For proper management and treatment the following points should be followed:

1. Generally there are no medicines to treat anorexia effectively. However, antidepressants can help in treating other mental disorders such as depression or anxiety which are related to anorexia.
2. Realize it that you have a problem of anorexia. Admit it that your relentless pursuit of thinness is out of your control.
3. Individual psychotherapy can provide help to the affected person in dealing with the behavior and thoughts that lead to anorexia. He can gain a healthier self-esteem and learn positive ways to cope up with distress.

Q. 7- What is Bulimia? Discuss its type, causes, symptoms and treatment in detail.

Ans: Bulimia is a psychological disorder in which patient experiences regular bouts and serious over eating which are always followed by a feeling of guilt which can then lead to extreme reactions such as crash dieting, doing lots of exercise and purging.

Types of Bulimia

There are two types of Bulimia:

- 1.) **Purging Bulimia:** In this type of bulimia, the individual regularly engages in self-induced vomiting or the misuse of laxatives, diuretics or enemas. The individual rapidly wants to remove food from the body before it can be digested.
- 2.) **Non-Purging Bulimia:** In this type of bulimia, the individual uses other methods to get rid of calories and to prevent weight gain. She/he uses fasting, strict dieting or excessive but does not engage in self-induced vomiting or misuse of laxative, diuretics or enemas.

Causes of Bulimia

- 1.) **Performance pressure in sports:** Eating disorders such as anorexia and bulimia are common among sportspersons. Usually gymnasts, racers and wrestlers are found to be affected by bulimia. Coaches unknowingly contribute to eating disorders by encouraging sportspersons to reduce weight or maintain a low weight for presenting a better performance in sports.
- 2.) **Family history:** Family history also plays a role in developing bulimia. Bulimia may develop to an individual whose parent, brother or sister has bulimia. It has some type of genetic link.
- 3.) **Psychological factor:** Psychological factors such as low self-esteem, perfectionism, impulsive behavior, depression and anxiety disorders etc. may be the causes of bulimia.
- 4.) **Social Factors:** In fact, the persons who remain in media such as actors, dancers and models are at higher risk of eating disorders. Such as bulimia and anorexia

Symptoms of Bulimia

- 1.) Makes excuses to go to the bathroom immediately after meals

- 2.) Only eat diet or low-fat foods (except during binges)
- 3.) Regularly buy laxatives, diuretics, or enemas.
- 4.) Fear weight gain.
- 5.) Be intensely unhappy with body size, shape, and weight.

Treatment of Bulimia

- 1.) Healthcare provider should give a proper plan of physical activity or exercise to the person affected by bulimia. The affected individual should not perform excessive exercises to burn off calories consumed by taking more amounts of food.
- 2.) Psychological treatment helps in improving symptoms of bulimia. Cognitive behavioral therapy can be used to treat mental ailments such as depression, negative beliefs and behaviors with healthy and positive ones.
- 3.) In case of bulimia, to come back to a healthy weight should be given top priority. Dietician should prepare an eating plan to help you achieve a healthy weight. He should provide education regarding normal eating habits and good nutrition.
- 4.) Antidepressants may alleviate the symptoms of bulimia along with the psychotherapy or psychological treatment. Fluoxetine is the only antidepressant to treat bulimia.

Q.8- Briefly explain the effects of diet on performance.

Ans: An active lifestyle and exercise routine, along with eating well, is the best way to stay healthy. Eating a good diet with enough fluids can help provide the energy you need to finish a race or just enjoy a casual sport or activity. You are more likely to be tired and perform poorly during sports when you do not get enough calories, carbohydrates, fluids, vitamins, iron and other minerals, and protein.

Daily Training Diet Requirements

- 1.) Enhance adaptation and recovery between training sessions.
- 2.) Promote the short and long-term health of athletes.
- 3.) Provide adequate fluids to ensure maximum hydration before, during and after exercise.
- 4.) Provide enough energy and nutrients to meet the demands of training and exercise.

In your diet, include a wide variety of foods like wholegrain bread and cereals, vegetable (particularly leafy green varieties), fruits, lean meat and low-fat dairy products to enhance long term nutrition habits and behaviors. To know the role of particular diet, it would be better to know the role of essential nutrients on performance. These essential nutrients are described below:

Protein

Proteins are a part of our tissues including body fluids such as blood, they are needed for repair and maintenance of body tissues. Proteins are essential for muscular development. All sportsmen require a good amount of protein in their diets. However, sportsmen like boxers and wrestlers require more proteins due to wear and tear of tissues.

Fats

Fats are composed of fatty acids. These are a better sources of energy. Fat Provides heat and energy to the body. Athletes and sportsmen require fat from light to moderate proportions, because fat is a source of fuel or energy for the body.

However, high jumpers or gymnasts require only minimum amount of fat, because the extra weight can hinder their performance.

Carbohydrates

Carbohydrates are specially voluble food when a considerate amount of muscular work to be undertaken. Carbohydrate is an essential component of a sportsman's diet because less intake of carbohydrates can result in exhaustion. Carbohydrates also provide strength and fuel for muscles. Therefore, an athlete's diet should be rich in carbohydrates.

Vitamins

Vitamins accelerate the vitality, lightness, buoyancy and resistance of the body. Vitamins are essential for normal functioning of the body and good performance in sports. For example, Vitamin E helps in the treatment of heart diseases. Similarly, Vitamin C helps in the treatment of wounds.

The three Vitamins which have proved significantly are

Vitamin "B-Complex". Deficiency of vitamin "B-Complex" has shown the decrease on the sports performance. Studies related to excess amount of Vitamin "B-complex" intake show both the improvement in performance and no influence on performance. So, there is further need for research to know the effect of this vitamin on the performance.

Vitamin "C". Low level of Vitamin 'C' intake does not reduce the work performance significantly. Approximately, 60 mg of Vitamin 'C' intake by non athletes and 300 mg to 500 mg intake by successful athletes do not have any harmful effect on kidneys.

Vitamin 'E'. Vitamin 'E' has been claimed to have beneficial effects in the treatment of many diseases and specially heart diseases. Studies conducted on the use of vitamin 'E' have shown little or no effect on the performance.

Water

In the diet of a sportsperson water is required as a solvent, a transport medium, a substrate in hydrolytic reactions and for lubrication. Water is an essential component of diet. Loss of water in the body can lead to nervous system disorder, headache and dizziness, However, excess amount of water does not show any improvement in performance. Thus every athlete/sportsperson should consume a well-balanced diet incorporating all essential nutrients.

Minerals

Minerals are required in a sportsperson's body for various functions. Sportsperson's body requires essential minerals like iodine, iron, calcium, magnesium, phosphorus etc. During sports performance, sweating can reduce the amount of Sodium from the body. It can be compensated by the intake of salt. However, excessive intake of salt can lead to Potassium loss or water retention. Iodine is also required for the normal functioning of the thyroid gland.

Q.9- What do you mean by healthy weight? Discuss about the method to control healthy body weight for lifetime.

Ans: Weight is a tough mass. The health benefits of staying at a healthy weight are huge and well worth effort. It helps in lowering the risk of heart disease, diabetes and high blood pressure.

According to national Institute of Health “ A healthy weight is considered to be one that is between 19 and 25 (BMI). If the BMI is between 25-29 an adult is considered overweight. If the BMI is 30 or greater, the person is considered to be obese”.

Method To Calculate BMI

To Know our body mass index (BMI), we divide our body weight in kg by our body height in m².

$$\text{BMI} = \frac{\text{Wight in Kg}}{\text{Height in m}^2}$$

Under Weight	< 18.5
Normal Weight	18.5-24.9
Overweight	25-29.9
Obesity Class A	30-34.9
Obesity Class B	35-39.9
Obesity Class C	>40

Methods to control Healthy Body Weight

1. **Regular Daily Exercise:** Exercise burns excessive calories or fat stored in the body. If consumption of calories is less than the numbers of calories burnt by the body, then it will be bad to weight lose. Aerobic exercise should be done.
2. **Set Small Goals:** If one tries to lose too much weight too soon, then the person is likely to get demotivated. Therefore, it is important that small and realistic goals should be set in. Achievement of these goals further motivates the individual to lose weight.
3. **Cut Your Calories:** keep a plan ready to get back on the track if your body weight begins to exceed the required level. It is a simple plan to follow. Just cut or subtract only 100 calories a day. In this way, you can return to your goal weight.
4. **Avoid junk food and Fizzy drinks:** Consumption of junk food (Pizza, burger etc.) items immediately leads to weight gain. Therefore, to control weight consumption of junk food should be avoided. Consumption of fizzy drinks such as soft drinks and hard drinks have high sugar content. Therefore, consuming these drinks leads to weight gain. Instead, one can drinks lemon water which is a natural drinks
5. **Adopt a healthy life style:** Instead of being lazy, we should try to be active. It works wonders in controlling weight. Use stairs instead of elevators or escalators; Walk to a nereby shop instead of using automobile; play outdoor games instead of computer games- all this contributes to healthy lifestyle.
6. **Adopt Alcohol, Smoking and Drugs:** Alcohol, smoking and drugs always tend to increase weight. Alcohol is directly absorbed from the stomach in the blood stream and easily stored as fat. It is also applicable in case of smoking and drugs. So, never use such things, if you want to lose weight.
7. **Do not Overeat:** One should not overeat. You should eat the food according to the requirement of your body. Suppose you require 2000 calories per day, then you should take the food that consists of only 2000 calories. If you take 2100 calories per day, the 100 calories will be accumulated daily as fat in your body. So, you should avoid overeating.
8. **Don't Skip Meals:** Never skip your meals, such as breakfast, lunch and dinner as far as possible. If you skip your meal, the next time you will definitely do overeating which may lead to obesity. In fact, skipping meals increases hunger and it results in greater food consumption next time.

9. **Yoga exercises:** Yoga exercises are also helpful both for mind and body. Yogic exercises help to reduce weight. In fact, this power yoga is the latest craze. Meditative asanas also help in relieving the stress and tension.

Q.10- Explain in detail various pitfalls of Dieting.

Ans: The main major pitfalls of dieting are given below:

- (1) Most of the persons who go on dieting usually underestimate the number of calories they consume. So, it is essential to be more aware about the number of calories you take in your diet.
- (2) If you want to lose your weight, most probably you stress on not to eat more and not on what you drink. In fact, beverages, coffee with cream and sugar, sweetened juice and sodas really contribute to weight gain.
- (3) If you reduce more intake of calories it will produce, a huge weight loss. It can be dangerous for you. It will definitely lower your metabolism and as a result of it your body weight will not be reduced properly.
- (4) Generally some nutrients like carbohydrates and fats are restricted in dieting. In reality your body needs all types nutrients. If you don't take all the nutrients in required amounts your proper functioning will be impaired.

Q.11- What do you mean by Food Intolerance? Explain the causes, symptoms and management of food Intolerance and detail

Ans: Food intolerance means when an individual cannot digest certain food properly. It is becoming one of the most likely reasons for ill health today. Food intolerance is often confused with food allergy, but these are both very different. Food intolerance basically affects the digestive system and causes, diarrhoea, bloating, stomach cramps and celiac disease.

Causes and Symptoms of Food Intolerance

Causes of Intolerance: Food intolerances are caused by part or complete absence of activity of the enzymes responsible for breaking down for absorbing the food elements. These deficiencies are usually innate.

Symptoms of Intolerance: Food intolerance can cause nausea, stomach pain, diarrhoea, vomiting, gas cramps, headaches, irritability etc.

Management of Food Intolerance

Food intolerance can be managed adequately in such a way without the need for professional assistance. If you are not able to know the food which causes problem you should seek expert medical help. Guidance can also be provided by your general practitioner to assist in diagnosis and management. Fructose intolerance therapy, Lactose intolerance therapy and Histamine intolerance therapy can be applied for managing food tolerance.

Q.12-What do you mean by food myths? Explain any five food myths prevailing in contemporary society.

Ans : Food myths are things which are repeated sometimes so much that we are inclined to believe they are true, e.g., high protein diets cause ketosis which reduces hunger.

1.) **Drinking while eating makes you fat:** The actual fact behind this misconception is that enzymes and their digestive juices will be diluted by drinking water while eating. It will slow down your digestion which may lead to excess body fat. In contrary, there is a scientific fact that drinking water while eating improves digestion.

2.) **Fat-free products will help you to Lose weight:** If you take at free labeled products they can lead to weight gain. In fact, these foods have more calories. Approximately, these products have same number of calories (may be slightly less) in comparison to other regular food.

3.) **Starve yourself if you want to lose weight:** Eating a good diet is more important than not to eat when you are on a weight loss programme. Include such food items in your diet which suppress appetite and increase metabolism so that your don't eat too much. So, there is no need to starve yourself if you want to lose weight.

4.) **Exercise makes you to eat more:** Exercises burn calories which may increase your hunger. Research studies conducted in this area have not shown that the individual who do exercise, consume more calories than those who don't exercise. So there is no truth in this statement.

5.) **Eggs increase cholesterol levels so avoid them:** There is no doubt that eggs are good source of health. An egg provides you various nutrients such as protein, vitamin A, B, D, Zinc, Iron, Calcium and Phosphorus etc. It is as per daily requirement of cholesterol by our bodies. So, if you take one egg daily there is no problem of cholesterol level.

Q.13- What do you mean by sports nutrition?

Ans: Sports nutrition is the study and practice of nutrition and diet as it relates to performance in the field of games and sports. It has a direct relationship with the type and quantity of fluid and food intake by a sportsperson. In fact, it deals with the nutrients such as carbohydrates, proteins, fats, vitamins, minerals and water etc.

Q.14- Describe the considerations in meal intake which should be taken before, during and after the completion.

Ans: Food nutrients like carbohydrates, fats and proteins supply us with energy. What an athlete eats on a day to day basis is extremely important for athlete's training. Athlete's diet will affect how fast and how well athlete progresses, and how soon he/she reaches to the competitive standards. Once an athlete is read to compete, he/she will have a new concern, his/her competition diet. What should an athlete eat before event, during event and after event is important.

Meal Before Event/Performance

- (1) The meal should be taken at least three to four hours and snacks atleast one to two hours before exercise, to give enough time for digestion. The diet should include starches such as cereal, bread and fruit to give him/her a slow, steady release of energy.
- (2) Pre-exercise meals and snacks include cereals and low-fat milk, toast/muffins, fruit salad and yogurt, pasta with tomato-based sauce, a low-fat breakfast or low-fat creamed rice.
- (3) A high-carbohydrate meal, three to four hours before exercise is thought to have a positive effect on performance.

Meal During Event/Performance

During exercise lasting more than 60 minutes, an intake of carbohydrate is required to top up blood glucose levels and delay fatigue.

- (1) Take small sips of water another fluids even if you feel do not thirsty.
- (2) Drink liquid glucose to save your own limited stores of glycogen.
- (3) During event, 30-60 g of carbohydrate is sufficient and can be consumed in the form of sports gels, low-fat muesli and sports bars or sandwiches with white bread.
- (4) It is advisable to consume regular fluid during prolonged exercise to avoid dehydration. Sports drinks, diluted fruit juice and water are suitable choices.

- (5) It is important to commence early intake in exercise and to consume regular amounts throughout the exercise period.

Meal After Event/Performance

- (1) Drink lots of water and other fluids to replace any losses of fluid.
- (2) Fat carbohydrates with a moderate to high level in the first half-an-hour or so after exercise be consumed to top up glycogen stores. This should be continued until the normal meal pattern resumes.
- (3) Carbohydrate foods and fluids should be consumed after exercise, particularly in the first 1-2 hours after exercise.
- (4) The food should be rich in carbohydrate within an hour of exercising even if we do not feel hungry, to restore glycogen stores quickly.

Chapter -3 Yoga and Lifestyle

Q.1. What is Yoga ?

Ans. The word yoga is derived from Sanskrit word 'Yuj' which means 'to meet'. So yoga is the union of body with soul.

Q.2. Define the term Asana. Write about the categories of Asanas.

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

Asana may broadly be classified into three categories:

- (i) Cultural or corrective asana
 - (ii) Meditative asana
 - (iii) Relaxative asana
-
- (i) Cultural asanas can further be classified into two groups, depending on the effects produced.
 - a. asana that work through and on the spine and visceral organs.
 - b. asanas that work through the skeleton muscles, ligaments and joints.
 - (ii) Meditative asana are those asanas which are aimed at quiet sitting and are used for higher practices in yoga.
 - (iii) Relaxative asana are those which remove tension and bring about physical as well as mental relaxation.

Q.3. Write steps and benefits Vazarasan in Obesity.

Ans. Steps

- Sit on the flat floor and fold your legs. Keep the spine straight and close the eyes.
- Keep the right palm on right knee and left palm on left knee.
- Now start to inhale slowly then exhale. When you exhale try to think that your disorders are coming out from your nose.
- Repeat these steps for 5 minutes and take a rest. You can increase the time for 15 minutes.

Benefits

- Calms the mind and bring stability in mind.
- Cures constipation, acidity, increases digestion process.
- Those suffering from gas problem can practise immediately after lunch or dinner.
- Helps to get rid of back pain.
- Cures stomach disorder.
- Cures urinary problems.
- Strengthens the sexual organs.

Q.4. Explain Hastasana.

Ans. Standing poses actually help in maintaining body equilibrium while developing flexibility and strength in the legs. This pose helps in keeping the legs and spine strong and flexible.

Q.5. Write the steps and benefits of Hastasana.

Ans. Steps

- Stand upright with feet about hip width apart.
- Inhale and raise hands straight above the head, with palms facing outwards.
- Exhale and bend head and trunk forward from the hip, as far as possible so that the upper arms touch the ears.
- Now exhale and continue to stand in that position and try to reach forward so as to touch the big toes with the fingers.

- Holding out the breath, hold on to the big toes and try and push the forehead into the space between the knees. During this entire process the legs and knees should be held straight.

Benefits

- This asana massages and tones the digestive organs, alleviates flatulence, constipation and indigestion.
- All the spinal nerves are stimulated and toned.
- Inverting the trunk increases the blood flow to the brain and improves circulation to the pituitary and thyroid glands.
- Other benefits resulting from this inversion include increased vitality, improved metabolism, increased concentration and the removal of nasal and throat diseases.

Q.6. Explain Trikonasana.

Ans. The triangle pose is consisted of two sanskrit words Trikon and Asana. The meaning of trikon is triangle while the meaning of asana is pose. Triangle pose is very important for health and wellness, it has greater significance and relevance in the domain of sound health. Extended triangle pose yoga has the ability to bring stability, strength and stamina in one's life. Therapeutically, it is good for strengthening for core and legs.

Q.7. Write steps and benefits of Trikonasana.

Ans. **Steps**

- Stand erect. Now, keep distance between your legs about 3 to 4 feet.
- Extend your arms at the shoulder level.
- Inhale and raises your right arm by the side of your head.
- Now, bend your right arms with exhaling towards the left side by keeping your body weight equally on both the feet. You should ensure that the right arm become parallel to the ground.
- Maintain the position as per your comfort with normal breathing and come to the original position by inhaling.

Benefits

- This asana is good to burn fat.
- It is good for your backbone.

- Triangle pose helps to strengthen your legs, knees and ankles.
- Good for your digestion.
- It may be used for stress management.

Q.8. Explain ArdhaMatsyendrasana.

Ans. ArdhMatsyendrasana asana exercises the vertebral and bring them in good shape. It helps the bladder, liver, intestines, spleen, pancreas and other abdominal organs and also provide strength to spinal nerves. It is helpful in treating obesity, asthma, dyspepsia and diabetes.

Q.9. Write steps and benefits of ArdhaMatsyendrasana.

Ans. **Steps**

- Sit straight on the floor.
- Stretch legs in front of you.
- Under the right thigh place your left heel by keeping the right thigh in straight position.
- Cross the right leg over the left thigh carefully and place your right foot flat on the floor.
- Over the right knee pass your left arm and clasp the big toe of your right foot.
- With the help of your right hand grasp the left thigh from the rear.

Benefits

- Stretches and energizes the spine.
- Open the shoulders, neck and hips.
- Cleanses the internal organs.
- Increases flexibility, especially in hips and spine.

Q.10. Explain briefly Diabetes.

Ans. Yoga postures for diabetes switch back and forth between asanas (poses) that contract specific areas of the abdomen and asanas that relax those areas. This alternation between abdominal contractions and release stimulates the pancreas thus increasing the blood and oxygen supply. As a result, the pancreatic cells, hit by nutrients and fresh blood flow, undergoes a rejuvenation that improves the organ's ability to produce insulin. Yogic breathing practices also work in a similar way to stimulate healthy pancreatic function. In addition to postures, exercising yoga reduces blood sugar levels and helps relieve one of the main symptoms of

diabetes i.e. hypoglycemia. Yogic exercise also reduces LDL ("bad") cholesterol and triglyceride levels, both of which are often accompanying symptoms for diabetes.

Q.11. Explain Bhujangasana.

Ans. Bhujangasana is also famous as a cobra pose in yoga. It is an excellent exercise for those suffering from a stomach disorder, spinal cord problem, back pain, respiratory, disorder and obesity.

Q.12. Write steps and benefits of Bhujangasana.

Ans. **Steps**

- Lie down on your stomach and feel relax.
- Stretch and joint the legs. So that knees of both the leg touches each other.
- Place the palm near the chest facing the ground. Keep in mind that elbow should be straight.
- In bhujangasanayour inhaling and exhaling plays on important role.
- So now try to move your head back as much as you can.

Benefits

- It cures acidity, indigestion and constipation.
- Improve the function of liver, kidney, pancreas and gallbladder.
- It cures back pain, spondylitis, slip disc.
- Helps to lose weight.
- Helps to improve blood circulation.

Q.13. Define Pachimottasana.

Ans. Now-a-days many of the people have diabetes problem. Some people are in dangerous condition whenever they will be affected by the diabetes.

According to a recent studies four per cent youngsters in India affected by diabetes. Lifestyle changes are said to be a reason for this but the medical world cannot come to a proper conclusion. Diabetes is a deficiency, it is not a disease.

Q.14. Write steps and benefits of Pachimottasana.

Ans. **Steps**

- Lie down on your back in a mat. Your legs should be straight and stretch your hands upward straightly besides the ears. Your fingers should be straight.
- Deeply inhale now. Don't bring your hands down, slowly raise up the body and sit.
- You should keep your hands besides the ears.
- In this stage exhale the breath and bend the body hold the first finger in your legs with index finger and middle finger by making its an anchor.
- Deeply exhale and inhale once, your elbows should besides the knee joints and it should touch the floor.
- Now your face is in between the knee joints. Be in this pose for five to ten seconds. Now sit straight and your finger should hold the big finger of your leg.

Benefits

- While practicing this Paschimottanasana the intestines, gall bladder are smoothly pressed and stimulates well.
- The soul energy of the body will be strengthening by spinal cord, spinal nerves are pulled during the time of asana.
- It prevents diabetes. It increases the fertility factor of male removes the infertility.
- Stomach pain, headache, piles, hip pain, back pain and body weakness are cured by doing this asana.
- The menstrual problem will be cured for the ladies. Hip bones will become strengthen.
- For women can do this asana before marriage can give birth from normal delivery by strengthening their bones and inner reproductive organs.
- This asana helps to increase the concentration capacity.

Q.15. Explain PavanMuktasana.

Ans. This asana is also called as wind removing pose. It is a yoga pose in which the body is positioned in a supine position. Everyone regardless of whether he or she is a beginners or advanced practitioner can practice this pose. The PavanMuktasana massages the organs of the abdomen and also eases tension that occurs in the area of the belly and lower back. It is beneficial to cure gas problems and poor digestion.

Q.16. Write steps and benefits of PavanMuktasana.

Ans. Steps

- Lie flat on your back and keep the legs straight and relax. Breathe deeply and rhythmically.
- Inhale slowly and lift the legs and bend the knee. Bring upwards to the chest till your thigh touches the stomach.
- Hug your knees in place and lock your fingers.
- Now try to touch the knee with the nose tip.

Benefits

- This asana cures acidity problems, indigestion and constipation.
- Pavanmuktasana is very good for the abdominal organs.
- Regular practice of this asana cures gastric problems.
- This asana is very helpful for people suffering from arthritis pain, heart problems, waist pain and acidity.

Q.17. Explain ArdhaMatsyendrasana.

Ans. The yoga pose ArdhaMatsyendrasana or Half Lord of the Fish pose is consisted of four words (Ardha-Half, Matsya-Fish, Endra-King and Asana-Pose). The lord of the fish pose is a boon for the spine and spinal region and act like as rejuvenator for the spine nervous. This asana is good for spine as it helps to increase flexibility of spine, spinal nerves and the associated parts with it. This twist yoga posture expands your chest, relieves to neck and shoulders.

Q.18. Write step and benefits of ArdhaMatsyendrasana.

Ans. Steps

- First of all, sit on the ground with spreading your legs in front of you.
- Bend your left leg so that the left foot comes close to your hips while the right foot is placed outside the left knee.
- Place the left arm over the right knee and grasp the toes of the right foot with the left hand.
- Now, put your right arm behind back around the waist in order to touch the navel from behind.

Benefits

- This yoga pose is extremely beneficial for burning of fat from the abdomen.
- This pose is helpful in weight loss and obesity management.
- It provides wide range of flexibility to the spine.
- It has been found beneficial in the treatment of backache, neckache and headache.

Q.19. Explain Asthma for Sukhasana.

Ans. This yoga is extremely beneficial burning of fat from the abdomen. Thus, this pose is helpful in weight loss and obesity management. It provides wide range of flexibility to the spine. ArdhaMatsyendrasana has been found beneficial in the treatment of backache, neckache and headache. It helps to remove any tendency towards round shoulders. It is beneficial in case of sciatica and slipped disc. It gives compression and stretch to the abdominal organs, thus facilitates massage, recirculates impure blood and tones up the associated nerves. It has been found useful in treating of ailments like indigestion, rheumatism, and constipation. It is effective in the proper function of adrenal glands, kidney and liver. The yoga pose strengthens the shoulder, hips and neck. It gives relief from stress and strain that occurs in the back due to forward and backward bending yoga poses.

Q.20. Write steps and benefits of Sukhasana.

Ans. **Steps**

- This yoga is extremely beneficial for burning of fat from the abdomen.
- This pose is helpful in weight loss and obesity management.
- It helps to remove any tendency towards round shoulders.
- It is beneficial in case of sciatica and slipped disc.

Benefits

- It provides wide range of flexibility to the spine.
- It helps to remove any tendency towards round shoulders.
- It is beneficial in case of sciatica and slipped disc.
- It gives compression and stretch to the abdominal organs, thus facilitates massage, recirculates impure blood and tones up the associated nerves.

Q.21. Explain Asthma for Chakrasana.

Ans. This asana is known as 'ArdhaDhaurasana' also. The name of this yoga posture is derived from an addition of two different words, 'Chakra' and 'Asana'. This asana

is also known as 'Wheel Pose' in which the word 'Wheel' present the first-half word 'Chakra' and 'Pose' can be replaced in the place of 'asana'. In this asana you have to bend slowly backward in a perfect manner as the posture needs perfection and practice. People who daily practice this asana can gain a huge flexibility in their backbone, but it takes time to get that flexibility.

Q.22. Write steps and benefits of Asthma for Chakrasana.

Ans. **Steps**

- To begin this asana, you have to lie down properly on the yoga mat; your face facing upward.
- Bring your feet closer to your hips with bending your knees upward; keep a distance of about one foot between your feet.
- Bring up your hands near to your ear and put your palms on the ground as the fingers should facing on your shoulders.
- Now lift up your body in air by balancing on your feet and hands with rotating your head backward slowly. Warning: Do not try to push your body too much to lift your body more upward in air as it may cause to your spine. Do as much as you can. You will get improvement in your posture by practicing it daily.

Benefits

- Chakrasana strengthens your hands, thighs, shoulders and legs muscles.
- This asana is good for your people facing breathing problem and diseases such like Asthma.
- This asana makes our kidney and liver stronger and strengthens our wrist, hips and spine.
- This asana is one of the yoga asanas which are helpful in increasing our height.

Q.23. Explain Asthma for Gomukhasana.

Ans. Placing both the feet on the ground by the side of the buttocks and keeping the body steady is Gomukhasana, resembling the mouth of a cow.

Q.24. Write steps and benefits of Asthma for Gomukhasana.

Ans. **Steps**

- Sit erect stretching both legs together in front, hands by the side, palm resting on the ground, fingers of the hands together.

- Fold right leg at the knee and place it on the ground by the side of the left buttock.
- Similarly bringing the left leg from above the right leg, place it on the ground by the side of the right buttock. Out towards left and right side.
- Place the palms on the knee one above the other and sit erect.

Benefits

- It helps introduce relaxation. When you feel fixed, tense or worried, practicing.
- It will help release the tension.
- It stimulates the kidneys.
- It is helpful in relieving ailments like diabetes, high blood pressure, and sexual malfunction.

Q.25. Explain Asthma for Parvatasana.

Ans. It is one of the important seat and yoga postures. It is immense benefits and is one among the yoga postures for weight and loss. As the pose resembles a mountain, it is called parvatasana.

Q.26. Write steps and benefits of Asthma for Parvatasana.

Ans. **Steps**

- Sit down on the floor in a cross legged position or Sukhasana (easy pose). You can also sit down by spreading the legs a little more than the hip width or in Padmasana (lotus pose).
- Bring your hand in front of you and interlock the fingers so that your palms are facing towards you.
- Breathe out and move your hands over head. Keep your fingers interlocked and hands stretched upwards.
- Put your torso in upward direction and stretch as much as much as you could.

Benefits

- It gives a full body stretch which improves the blood circulation around the body.
- It makes you alert and attentive if you are feeling bored, sleepy or losing interest in doing work.
- It improves your mental efficiency and makes you more optimistic.
- It strengthens the weak muscles of the body and thus prevents any injury.

Q.27. Explain Asthma for Bhujangasana.

Ans. Bhujangasana (Cobra Pose) works by toning your abdomen, improving and fixing your blood circulation and which is an effective way of reducing your stress and fatigue. According to famous yoga therapists Bhujangasana is the best and the ideal exercise for people with asthma and other respiratory problems.

Q.28. Write steps and benefits of Asthma for Gomukhasana.

Ans. **Steps**

- Lie flat on your stomach. Place your hands on the side and ensure that your toes touch each other.
- Then, move your hands to the front, making sure they are at the shoulder level, and place your palms on the floor.
- Now, placing your body's weight on your palms, inhale and raise your head and trunk.
- Note that your arms should be bend at your elbows at this stage.

Benefits

- It is a deep backbend that makes the spine stronger and more flexible.
- It helps regulate metabolism thus balancing and the weight.
- It gives the lungs, shoulders, chest and abdomen a good stretch.
- It also tones the organs that lie in the lower abdomen.

Q.29. Explain Asthma for Paschimottasana.

Ans. This asana is commonly known as the forward Bend Pose, involves the whole body stretches all vital parts from head to toe. This particular asana is recommended to many people who have been diagnosed with diabetes.

Q.30. Write steps and benefits of Asthma for Paschimottasana.

Ans. **Steps**

- Sit down on your yoga mat and keep your back straight. Place the legs in front and stretch them as well.
- Move your hands upwards and keep them straight and placed beside your ears. Remember to keep fingers straight and pointing upwards as well.
- Inhale as deeply as you can without bringing any of your hands down.

- Bend the body forward and hold your legs respective first fingers with your hands index and middle fingers. Exhale during this step.

Benefits

- It is known anxiety buster.
- Improves the spine's ability to stretch and in the process, strengthens it.
- Toning several abdominal organs.
- Many women are recommended this asana particularly after delivery.

Q.31. Explain Asthma for Matsynasana.

Ans. It is one of the beginners yoga pose inbuilt with lot of health benefits. Another name of this yoga pose is 'Fish Pose'. Matsyasana purifies our blood and keeps us healthy. So it called Fish Pose.

Q.32. Write steps and benefits of Asthma for Matsynasana.

Ans. **Steps**

- Sit on the carpet; folds the both legs together like Padmasana, ArdhaPadmasana or Sukhasana.
- Thrusting hands on the carpet and slowly lies down.
- Place the palms next to ears, towards the should blade.
- Press palms and waist, raise the trunk and head. Then place the crown of the head on the floor.

Benefits

- Spinal cord and back muscle tissues gets refreshed.
- It helps to cure asthma and respiratory disorders.
- Headache caused by stiffness of neck can be curved easily.
- It helps to stop bleeding hemorrhoids.

Q.33. Explain Hypertension.

Ans. Yoga and meditation play on important role in lowering of high blood pressure (hypertension) thereby improve the lifestyle through mental relaxation and stress reduction. For management and control of hypertension, Yoga and Naturopath is a beneficial step.

- Katichakrasana is useful yoga pose to relieve from hypertension.

- Bhujangasana is quite useful in normalising blood pressure.
- Dhanurasana keeps your tiredness away.
- Shavasana may be practised when blood pressure is under control and in case of tiredness.
- Chandrabhedhi pranayama also lowers down blood pressure.

Q.34. Write steps and benefits of Hypertension for Tadasana.

Ans. **Steps**

- Stand erect, and place your legs slightly apart, with your hands hanging alongside your body.
- You must make your thigh muscles firm. Lift your kneecaps while ensuring you do not harden the lower part of your belly.
- Strengthen the inner arches of your inner ankles as you lift them.
- Now, imagine a stream of white light (energy) passing through your ankles, up to your inner thighs, groin, spine, neck all the way up to your head. Gently turn your upper thighs inward. Elongate the tailbone such that it is towards the floor. Lift the pubis such that it is closer to the navel.

Benefits

- This asana improves body posture.
- With regular practice of this asana, your knees, thighs and ankles become stronger.
- This asana reduces flat feet.
- It also makes your spine more agile.

Q.35. Explain Hypertension for Vajrasana.

Ans. Vajrasana is a kneeling pose and it takes its name from the Sanskrit word 'Vajra' which means diamond or thunderbolt. Asana means Pose. This diamond pose is also called Adamantine Pose. Usually, breathing exercises like Pranayama, Kapalabhati and Anulom Vilom are done sitting in this position, and it is said that in doing so, the body becomes as strong as a diamond.

Q.36. Write steps and benefits of Hypertension for Vajrasana.

Ans. **Steps**

- Kneel down, stretching your lower legs backward and keeping them together. Your big toes should cross each other.
- Gently lower your such that your buttocks are resting on your heels and your things on your calf muscles.
- Place your hands on your knees, and set your gaze forward with your head absolutely straight.
- Turn your attention to your breathing. Be fully aware of how you breathe and carefully observe as you inhale and exhale.

Benefits

- This asana improves digestion and with regular practice, it eliminates constipation.
- Better digestion prevents ulcers and acidity.
- This asana strengthens the pelvic muscles too.
- It helps to ease out labour pains and also reduced menstrual cramps.

Q.37. Explain Hypertension for PavanMuktasana.

Ans. The wind Relieving Pose is a reclined posture that is suitable for everyone, whether they are beginners or advanced practitioners. This pose helps to release digestive gases from the intestines and stomach with great ease. It is also called the one-legged knee-to-chest pose.

Q.38. Write steps and benefits for Hypertension for PavanMuktasana.

Ans. **Steps**

- Lie flat on your back on a smooth surface, ensuring that your feet are together, and your arms are placed beside your body.
- Take a deep breath. As you exhale, bring your knees towards your chest, and press your thighs on your abdomen. Clasp your hands around your legs as if you are hugging your knees.
- Hold the asana while you breathe normally. Every time you exhale, make sure you tighten the grip of the hands on the knee, and increase the pressure on your chest. Every time you inhale, ensure that you loosen the grip.
- Exhale and release the pose after you rock and roll from side to side about three to five times. Relax.

Benefits

- It strengthens the back muscles and tones the muscles of the asana and the legs.
- It improves the circulation of blood in the hip area.
- It eases the tension in the lower back.
- It helps burn fat in the thighs, buttocks and abdominal area.

Q.39. Explain Hypertension for ArdhaChakrasana.

Ans. It is known as the Half Wheel Pose as it is the precursor to practicing 'Chakrasana' the full wheel pose. Though it does not give the impression of half a circle it prepares the body for the practice of Chakrasana.

Q.40. Write steps and benefits of Hypertension for ArdhaChakrasana.

Ans. **Steps**

- Bend the knees and place the feet together near the buttocks.
- Bring the arms over the head and clasp the elbows.
- Exhale and inhaling raise the hips from the ground making a straight line from the shoulders to the knees.
- Either stay in that pose or continue by shifting the weight to the right side and straightening the left leg. The knees will remain together.

Benefits

- Reduce back Pain and is useful for lumbar spondylitis.
- It also strengthens the muscles around the spinal region.
- Tones the female reproductive organs and can be useful for menstrual disorders and after childbirth.
- Increase the awareness of the spinal movement especially the lower back.

Q.41. Explain Hypertension for Bhujangasana.

Ans. Cobra Pose : In this pose, one needs to lie on one's stomach with hands under the shoulders and elbows tucked into the body. After that, a gentle arc should be created in the spine by lifting one's head and upper body off the mat. One's pelvis should remain on the mat to protect the lower back. One can stay in this pose for about three to five breaths.

Q.42. Write steps and benefits of Hypertension for Bhujangasana.

Ans. Steps

- Lie on your stomach with your toes flat on the floor and your forehead resting on the ground.
- Keep your legs close together, with your feet and heels lightly touching each other.
- Place your hands (palms downwards) under your shoulders, keeping your elbows parallel and close to your torso.
- Taking a deep breath in, slowly lift your head, chest and abdomen while keeping your navel touching the floor.

Benefits

- This Asana helps to stretch muscles in the shoulders, chest and abdominal also. It decreased stiffness of the lower back, and it's give strengthens the arms and shoulders.
- It increases flexibility, improves menstrual irregularities in women. Elevate mood, and this can also helps in stress, depression, anxiety keep away from our mind. It firms and tones the butt area.
- Improves the blood circulation and oxygen in body, heart and throughout the spinal and pelvic region especially, and its stimulates organs in the abdomen, like kidneys. It also opens the chest and helps to clear the passages of the heart and lungs.
- Improves digestion. Gives strengthens to the spinal cord. Help to soothes sciatica. It also helps to cure the symptoms of asthma.

Q.43. Explain Hypertension for Shavasana.

Ans. The Sanskrit word 'Shava' means 'Corpse'. This pose looks like sleeping pose. It is very simple and everyone can do this asana. But friends this pose needs lots of concentration. You have to concentrate on each part of the body. Beneficial for improving concentration, curing insomnia, calming mind, releasing stress, fatigue and depression.

Q.44. Write steps and benefits of Hypertension for Shavasana.

Ans. Steps

- Lie flat on your back, like our sleeping pose. Legs should be separated.

- Keep your arms at your side and your palms facing up. Just relax.
- Close your eyes and breathe deeply and slowly through the nostrils.
- Start concentrating from your head to your feet. This means you are consciously relaxing your each part of the body. Don't move ahead without relaxing particular part of the body.

Benefits

- It relaxes your whole body.
- Releases stress, fatigue, depression and tension.
- Improves concentration.
- Cures insomnia.

Q.45. Explain Back Pain

Ans. The back pain which is felt in the back usually originates from the bones, joints, muscles and nerves etc. It may be in the cervical, thoracic or lumbar region. It may be spontaneous or can be chronic. It can be constant, stay in one place or radiate to other parts such as arms, hips or legs. It may give a feeling or burning sensation. Sometimes numbness may be felt in the legs or arms. Infact, back pain is not only the problem of our country but it is also observed all over the world. As a matter of fact, nine of ten persons experience the back pain at least once in their life. That is why it is said that back pain is a very common complaint or problem throughout the world. Due to this problem the affected persons are not capable to their work smoothly and efficiently.

Q.46. Write prevention and Management of Back Pain.

Ans. Prevention and Management of Back Pain

A. Prevention: There are some important point which may help in preventing the back pain. These points are described below:

1. Regular Exercise: Regular exercises are helpful in enhancing strength and keeping the body weight in control. Each and every individual should perform aerobic exercises which are usually considered best exercises because these exercises do not strain or jerk the back. In these exercises, the exercises related to back muscles and abdominal muscles should be included. Along these exercises, the flexibility exercises such as bending forward, bending backward, bending sideways and sit ups should also be performed regularly.

2. **Maintain Appropriate Body Weight:** Overweight and obese persons are at the greater risk of developing back pain. That is why an individual should try to keep or maintain proper body weight. Infact, there are less chances of back pain who have normal or proper body weight. For maintaining proper body weight aerobic exercises and diet control can play very effective roles. Aerobic exercises should be performed for at least 60 minutes each day. Aerobic activity can be in various forms such as slow running, jogging and cycling etc. For maintaining weight or keeping the body weight under control low calorie diet should be taken.
 3. **Proper Sitting Postures:** For the prevention of back pain one should lay stress on proper sitting posture. For proper sitting posture one should make sure that feet should be flat on the floor. The chair or seat should have good back support. When sitting in a chair, hips should be as far back in the chair as possible. Head, spinal column, shoulders and hips should be in straight line and erect. Legs should not be in hanged position. Thighs should be in horizontal position. Don't cross your legs in sitting position. In such sitting posture there will not be undue stress on the back, which is beneficial in preventing back pain.
- B. **Management:** The aim of management of back pain is to achieve maximum reduction in the intensity of pain as early as possible so that the affected individual may restore his strength to perform daily routine activities. Generally, the back pain can be managed with the help of various types of therapies and corrective exercises. Surgery is required in rare cases. Back pain can be managed with the help of following measures.
1. **Heat Therapy:** Heat therapy can reduce the symptoms of pain. Sometimes hot bath (moist heat) provides best results.
 2. **Cold Compression Therapy:** In some cases, back pain is relieved by cold compression therapy (ice or cold pack application).
 3. **Massage:** Massage can be very effective in relieving pain but it must be performed by an experienced individual.
 4. **Medications:** Medications may be beneficial in reducing pain. Muscle relaxants may be effective but only for short term.

Chapter -4

Physical Education and Sports for CWSN

Qus:-1 What do you mean by disability ?

Ans:- – Disability is an impairment of physical , biological , mental and cognitive ability that is a multidimensional for the person involved .

There may be effects on the cardio- vascular system , respiratory system which limit their ability to perform normal functions .

Qus:-2 what do you mean by disorder?

ANS- Disorder is defined as a state of a mental or physical function limitation which interrupts the normal function of the body .

Q 3 What is a cognitive disability?

Ans:- Cognitive disability can be used to describe as neurological disorder which lead to learning disabilities. It is also known as developmental disabilities such as motor learning, limitation speech learning, poor memory, dyslexia etc. it may lead to individual performance defects such as concentrations, math solving problems reading, writing and retentions.

Qus:-4 what do you mean by intellectual disability?

Ans:- Intellectual disability is a disability or a mental limitation in intellectual functioning such as IQ level, reasoning and learning simple words and solving maths problems. It is also know as mental retardation or learning disabilities.

Qus:-5 what is physical disability ?

Ans:- physical disability is referred to functional limitation such as cardio- respiratory disorder, paralysis, sleep disorder etc. it is also includes physical limitation such as lack of strength flexibility, endurance, mobility etc

Qus:-6 Enlist the causes by disability?

Ans:- genetic or biological conditions. Before birth issues at the time of birth problems, after birth poverty and environmental factors diseases, malnutrition

Ques:-7 enlist the causes of the disorder

Ans :- (i) genetic or biological factors

(ii) Environment factor

(iii) low birth weight

(iv) Poverty and environment factors

Qus:- 8 what is ability etiquettes ?

Ans:- disability etiquettes is a set of guidelines dealing specially with how to approach people with disabilities. This guideline refers some issues related to disability. There are some rules to deal with disabilities open individual.

Qus:-9 Define attention- deficit hyperactivity disorder

Ans:- Attention deficit hyperactivity disorder is a psychological or mental disorder. In this disorder the child has a problem of poor concentration, paying attention and adapting behavior

Qus:- 10 what do you understand by sensory processing disorder?

Ans: sensory processing disorder is a condition of sensory dysfunction in which the brain has difficulty in receiving and responding to information. The central nervous system is responsible for sensory system is responsibility for sensory process disorders.

In this disorder brains multi-sensory integration is not adequate.

A child with sensory processing disorder is oversensitive sensory processing disorder is a disorder in which the brains has trouble receiving and responding to information.

Ques:-11 what do you mean by obsessive compulsive disorder?

Ans obsessive compulsive disorder is a mental health disorder that effects people of all age it is an anxiety disorder in which problems is associated with depression and eating disorders.

The individual behavior change as obsession, compulsions and distracted thoughts.

Ques:-12 what do you mean by autism spectrum disorder?

Ans autism spectrum disorder is a disorder related the language, communication, and behavioral dysfunctions.

Q.13. Write any for advantages of physical activities for Children with Special Needs.

Ans. It is an undisputed fact that young and old must strive for a healthy lifestyle. This means kids, teens and adults must keep mentally and physically fit. Children with special needs most definitely from having a balancing in all aspects of their life : social, physical and mental. Some youth have limited mobility or tire more easily than other kids and teens. For some kids with sensory issues communication challenges or difficulties with social skills, team sports are simply not fun. Kids with side effects from medication, those who are always overtired from lack of quality sleep and youth who are overweight and not physically fit at all will not enjoy many organised activity programs.

Q.14. Write advantages of Physical Activities and Adaptive Sports.

Ans. **Advantages**

- Many areas especially with sport teams because the special needs community and the support and funding are not there in numbers great enough to make it work. But rural areas have wide open space offering ample opportunities for families to enjoy walks, bike rides, horse back riding and lots of unstructured physical activities.
- In order to be healthy and to form positive life. Long habits, children benefit from athletic activities. Physical activity engages large muscle groups, provides social interaction, teaches teamwork and healthy competition.
- Children who have special needs, according to Erin Kizzar, occupational therapy clinic manager at Therapy works in Tusa, have decreased tone, strength and coordination, which actually require a greater amount of physical activity.
- The Tulsa area offers plenty of opportunities for these children to find an activity that is fun and challenging.

Q.15. Write making Adaptations to include Children With Special Needs.

Ans. Each child is different, and each delay or disability will require different modifications. Child care providers should gather as much information as you can about the child and the disability, and learn about typical modifications that can be made. The child's parents and professionals who work with the child can be a tremendous resources. Many of the adaptations that you make to your child care program will be simple. Often, the modifications was also benefit the other children in your child care program.

Plan together: Parents consultants and caregivers need to set goals together. Ask to be a part of the team that develops and tracks the child's Individualised Education Plan (IEP) so you can discuss activities, exercises and supports needed to reach goals. Goals should be simple and should match the abilities of the child. Always discuss your ideas and plans with the family.

Modify toys and equipment : Simple changes often can be made to regular toys. For example, you can help a child who has difficulty with stacking rings by simply removing every other ring. For a child who has difficulty holding a bottle, cover the bottle with a cloth sock so little hands can grasp it better.

Make small changes in your child care environment : Slight adjustments in your child care environment may make the time that a child with special needs spends with you easier and more enjoyable for everyone. A quiet, private space for play may help an overactive child. A child with poor vision may benefit from an extra lamp in the play area. Removing a rug that slips will help a child who has trouble walking.

Model appropriate behaviours : Children with special needs are sometimes timid about laying with others. You can show them how by being a play partner yourself. You might play a game with the child or pretend to go shopping together. As the child becomes more comfortable, you can invite other children to join your play activity.

Teach specific words and skills that will show how to find a playmate and how to be a playmate : Learning how to look directly at another child when speaking or to say "May I play?" are big steps for some children.

Teach typically developing children how to talk and play with children who have a disability: Talk to the children about what to do. For instance, gently touching the shoulder of a child with a hearing impairment or looking directly at him while talking are effective ways of getting that child's attention.

Look for strengths as well as needs : Avoid becoming too focused on a child's disability. Treat each child as a whole person. Provide activities that will support a child's strong points. Every child needs to feel successful and capable.

Consult with parents, health care professionals and early childhood specialists : Parents and specialists can provide specific information and suggestion for

working with a child who has a disability. Do not be afraid to ask questions. Parents sometimes take it for granted that caregivers will know what to do.

CHAPTER – 5 CHILDREN AND WOMAN IN SPORTS

Q.1 – What do you mean by Motor Development ?

Ans: Motor development refers to the development of a child's bone, muscles and ability to move around and manipulate his/her environment. In simple words, motor development means the development of movement and various motor abilities from birth till death. In other words, motor development is the progressive change in movement through the life cycle.

Q.2 – Mention the types of motor development ?

Ans: Motor development in children can be divided into two parts:

Gross Motor Development: Gross motor development is the development of large muscles in the child's body such as sitting, walking, running, climbing etc.

Fine Motor Development: Fine motor development is the development of the small muscles of the body especially in the small movement of the fingers and hands. For example, discus, polo catching a cricket ball, smashing a volleyball etc.

Q.3 – Discuss the factors affecting motor development in detail.

Ans: There are various factors which are liable to affect motor development of children. These factors are explained below:

1. **Nutrition:** Nutrition is liable to affect the motor development. Indeed, nutritious food promotes good motor development. Sensory motor development is dependent upon nutrition. If children get nutritious food they get stronger which ultimately leads to good

motor development. On the other hand, if children do not get proper nutrition they are found to be less energetic and owing to that their motor development takes place slowly.

2. **Physical activities:** Performing regular physical activities, enhances the motor development at a faster rate. However, the physical activities must be according to the capabilities of children. Children, who do not perform or practice physical activities regularly minor activities, their motor development also becomes so slow that they take a long time for motor development.
3. **Opportunities:** It is a well known fact that the children who get ample opportunities to perform more and more physical activities or motor activities are likely to have better motor development. In fact, opportunities to take part in motor activities give a better chance for developing sensory motor activities.
4. **Postural deformities:** Postural deformities in children definitely affect their motor development. Any postural deformity viz., spinal curvature deformities, flat foot, knock-knees and bow legged etc. creates hindrances or obstacles in the path of motor development of children. In the absence of postural deformities the motor development in children takes place at a faster rate.
5. **Obesity:** Obesity and overweight have negative effect on the motor development of children. It means that children who are overweight or abuse do not feel enough enthusiasm for any motor activity and may even find it uncomfortable to perform it. Motor development in such children takes place very slowly. They take more time to perform motor movement.

Q.4 – Elucidate any five physical and physiological benefits of exercise on children.

Ans: 1. **Exercise controls weight:** Regular exercise helps in controlling weight. In fact weight gain occurs when the child takes more calories than the requirement of his body. The unused or excess calories are accumulated as fats in his body. In this way, he starts gaining weight which ultimately leads him towards overweight and obesity.

2. **Exercise strengthens bones:** Exercise builds strong bones. As a matter of fact, exercise increases bone density which helps in preventing osteoporosis. If regular exercise is not performed, the bones usually lose their density, become weak, fragile and porous. Hence, exercise is beneficial because it helps in strengthening the bones.

3. **Exercise strengthens the lungs:** Exercise is beneficial for children because it enhances the lungs' capacity and their efficiency in inhalation and exhalation. It increases the size of lungs. Tidal air capacity and vital air capacity are increased.

4. **Exercise helps in motor development:** Exercise helps in motor development of infants and children at a faster rate which ultimately helps in making fine movements in later life. By performing exercise in early age the movements of muscles become efficient and smooth. It can also be said that their movements become more attractive.

5. Exercise helps in digestive process: During childhood, the growth and development takes place at a faster rate, so for proper growth and development digestive process should be efficient. Research studies indicate that exercise is beneficial for improving the digestive process.

Q. 5 – What do you mean by weight training ?

Ans: Weight 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. In fact, weight training refers to the exercise phase of the activity where weight in the form of bar-bells and dumb-bells are used to condition and alter the sizes of various segments of the body.

Q. 6 – Mention any two advantages of weight training ?

Ans: 1. **Increases body density:** Weight training helps in increasing bone density. Research studies conducted in this field indicate that the risk of osteoporosis is lower for the individuals who perform weight training exercise at least three times a week.

2. **Reduces stress and tension:** Weight training is also advantageous for reducing stress and tension. In fact, it acts like an outlet for stress and tension.

Q. 7 – Elucidate two disadvantages of weight training.

Ans: 1. **Risk of injuries:** While performing weight training, there is always a risk of getting injuries specially when performing exercise without any companion. Whenever you are not able to perform the required repetition of exercise, at that critical moment, if you are alone you may be injured. So you should always have a companion or supportor with you in case the worst happens. In addition you should perform weight training under expert physical trainer.

2. **Less flexibility:** Weight training reduces the level of flexibility if flexibility exercises are not done along with weight training. However this is a mild or little disadvantage in comparison to many advantages. If flexibility exercises are performed persistently it will be negligible

Q.8 – What do you mean by correct posture ?

Ans: Correct posture means the balancing of body in accurate and proper manner while sitting, standing, reading, writing, walking, running or during any other action. It means that correct posture is the position of the body held with least fatigue. It can also be said that if an individual's all the organs are in proper and right alignment, his posture is correct posture.

Q. 9 – Explain the correct posture of standing ?

Ans: In standing position, both the heels of the feet should meet each other. Toes of the feet should be “3” to “4” apart. The whole body should be erect. Straight knees, chin inside, chest forward, belly backward and pressed inside with equal body weight on both feet. In this position, the complete body should be balanced. From the side line of the centre of gravity must pass through the ear, shoulders, hip, knee and ankle. In such a position, the muscles and ligament remain free of stress.

Q. 10 – Explain the correct posture of sitting.

Ans: When we sit in a chair, our hips should be as far back in the chair as possible. Head, spinal column, shoulders and hips should be in straight line and erect. Legs should touch the ground and not in hanging position. Things should be in horizontal position. While we read, the book should be on table but the book should not be too far away or near the eyes. The approximate distance between book and eyes should be at least 30 cm. If we do not follow this rule, eyesight problem may occur.

Q. 11 – Discuss any two advantages of correct postures.

Ans:Physical Appearance: It is a natural phenomenon that every individual wants to have a good physical appearance. It also becomes more important in the presence of opposite sex. For creating a good impression on other people, good appearance is a prerequisite. In fact physical appearance depends upon the posture of the individual. This leaves the first impression upon other. For good physical appearance, people do not hesitate to spend a large amount of money. It does not mean that they waste their precious money. It is not a wastage. It adds something, put the outlook of a person mostly depends upon this posture.

Q. 12 – What are the bad causes of bad posture? Explain any eight.

Ans: Causes of Bad Posture:

1. **Lack Of exercise:** Exercise tones up the spinal nerves and abdominal organs, improves digestion, promotes flexibility and co-ordination, reduces mental strain, provides energy, improves physical ability and efficiency. Lack of exercise is also a factor of poor posture.
2. **Weakness:** It is not possible to assume and maintain erect posture without expenditure of some energy. The muscular weakness and lack of viability is thus responsible for such faulty posture.
3. **Improper Clothing:** The type of dress one wears also has impact or effect on posture i.e., high heel shoes, tight shoes tight fitted dress.
4. **Improper Diet:** Improper diet may result in various diseases due to deficiencies of vitamins, minerals in adopting faulty and poor posture.
5. **Habit:** Habits of posture, whether good or bad, are acquired in the same way as the habits of walking, speaking or sitting i.e., by practicing a certain type of co-ordination so many times that the act becomes unconscious and habitual and wrong habits are caused by occupation and environments also.
6. **Chronic Fatigue:** Due to continuous work lack of rest and sound sleep without proper relaxation the body and mind become over-worked and cause poor posture.
7. **Overload:** One may develop round shoulders and deformities of spine like kyphosis and scoliosis by continuously lifting heavy weight on shoulders and the upper back.
8. **Mental Attitude:** A posture is the manner in which we carry or hold our body and it is bound to reflect our mental attitude, feeling of happiness, confidence and satisfaction help to maintain a balanced and erect posture, whereas depression and feeling of sadness pose hurdles in proper posture maintaining.

Q. 13 – Explain the causes and remedial measures to knock knees ?

Ans:Causes of Knock-knee:

This deformity mainly causes due to weakness of muscles and ligaments and also softness of bones of the knee region. As we know the knee has to bear the maximum pressure in standing position and body movements, the muscles and ligaments of their region need to be strong and in proper tone. Any kind of weakness can lead to knock-knees. This defect usually occurs in early age. In infancy, general weakness or sometimes overweight of the child may lead to this kind of deformity.

Remedial Measures to Knock Knees:

Massage and active and passive movement to be done to strengthen the weak muscle. Performing padmasana and gomukhasana regularly for some time is a good option. Horse riding is the best exercise for remediation of this deformity. To remove this deformity, extra care should be taken while walking, standing and other weight bearing positions. Walking on an outward inclined surface and applying pressure on the outer edge of the feet will be helpful in this deformity.

Q. 14 – Explain the causes and remedial measures to Kyphosis ?

Ans:Causes of Kyphosis:

Primary causes such as defective vision or hearing often result in holding the head further forward. Defective vision or incorrect spectacles lead to the development of leaning forward specially while writing or reading books. Hard hearing people often develop the habit of craning forward to assist their hearing. Tight and rough collars of a dress may result in holding the head wrongly. All such habits produce a strain on the extensor or pulling back muscles of the neck and spine and make them weak.

Remedial Measures to Knock Knees:

1. Lying in a lateral position and circling the free arm.
2. Arms stretching backward and bringing the chest forward.
3. Head backward bending.
4. Head extension in prone lying position.
5. Holding the ankles with hands in prone lying position and making a back arch (Dhanurasana).
6. In prone lying position with hands behind the neck. Partner pulling the arms upward

Q. 15 – Explain the causes and remedial measures to Round Shoulders ?

Ans:Causes of Round Shoulders:

Round shoulder deformity causes due to poor posture during work, faulty furniture, wrong habit of sitting and standing or carrying heavy loads on one shoulders or upper back. It is generally associated with forward displacement of the shoulders.

Remedial Measures to Round Shoulders:

Try to sit, stand in erect position. Avoid using faulty furniture due to which round shoulder deformity occurs. It is advised that do not to always carry heavy loads on one shoulder either due to habit or by occupation. Always change the side time to time to avoid any kind of deformity. The corrective exercises may improve the curvature where there is a loss of only muscular tone.

It is essential to seek medical advice before any attempt is made to correct the deformity by exercise. The aim of exercise should be to restore the muscular balance between antagonistic groups of muscles. Stand in erect position. Do not allow to drop the shoulder. Do shoulder exercise freely with forward and backward rotation. Do more exercise with the shoulder which is bent down one side due to heavy work or wrong sitting position.

Q.16 – Explain the causes and remedial measures to Lordosis ?

Ans:Causes of Lordosis:

This defect is probably due to habit formation during the growing years. This mainly causes due to imbalanced diet, improper environment, improper development of muscles, obesity and diseases affecting vertebrae and spinal muscles. We should take the following precaution to avoid this deformity:

1. Excessive intake of food should be avoided.
2. Balanced diet should be taken.
3. Obesity should be kept away specially in early age.
4. The body should be kept straight while carrying weight.

Remedial Measures to Lordosis:

1. Sitting on a bench and bringing the head close to the knees.
2. From long sitting position with the knees slightly flexed, holding behind the knees and bending forward so as to bring the head close to the knee.
3. From the knee sitting position place the hands in front at shoulder width apart. Raise alternately one knee and bring close to the chest with having maximum convexity at the back.
4. Patient in supine lying position with hands at the sides of the body, palm facing downward. Raise both the legs slowly and bring the toes over and above the head level and place them on the floor.
5. Individual in supine position with the knees slightly bent. The hands are kept behind the neck. Partner holds the legs. Slowly raise the head and trunk and bring the elbow close to the knees.
6. Halasana should be performed regularly.
7. You should lie down in supine position, i.e., on your back, then should raise your legs at 45° angle. Keep in this position for some time.
8. Toe-touching should be performed for at least 10 times.
9. Sit down and extend your legs forward. Try to touch your forehead to your knees. Repeat this exercise for 8-10 times.

Q. 17 – Explain the causes and remedial measures to Scoliosis ?**Ans:Causes of Scoliosis:**

This type of deformity occurs due to injury or disease. It may be the result of weakening of the spinal muscles of one side and the strengthening of the muscles of the other side. It also occurs due to the adaptation of wrong sitting positions during study or writing when working on table. It is mostly associated with some loss of strength in all the body muscles.

Remedial Measures to Scoliosis:

1. Hanging on the bars with sideward bending to the opposite side of the spinal curve or concavity is recommended.
2. Exercise on hanging on bars helps the spine to straighten.
3. Deep breathing and general coordination exercise should be done.
4. Swimming is the best exercise. Breast stroke style is most suitable and useful exercise for this defect.
5. Exercise of the spine-like flexion, extension, rotation and sideward flexion of the spine should be done.

Q. 18 – Explain the causes and remedial measures to Bow Legs ?**Ans:Causes of Bow Legs:**

Due to deficiency of calcium and phosphorus of the bones this deformity occurs. It results in the softening of the bones. Long bones of legs which have to bear a lot of strain, get bent. The bow legs is also found in footballers. The outward toe and kicking of football also causes the deformity. This bending of curvature of the long bones of the legs is called rickets. This generally occurs in children between the age of six to eighteen months.

Remedial Measures to Bow legs:

1. Use the correct method of walking in order to avoid any kind of deformity.
2. Do not allow children to stand for long hours which give strain on the legs.
3. Teach the child to stand in correct position to avoid any kind of deformity.
4. Use lateral heel wedge in shoes.

Q 19 – What are the causes of Flat foot deformity ? Explain any three.

Ans: Causes of Flat Foot:

Flat foot deformity occurs due to the loss of tone in the muscle supporting the foot which result in the flattening of the arch. The defect is mostly caused due to Bad or faulty Posture; Standing for a long time; lack of exercise; Unsuitable or without arch local footwear; overweight of the body.

Remedial Measures to Flat Foot:

1. Walking with feet parallel to each other, also walking on the outer border of the feet to strengthen the interferences.
2. Bending of the toes downwards round a point of resistance.
3. Picking up marbles with toes
4. Walking on heels and toes
5. Walking with feet parallel to each other.
6. Backward and forward hopping with knees bent.
7. Walking on slopes.

Q. 20 – How can physical activities can be helpful in correcting common posture deformity?

Ans: There are various internal problems occur in the body which deteriorate the health and cause physical problems. To overcome through these deformities and not allow deformities in our body we have to concentrate on various physical activities. Physical activities may be easy or rigorous but we should involve ourselves in some or the other physical activity because physical activities are good source of correcting various deformities.

The General influence of physical activities is as follows:

1. Effect on chest.
2. Effect on organs of movement
3. Effect on muscular pressure
4. Effect on digestion
5. Effect on respiration
6. Effect on heart and blood.

The worst condition of this position is the compression, resulting in contraction, or atleast imperfect development of the upper part of the chest. This kind of deformity may be classed as a more exaggerated, of the various species of spinal curvature, often due to weakness of the dorsal muscle or to inordinate or unregulated growth. The true cause of these displacement is often, if not always,

to be found in neglect of proper exercise for the muscles which hold the parts, in their due relationship with each other. Following are some of the corrective measures:

- (1) To minimize or correct kyphosis, some corrective exercise should be done with the help of physical activity. These activities and exercises, should be done under expert medical advice, to improve muscular tone of the stretched muscles. Care should be taken to see that the muscle group that is lacking in tone, should never be too stretched.
- (2) For correcting functional flat foot one should exercise by rising on the toes, by climbing stairs on the toes, by rope skipping and by cycling. The foot should be through extreme range of its motion by voluntary contraction to stretch the shortened soft structures. The emphasis should be upon the physical activities and exercises involving toe flexion, foot and ankle flexion and supination.
- (3) Breathing and general coordination physical activities are useful in removing scoliosis deformity.
- (4) Swimming with breast stroke style is most useful for correcting scoliosis deformity.
- (5) The head carriage and round back may be improved by physical activity and exercise to strength and shorten the extension or back muscles of the neck and upper part of the spine at the same time lengthen the muscles that bend the neck forward. The round shoulder can be corrected by strengthening the shoulder muscles and lengthening the chest muscles.
- (6) Physical activity like picking up objects with toes and bending of the toes downwards round a point of resistance can minimize defect of flat foot.
- (7) Beam hanging exercises help the spine a lot. Therefore beam hanging with sideward bending to the opposite side of the curve or concavity is recommended.
- (8) During physical activities general spinal exercise of flexion, extension, rotation and sideward flexion of the spine should be done.

CHAPTER – 6 TEST & MEASUREMENT IN SPORTS

Q.1 – What do you mean by test?

Ans – Tests are used to collect information or data about a specific skill, strength, endurance, knowledge, behaviors or attitude etc. In fact, test refers to any specific instrument, procedure or technique used by administrator to elicit from the test taker.

Q.2 – What do you mean by measurement?

Ans – Measurements are related to physical measurements such as size, height, weight, vital capacity and achievements etc. Indeed, measurement refers to the process of administering a test to obtain a quantitative data.

Q.3 – What do you mean by Muscular strength?

Ans - Muscular strength is one of the important components of physical fitness. It is the amount of force the muscle or a group of muscle can exert against resistance for short duration as in anaerobic activities. Muscular strength is essential for performing daily routine work easily and smoothly.

Q.4 – What is Kraus-Weber test?

Ans – This tests consists of six items. It is commonly known as the Kraus-weber tests. These tests are supposed to measure the minimum muscular fitness of an individual. In fact, they measure the level of strength and flexibility of certain key muscle groups below which the functioning of the whole body as a healthy individual seems to be endangered.

Q.5 – What do mean by motor fitness?

Ans – Motor fitness refers to the capability of an athlete to perform effectively at his/her particular sport. It can be said that motor fitness is a person's ability to perform physical activities.

Q.6 – What do you mean by cardiovascular fitness?

Ans – Cardiovascular fitness is the ability of the heart and lungs to supply oxygen-rich blood to working muscle tissues and the ability of the muscles to use oxygen to produce energy for movements. This type of fitness is required to sustain physical activities or it can be said that cardiovascular fitness is essential for us to perform aerobic activities.

Q.7 – What do you mean by Harvard Step Test?

Ans – Harvard Step Test is a cardiovascular fitness test. It is also called aerobic fitness test. It was developed by Brouha and others in 1943. It is used to measure the cardiovascular fitness or aerobic fitness by checking the recovery rate.

Q.8 – What is Rockport one mile test?

Ans – Rockport one mile test is also known as Rockport fitness walking test. This test is suitable for sedentary individual. The objective of this test is to check or observe the development of the individual's VO_2 max i.e., maximum volume of oxygen.

Q.9 – What do you mean by flexibility?

Ans – Flexibility is the range of movements of joints. In other words, it means the range of motion available in a joints. In other words, it means the range of motion available in a joint. It is affected by muscle length, joint structure, tendons, ligaments and other factors. An individual, who has good flexibility can move his body joints through a full range of motion in mark and play.

Q.10 – What do you mean by Senior Citizen Fitness Test?

Ans – This test is also known as fullerton functional test of senior citizens. It helps the early identification of at risk participants. Along this, it is significant to plan safe and effective physical exercise programmers for senior citizens because individual's health and fitness level can be known better with the help of this test.

Q.11 – Explain the Chair Stand Test for lower body strength in detail.

Ans – **Purpose:** The main purpose of this test is to measure the lower body strength, particularly legs strength which is usually required for various tasks such as climbing stairs, getting in and out of vehicle, bath tub or chair.

Equipments required: A chair with a straight back and a seat of at least 44 cm and a stopwatch.

Instructions for participants:

1. The participants should sit in the middle of the chair.
2. He should keep his hands on the opposite shoulder crossed at the wrists.
3. The feet should be flat on the floor.
4. His back should be erect.
5. Repeat sit up and down for 30 seconds.

Procedure: Keep the chair against the wall. The participant sits in the middle of the seat. His feet should be shoulder width apart and flat on the floor. The arms should be crossed at the wrists and held close to the chest. From the sitting position, the participant stands up completely up then completely back down at the start of the signal. This is repeated for 30 seconds. Count the total number of complete chair stands. In case the participants has complete a full stand from the sitting position when the time is finished the final stand is counted in the total.

Q.12 – Explain the Arm Curl Test for measuring upper body strength.

Ans - **Purpose:** The main purpose of this test is to assess or measure the upper body strength and endurance which is required for performing household and other activities enduring lifting and carrying things.

Equipments required: 5 pound weight for women and 8 pound for men, a chair without arms and a stopwatch.

Procedure: To do the maximum number of arms curls that can be completed in 30 seconds is its aim. Arm curl is performed with the dominant are side. The participant sits on the chair, hold the weight in the hand using a suitcase grip. It means the palms should be facing towards the body. The arm should be in a vertically downward position. The upper arm should not move but lower arm should move freely. Curl the arm up through a complete range of motion gradually turning the palm up. When the arm is lowered through the complete range of motion, gradually return

to the starting position. The arm should be completely bent and then completely straightened at the elbow. This complete action should be repeated by the participant as many as times as possible with 30 seconds.

Q.13 – Elucidate the chair sit and reach test for lower body flexibility.

Ans - **Purpose:** To assess the lower body flexibility, which is important for good posture, for normal gait patterns and for various mobility tasks such as getting in and out of bath tub or car?

Equipments required: Ruler, a chair with straight back approximately 44 cm high.

Procedure: The participant sits on the edge of the chair (kept against a wall for safety purpose). One foot remains flat on the floor while the other leg should be extended, remain forward with the knee straight. Heel should be on the floor and ankle should be bent at 90°. Place one hand on the top of the other with tips of the middle fingers even. Instruct the participants to inhale and then as he exhales, reach forward towards the toes by bending at the hip. His back should be straight and head up. Avoid any jerk or bounce and never stretch too much. Keep the knee straight and hold the reach for 2sec. the distance is measured between the tip of the finger tips and the toes. If the finger tips touch the toes then the score is zero. If they do not touch, measure the distance between the fingers and the toes (-ve score). If they overlap, measure by how much (+ve score).

Q.14 – Discuss the Back Scratch Test for upper body flexibility.

Ans - **Purpose:** To assess the upper body (shoulder) flexibility, which is important in performing various jobs such as combing one's hair, putting on overhead garments and reaching for a seat belt etc.

Equipments required: A ruler.

Procedure: This test is performed in standing position. Keep one hand behind the head and back over the shoulder and reach as far as possible down middle of your back. Your palm should touch your body and the fingers should be downward. Then carry your other arm behind your back palm facing outward and fingers upward and reach up as far as possible trying to touch or overlap the middle fingers of both hands. Fingers should be aligned. Measure the distance between the tips of the fingers. If the fingers tips touch then the score is zero. If they do not touch measure the distance between the fingertips (-ve score). If they overlap measure by how much (+ve score). Practice two times and then test two times.

Q.15 – Explain the Eight Foot up and go Test for measuring agility.

Ans - **Purpose:** To assess speed, agility and balance while moving. These are important in performing various jobs which require quick maneuvering such as getting off a bus in time and to answer the phone etc.

Equipments required: A chair with straight back (about 44 cm high) a stop watch, cone marker, measuring tape and an area without any hindrance.

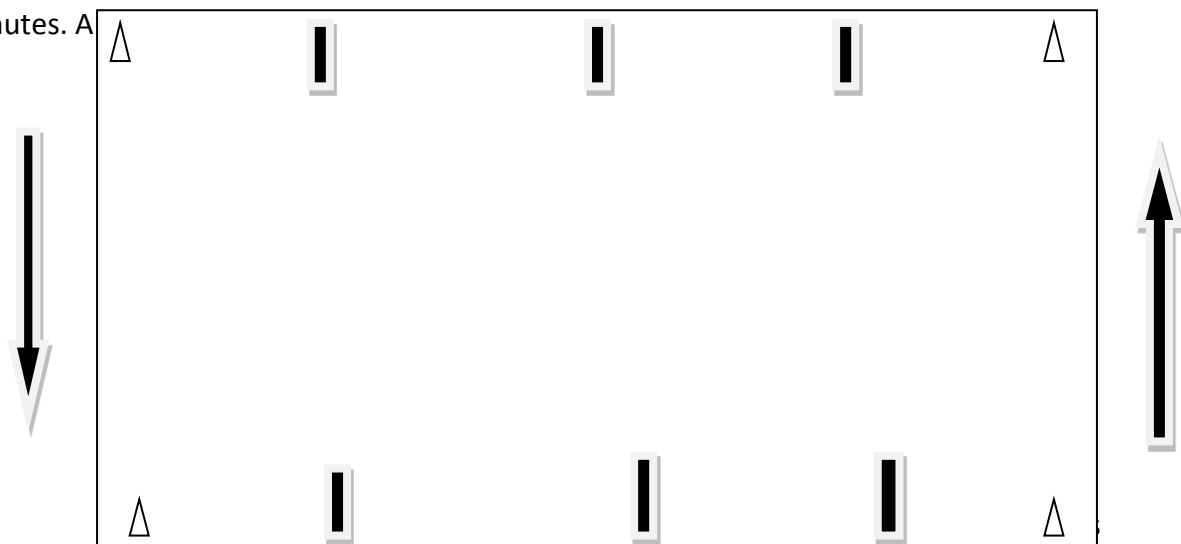
Procedure: Keep a chair next to the wall and the marker, 8 feet in front of the chair. The participant starts completely seated, hands resting on the knees and feet flat on the ground. On the command 'Go' stopwatch is started and the participant stands and walks (on running at all) as quickly as possible to and around cone and returns to the chair to sit down. Time is noted as he sits down on the chair. Two trails are given to the participant.

Q.16 – Describe the six minute walk test for aerobic endurance.

Ans - **Purpose:** To assess aerobic fitness or aerobic endurance which is important for walking distances, stair climbing, shopping and sightseeing etc.

Equipments required: A measuring tape, a stopwatch.

Procedure: The walking distance or course is marked i.e., 45.72 m or 50yards in a rectangular area (45 X 5 yards or 45.72 X 4.57m) with cones placed at regular intervals to indicate the distance covered. Efforts are made to walk maximum distance as quickly as possible in six minutes. A



Scoring: The total distance covered in six minutes is recorded to the nearest meter.

CHAPTER – 7 PHYSIOLOGY AND INJURIES IN SPORTS

Q.1 – What do you mean by flexibility?

Ans – Up to some extent, flexibility also determines the speed. In fact, good flexibility allows maximum range of movement without much internal resistance. Flexibility also enables complete utilization of explosive strength.

Q.2 – What is physical fitness?

Ans – Dr. K.L. Anderson has defined physical fitness as “The ability for respiration and circulation to recover from a standard work load.”

Q.3 – What is cardiac output?

Ans – Cardiac output is the amount of blood pumped by the heart in one minute. It is measured in litre/minute. Cardiac output is a product of stroke volume and heart rate. If either heart rate or stroke volume increases or both, the cardiac output increases also

Q.4 – What do you mean by ageing?

Ans - Ageing is an inevitable and extremely complex, multi-factorial process. It is characterized by the progressive degeneration of organ systems and tissues. It is largely determined by genetics and influenced by a wide range of environmental factors such as diet, exercise, exposure to microorganism, pollutants etc.

Q.5 – Explain any 3 physiological factors determining strength.

Ans – 1. **Size of muscles:** The strength of the muscle largely depends upon the size of the muscle. It is a well known fact that bigger and larger muscles can produce more force. The force produced by the same size of muscle in males and females is approximately the same but males are found to be stronger because they have larger muscles and bigger muscles in comparison to females.

2. **Body weight:** It is also a well known fact that the individuals who are heavier are stronger than the individuals who are lighter. There is a positive correlation between body weight and strength among international weightlifters. The heavier weightlifters lift the heavier weight. So, body weight also determines the strength of an individual.

3. **Intensity of the nerve impulse:** A muscle is composed of a number of motor units. The total force of the muscle depends on the number of contracting motor units. Whenever, a stronger nerve impulse from central nervous system excites more number of motor units, the muscles will contract more strongly or it can said that the muscle will produce more force or strength. So, the intensity of the nerve impulse also determines the amount of strength.

Q.6 – Discuss any three immediate effects of exercise on cardiovascular system.

Ans – 1. **Increase in heart rate:** Generally the resting heart rate of an adult remains at 72 beats per minute. The elite endurance athletes usually have 28 to 40 beats per minute. Even before the beginning of exercise the heart rate increases in anticipation. It is known as anticipatory response. When an individual starts exercise his heart rate increases as per the intensity and duration of the exercise.

2. **Increase in stroke volume:** Stroke volume is the amount of blood ejected per beat from the left ventricle. It is measured in ml/beat. Stroke volume increases proportionally with exercise intensity. In untrained individuals the stroke volume at rest remains at 50 to 70 ml/beat. It increases up to 110 to 130 ml/beat during intense exercise. The stroke volume of experienced athletes at rest remains at 90 to 110 ml/beat. It increases up to 15 to 22 ml/beat during intense exercise.

3. **Increase in cardiac output:** Cardiac output is the amount of blood pumped by the heart in one minute. It is measured in litre/minute. Cardiac output is a product of stroke volume and heart rate. If either heart rate or stroke volume increases or both, the cardiac output increases also.

Q.7. – Discuss any three effects of exercise on circulatory system.

Ans – 1. **Increase in number and efficiency of capillaries:** With the regular exercise, the efficiency and number of capillaries are increased. The unused and new capillaries become efficient and nourish the various cells efficiently.

2. **Increase in number of RBC:** The number of RBC (Red Blood Cells) increases when exercises are taken on regular basis. These RBC's are the carriers of nutrients, including hemoglobin and O₂ to the muscles.

3. **Delay in fatigue:** Regular exercise delays the fatigue in an individual. Fatigue is felt due to the formation of lactic acid and phosphate in the muscles. These waste products are easily and very fastly removed from muscles, if exercises are performed regularly. Even muscles can bear the formation of lactic acid, so it delay the fatigue.

Q.8 – Discuss any three effects of exercise on respiratory system.

Ans – 1. **Increase in residual air volume:** Residual air is the amount of air, which is left in the lungs after exhalation. If an individual performs regular exercise, his residual air capacity increases in comparison to an individual who does not perform regular exercise.

2. **Increase in size of lungs and chest:** When a person performs exercise regularly, he requires more amount of O₂. He inhales more amount of air during exercise. Consequently, his lungs and chest are exercised. After some period, the size of his lungs and chest increases.

3. Increase in vital air capacity: It is the amount of air which an individual can inhale and exhale with maximum effort. Its capacity varies from 3500 cc to 4500 cc in a normal adult. It is the sum of tidal volume, inspiratory reserve volume and expiratory reserve volume due to regular exercise its capacity increases up to 5500 cc.

Q.9 – Describe the Physiological factors determining speed as a component of physical fitness.

Ans – 1. **Mobility of the nervous system:** Our muscles contract and relax at maximum possible speed such as in sprinting events. This rapid contraction and relaxation of muscles is made possible by rapid excitation and inhibition of the concerned motor centres.

2. **Muscle composition:** The muscles, which have more percentage of fast twitch fibres contract with more speed in comparison to the muscle composition is genetically determined and cannot be changed by training. Different muscles of the body have different percentages of fast twitch fibres. So, different parts of body have different speed performances.

3. **Explosive strength:** For every quick and explosive movement, explosive strength is indispensable. For example, a quick punch in boxing cannot be delivered if the boxer lacks explosive strength. Explosive strength further depends on muscles composition, muscle size and muscle coordination. It also depends on metabolic process. Except muscle composition, the remaining factors can be improved through training which ultimately improve the speed up to limited extent.

4. **Flexibility:** Up to some extent, flexibility also determines the speed. In fact, good flexibility allows maximum range of movement without much internal resistance. Flexibility also enables complete utilization of explosive strength.

5. **Bio-chemical reserves and metabolic power:** For maximum speed performance the muscles require more amount of energy at a very high rate of consumption. For this purpose the phosphagen adenosine triphosphate (ATP) and creative phosphate (CP) stores in the muscles should be enough. If ATP and CP store is less in contracting muscles, the muscles contractions due to insufficient energy supply becomes slow after a short period.

Q.10 – Elucidate any 5 physiological changes due to ageing process.

Ans – 1. **Changes in metabolism and body composition:** With advancement of age our body needs less energy and the metabolism slows down. Consequently there is an increase in the accumulation of body fat and lean body weight (bones, ligaments, tissues, tendons, muscles and water) decreases. The metabolic rate decreases gradually with the increasing age. It also results in more accumulation of body fat.

2. **Changes in nervous system:** A number of research studies indicate that reaction time and moment time slow down with increasing age. They brain's weight, the size of this network and

its blood flow decrease with the age. However, the brain adapts to these changes growing new patterns of nerve endings. To recall memories becomes slow.

3. Changes in the gastrointestinal system: With increasing age, there is a reduction in the production of hydrochloric acid, digestive enzymes and saliva. These changes may result in delayed emptying of stomach, impaired swallowing. The breakdown and absorption of foods may also be impaired. The liver becomes less efficient in metabolizing drugs and repairing damaged liver cells.

4. Changes in urinary system: As the age, the mass of the kidneys decreases. This leads to reduction in the rate of blood filtration by the kidneys. The capacity of bladder decreases and there is an increase in residual urine. These changes increase the chances of urinary infection.

5. Changes in flexibility: The elasticity of tendons, ligaments and joint capsules is decreased with ageing. The elderly persons lose 8-10 cm of lower back and hip flexibility according to a research study. The range of movement is restricted as the age increases.

Q.11 – Enumerate any five effects of exercise on muscular system.

Ans – When we do regular exercise, some permanent changes take place in our muscular system. These changes occur only when exercises are performed daily. If we perform exercise once, there will be changes in our muscular system but only for a temporary phase. Following changes in our muscular system can be seen if exercise are done on regular basis.

- 1. Change in shape and size of muscle:** Through regular exercise, the shape and size of muscle is changed. In fact, cells of muscles are enlarged which change the shape and size of muscle.
- 2. Formation of more capillaries:** When exercises are done, the colour of muscles is changed, because a number of new capillaries are formed for a better efficiency of blood circulation.
- 3. Muscle Remains in Tone Position:** When exercises are done on regular basis then our muscles remain in toned position. Indeed, muscle remains under some degree of contraction. Muscle becomes firm and maintains a slight, steady pull on the attachments.
- 4. Controls Extra Fat:** Regular exercise controls the extra fat of body. Exercises burn the calories which is taken in the form of fat.
- 5. Change in the Connective Tissue:** The connective tissue, which connects fibres, becomes powerful. These tissues can bear stress of strenuous activity and can be extended up to some degree.
- 6. Efficiency in the Movement of Muscles:** The movement of muscles become efficient and smooth. The movements during different activities become attractive.

7. **Delays fatigue:** Regular exercise delays fatigue. The fatigue is mainly due to formation of carbon dioxide, lactic acid and acid phosphate. The accumulation of CO₂, acid phosphate and lactic acid becomes less in an individual who performs exercise regularly. Hence, fatigue can be delayed if exercises are performed daily.
8. **Increases Food Storage:** The food storage capacity is increased when regular exercises are done. This storage of food can be utilized immediately when it is needed.
9. **Exercise Makes the figure Beautiful:** If we perform regular exercise, we will be able to make our body beautiful. It can be seen in Miss Universe completion. Beautiful figures are appreciated in such contest. The 36"-24"-36" figure does not come up by chance. It is only possible through regular and various types of exercises. It is actually the muscle, which makes the shape of body.
10. **Non-Functioning Fibres become Active:** When we do not do any strenuous work, all the muscle fibres of our body do not perform any work. In fact, these fibres do not need to be active. But when we perform exercise regularly, the non-functioning fibres also begin to be active. Consequently, the strength of the body increases, because the total contractile power of the muscle fibres increases.
11. **Body posture remains correct:** By doing exercise regularly, the strength of muscles increases, which in turn, keeps the body posture in correct position. The postural deformities do not occur. If there is any physical deformity, it is removed by doing regular exercise.
12. **Improves Reaction Time:** Due to regular exercise, the speed of nerve impulses increases which ultimately improves the reaction time. These nerve impulses move very quickly through motor nerves from nervous system to muscle fibre. Owing to this the reaction time improves.

Q.12 – Elaborate the role of regular physical activity in maintaining functional fitness of aged population.

Ans – No one can stop the clock of ageing, but everyman can slow its tick with the help of physical activity. As a matter of fact, physical activity can play a very significant role in maintaining functional fitness in aged population. Physical activity is the most powerful tool in the hands of aged persons that it can improve as well as maintain functional fitness of aged persons very effectively. With the help of physical activity they can perform daily routine work more efficiently. It makes the person more energetic and removes the signs of ageing. It can reverse the common signs of old age such as muscle and bone loss, increased body fat, memory and cognitive decline, decreased metabolism, decreased flexibility and decreased blood flow etc. It is a well recognized fact that physical activity keeps the human body livelier, fitter and in better condition for long years. Regular physical activity can protect the individual against a number of chronic diseases of old age. Regular physical activity helps aged people to live healthier and more vigorous lives.

Regular physical activity can play a very effective role in maintaining functional fitness but it should be implemented in a proper way. First of all, the aged persons should consult to doctor regarding their level of physical fitness and health. The recommended amount of physical activity should be no more than their capacity. They must not feel tired on the following day. The physical activity prescription for aged persons should include aerobic, muscle strengthening and flexibility exercises. The intensity and duration of physical activity should be low in ht beginning. Regular activity can play an effective role in maintaining functional fitness in aged population in the following ways:

- 1. Reduces the loss of muscle mass:** Muscle mass decreases with advancing age. Ageing has a negative effect on metabolism. Regular physical activity decreases the loss of lean body mass and drop in the metabolic rate. Regular physical activity also reduces the accumulation of fats.
- 2. Helps in maintaining bone density:** Bone density decreases with age. It usually leads to fracture and osteoporosis. Physical activity helps to maintain bone mass and prevents osteoporosis. Resistance exercise stimulated bone growth. Research studies show that the aged persons can increase their bone density with the help of regular exercise.
- 3. Slows down brain ageing:** The regular physical activity reduces the risk of mild cognitive impairment. It is a condition characterized by memory and thinking problems. Mild cognitive impairment may lead to dematia later on. Regular physical activity reduces the risk of developing this problem in the first place. Regular physical activity improves memory and cognitive skills. It stimulates the growth of new nerve cells and builds new capillaries to supply the brain with more oxygen.
- 4. Reduces the risk of age-related diseases:** Regular physical activity reduces the risk of a number of health problems many ageing persons face. Such health problems are type 2 diabetes, obesity, hypertension and heart diseases etc. regular physical activity decreases blood sugar level, decreases LDL (bad cholesterol), increases HDL (good cholesterol), decreases blood pressure and decreases blood vessel stiffness. It can be alluded that physical exercise reduces the risk of diseases related with age.
- 5. Improves muscular strength:** Ageing process does not hinder the individual's ability to enhance muscle strength. Regular physical activity increases the strength of muscles. As a matter of fact, physical activities increase the size of muscles which ultimately increases muscular strength.
- 6. Enhances the capacity of lungs:** Regular physical activity enhances the capacity of lungs. It reduces the loss of elasticity of the lungs and chest wall. It also plays a key role in keeping the lungs strong. Regular physical activity increases oxygen uptake and oxygen exchange .
- 7. Improves flexibility:** Regular physical activity improves the elasticity of tendons, ligaments and joint capsules. Physical activity decreases the stiffness of joints. In this

way, there is improvement in flexibility. Aged persons can perform various functions which require flexibility.

- 8. Reduces stress and tension:** Regular physical activity has a unique capacity to exhilarate and relax to depression and reduce stress and tension. In fact, regular exercise reduces levels of body's stress hormones such as adrenaline and cortisol. Regular physical activity also stimulates the production of endorphins, the body's natural painkillers and mood elevators. Such benefits of physical activity help in maintaining functional fitness of aged persons.

It can be concluded that regular physical activity can play a very effective role in maintaining functional fitness in aged population because it has ample benefits which usually help the aged persons

Q.13 – Elucidate the gender differences in physical and physiological parameters.

Ans – **Main differences in physical and physiological Parameters:**

- 1. Muscular Strength:** Females have less muscular mass as compared to males. Males convert more of their caloric intake into muscles while females tend to convert caloric intake more into fat deposit. Thus men are physically more stronger than females.
- 2. Endurance:** Males have large lung volume (i.e., more vital capacity), moreover higher oxygen carrying capacity. This causes more endurance in males.
- 3. Sensitivity:** It is a fact that females are more sensitive to smell as compared to males.
- 4. Flexibility and Speed:** Females are more flexible as compared to males whereas males have more speed ability.
- 5. Skin:** Males have hard, more prone to redness and darker skin, whereas skin of females is soft, sensitive and fair.
- 6. Age and Gender:** Physical fitness is related to age and gender. It depends on gender difference. Male has more strength and endurance as compared to female and females dominate in flexibility and co-ordination dominating physical activities.
- 7. Blood components:** Females usually have lower Blood Pressure than males. Males have higher concentration of androgens while females have higher level of estrogens. Females have more WBC (White blood cells), Granulocytes and Lymphocytes; thus females have better immune system than males.
- 8. Skeleton difference:** Female skeleton is generally lighter, smooth and delicate than males, female pelvis is wider. Males have heavier, longer and stronger bones.
- 9. Weight:** Males are heavier (about 15% more). i.e. males have more weight as compared to females of same height.

CHAPTER -8 BIOMECHANICS AND SPORTS

Q1. What do you mean by Kinesiology ?

Ans. KINESIOLOGY means the science of motion without particular reference to mechanics or physics. The term means “Study of movement”.

Q.2– What do you mean by Biomechanics?

Ans – Biomechanics is a sub discipline of physical education. The term ‘biomechanics’ is a combination of two words i.e., ‘Bio’ and ‘mechanics’. Here ‘Bio’ is a Greek word that refers to life or living things and mechanics refers to the field of physics and the forces that act on bodies in motion.

Q.3 – What is a projectile?

Ans – An object thrown into the space either horizontally or an acute angle under the action of gravity is called a projectile. There are two forces which act on a projectile – gravitational force and air resistance.

Q.4 – What is gravity?

Ans – It is the force of attraction exerted by the earth towards its centre on a body or an object. The greater the weight of an object, the greater the influence of gravity upon it. Gravity affects a projectile as it decreases the height a projectile can obtain.

Q.5 – What do you mean by air resistance?

Ans – When projectile moves through the air, it is slowed down by air resistance. Air resistance decrease the horizontal component of a projectile. The effect of air resistance is very small, but it needs to be taken into consideration if you want to increase the horizontal component of a projectile.

Q.6 – What is linear motion?

Ans – Linear motion refers to any motion that moves along a straight line in one direction. As a matter of fact, linear motion describes a situation in which movement occurs in a straight line.

Q.7 – What is angular motion?

Ans – Angular motion is also referred to as rotator motion. It occurs when all points on a body or object move in circular or circular parts of circle about the same fix central line or axis. Angular motion can occur about an axis with the body or outside the body.

Q.8 – Define Work.

Ans – Work refers to an activity involving a force and the movement in the direction of the force. It can also be defined as the work done by a constant force as the product of the force and the distance moved in the direction of the force.

Work = force X Distance

Q.9 – Define power.

Ans – Power is the rate of doing work or the rate of using energy. The above definition can be expressed as an equation.

Power = work/time

Q.10 – Define Energy.

Ans – Energy is the capacity to do work. However, there are various forms of energy but in the field of games and sports our main concern is about mechanical energy. Mechanical energy is the combination of kinetic and potential energy.

Q.11 – What is the difference between linear and angular motion?

Ans – **Linear Movement:** Linear movement describes a situation in which movement occurs in a straight line. Linear movement can also be called translation but only if parts of the object or the athlete move the same distance, in the same direction, and in the same time frame. As you can imagine, translation rarely occurs in an athlete's movement because some parts of an athlete's body can be moving faster than other parts and not always exactly in the same direction. For example: an athlete in the 100 meter sprint wants to travel the shortest distance from the start to the finish line.

Angular movement: Coaches talk of athletes rotating, spinning, swinging, circling, turning, rolling, pirouetting, somersaulting and twisting. All of these terms indicate that an object or an athlete is turning through an angle, or number of degrees. In sports such as gymnastics, basketball, figure skating, diving, handball, jumping the movements used by athletes include quarter turn (90 degrees) half turns (180 degrees) and full turns (360 degrees) slam dunk competitions are great examples of basketball players showing off their 360°.

Q.12 – What are the factors which affect projectile trajectory?

Ans – 1. **Angle of projection:** Any object when projected at different angles covers different distances. When it is projected or released at the angle of 30° making a parabolic path, it covers less distance. When it is projected at the angle of 60°, it covers a distance less than the distance covered by 30° angle. When it is released at the angle of 45° making a parabolic path it covers the maximum distance. Here it is supposed that the initial velocity in all the cases is the same.

2. **Initial Velocity:** The distance covered by an object depends on the initial velocity of the projectile. If the initial velocity is more the object covers maximum distance. On the other hand, if initial velocity is less, the object covers less distance.

3. **Gravity:** It is the force of attraction exerted by the earth towards its centre on a body or an object. The greater the weight of an object the greater the influence of gravity upon it. Gravity affects a projectile as it decreases the height of projectile can obtain.

Q.13 – What is friction? Explain its types. Is it advantageous or disadvantageous in the field of sports? Give your views.

Ans – The force of friction is the force that depends at the surface of contact of two bodies and opposes their relative motion.

Types

1. **Static friction:** The opposing force that comes into play when one body tends to move over the surface of another, but the actual motion has not yet started is called static friction.
2. **Dynamic friction:** Dynamic friction is the opposing force that comes into play when one body is actually moving over the surface of another body. Further dynamic friction can be of two types i.e., sliding friction and rolling friction.

Friction is usually called a necessary evil. It means that it is essential in games and sports. Without friction, we cannot give a better performance in the field of sports. For example athletes use spikes and football players use studs to have appropriate friction while they run fast.

On the other hand, friction is disadvantageous in some of the sports and games, such as in cycling, there should not be more friction between road and the tyres of cycle.

Consequently, it can be said that friction is advantageous in some of the sports but in other sports more force of friction is disadvantageous.

Q.14 – Discuss the mechanical analysis of walking in detail.

Ans – Mechanical analysis of walking can be studied in two phases:

1. **Stance phase.**
2. **Swing phase.**
 1. **Stance Phase:** Stance phase is the time when the foot is on the ground. It is considered that it consists of maximum percentage of walking cycle. For a part of the stance phase both feet have a contact with the ground for a period of time. The stance phase of walking can further be divided into the following stages.

- (i) **Heel Strike:** This stage begins when the heel first touches the ground and continues until the complete foot is on the ground i.e. early flat-foot stage.
 - (ii) **Early flat-foot:** The standing of the early flat-foot stage is that moment when the complete foot is on the ground. The end early flat-foot stage occurs when the body's centre of gravity (COG) passes over the top of the foot.
 - (iii) **Late flat-foot:** An athlete comes into late flat-foot stage when his body's COG passes in front of the neutral position. This stage lasts when the heel lifts off the ground.
 - (iv) **Heel rise:** This stage starts when the heel begins to leave the ground. The foot functions as a rigid liner to move the body in forward direction.
 - (v) **Toe off:** This begins when the toes leave the ground completely. This stage continues until the beginning of swing phase.
2. **Swing Phase:** Swing phase occurs when one foot is on the ground and the other one in the air. The foot which is in the air is called to be in the swing phase. The swing phase in walking is shorter than stance phase.

Q.15 – Discuss the mechanical analysis of ‘running’ in detail.

Ans – The mechanical analysis can be studied properly in the following phase:

1. **Stance phase:** The stance phase is that phase in which the foot is in contact with the ground. This phase is considered as the more significant of the two phases because during this phase the foot and leg bear the body weight. This phase can be divided into four stages which are described below:
 - (i) **Initial contact stage:** This stage begins at the movement when both feet are off the ground (sometimes referred to as float phase). Suppose the left leg remains in the front and about to touch the ground. The moment, when the left foot touches the ground (whether touches heel, mid foot or forefoot) is called as initial contact stage.
 - (ii) **Braking or absorption stage:** when the left foot makes the initial contact to the ground in your front, your body starts performing a controlled landing. The left knee and ankle flex

and the left foot rolls to absorb forces. It is called braking or absorption stage.

(iii) Mid stance stage: The braking or absorption stage continues until the left leg is directly under the hip taking maximum load as the body weight passes over it. The ankle and knee are at maximum flexion angle. The entire foot is usually in contact with the ground. The next leg remains in swinging position. It is called mid stance stage.

(iv) Propulsive stage: Propulsive stage occurs when the supporting leg or left foot leaves the ground and propels your body in forward direction. Propulsion is achieved by your left ankle, knee and hip all extending to push the body up and forward using the elastic energy stored during the absorption phase.

2. Swing phase: Swing phase is initiated with toe off of left foot and ends with initial contact stage with right foot. The swing phase is longer in running in comparison to stance phase.

Ques:16 Define aerodynamics in sports ?

Ans:Aerodynamics is the study of forces and the resulting motion of objects through the air it is related to the flow of air around a projectile, which can influence the speed and direction of the object full stop full stop aerodynamics in sports study of how air resistance and drag affects sports objects and influence performance

Que:-17 Define flexion and extension ?

Ans:- 1. flexion refers to a movement that decreases the angle between two body parts flexion at the elbow is decreasing the angle between the humerus and the radius when the knee flexes the angle moves closer to the body and the angle between the femur and Tibia gets smaller

- 2 Extension refers to a movement that increases the angle between two body parts extension at the elbow is increasing the angle between the humerus and the radius extension of the lower limb straightens the lower limb

QUE:- 18 define adduction and abduction Movement in sports?

Ans:-abduction Movement in sports adduction refers to a movement towards the midline to a movement towards the midline or Centre, it is a movement of a body part towards the median Plane full stop abduction is a movement away from the midline or Centre, it refers to any movement of the body part away from the median Plane

Que:-19 discuss the muscles involved in running?

Ans:-muscular analysis of sprinting

1. The leg actions in running is one that takes place in a sagittal plane about a frontal axis and involves the hip knee and ankle joints.

2. The bones of the hip involved or femur and pelvis which form a ball and socket joint.

3. The bones of the knee involved or femur and tibia which form a Hinge Joint.

4. The bones of the ankle in walls are the tibia and calcaneus which form a modified joint.

Que:-20 What do you understand by friction in sports

Ans:- the action of one surface of object against another it is the resistance that one surface of object in contact when moving over another.

Que:21 define axis and planes?

Ans:- An axis is a straight line around which an object rotates.

Plane is the surface on which movement takes place

Que:- 22 Explain Newton's Law of Motion in sports

Ans:- **Law of inertia**:- this law states that a body at rest will remain at rest and a body in motion will remain in motion at the same speed and in the same direction till any external force is applied on it change that state.

application in sports

Example - In basketball player on the court must keep in mind about Dribbling because the ball will continue to bounce for sometime if they lose control if the ball bounces too far away from the player his or her team can lose position.

Newton's second law of motion-this law states that the acceleration of an object is directly proportional to the force producing it and inversely proportional to its mass

application in sports:-

(i)runners struggle while stopping at the finishing line because it requires a very sudden change in motion

(ii)shot put throw.

Newton's third law of motion:-

this law states that too every action there is always an equal and opposition reaction

Application in sports:- while swimming, the swimmer pushes the water backwards using his hands thus attains a forward push due to an equal an opposite reaction from the water.

CHAPTER – 9 Psychology &SPORTS

Q.1 – What do you mean by stress?

Ans – Stress consists of bodily changes produced by physiological or psychological conditions that tend to upset the homeostatic balance. In medical language 'stress' is defined as a perturbation of the body's homeostasis.

Q.2 – What do you mean by anxiety?

Ans – Then main aims of physical education teachers, trainers, coaches and sports psychologists is to enhance an individual's performance at optimum level. To achieve this aim, they must consider the effect of anxiety on performance.

Q.3 – What do you mean by coping strategies?

Ans – In the field of psychology, coping refers to the thoughts and actions which we usually use to deal with a threatening situation. In other words, coping is expanding conscious effort to solve personal or interpersonal problems and seeking to minimize or tolerate stress or conflicts.

Q.4 – What do you mean by problem focused coping strategies?

Ans – The problem focused strategies deal with the root causes of stress and try to improve the stressful environment the sportspersons are experiencing. The problem focuses coping strategies are aimed at changing or eliminating the authentic source of the stress.

Q.5 – What do you men by emotion focused coping strategies?

Ans – These are those coping strategies which try to reduce the negative emotional responses linked with the stress such as embarrassment, fear, anxiety, depression, excitement and frustration. In other words, these are those strategies which are used to tackle the feeling of distress rather than the actual problem.

Q.6 – What do you mean by personality?

Ans – Personality usually means that an individual is much more than his outer appearance. It is a dynamic and organized set of characteristics passed by a person that influences his/her cognitions, emotions, motivations and behaviours in different types of situations.

Q.7 – Explain about emotional dimension of personality in detail.

Ans – Emotional dimension is also an important dimension of personality. Emotional 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 situations. As a matter of fact, many sportspersons feel elated when they win but start crying, abusing the umpires or referee when they lose. Such situations show one's emotional status spontaneous outburst of such emotions is not accepted as a sign of good personality.

Q.8 – Explain any two technique of motivation.

Ans – 1. **Spectators:** If there is a huge number of spectators, it will have a positive effect on the players. But its effectiveness depends upon the experience and maturity of athletes. If an inexperienced athlete participates in competition, which is full of spectators, then he will not be

able to perform better in comparison to an inexperienced athlete. An inexperienced athlete is usually overpowered by fear.

2. Hypnotism: The motivation through hypnotism can be effective but, generally, it is discarded by the public, it has its scientific base. Several studies show its positive effect. Performance may be improved through hypnotism if it is properly employed by a trained person.

Q.9 – Discuss intrinsic and extrinsic motivation.

Ans – 1. **Intrinsic motivation:** Intrinsic motivation is internal. It occurs when people are compelled to do something out of pleasure, importance or desire. Motivation is always intrinsic when the force comes from within oneself.

2. **Extrinsic Motivation:** Extrinsic motivation is external. It occurs when external factors compel the person to do something. Motivation is always extrinsic, when external forces, positive or negative produce a behavioral change, reward, punishment, praise, blame or cash prize etc.

Q.10 – Explain any three techniques of motivation for higher achievement in sports.

Ans – 1. **Presence of opposite sex:** Opposite sex plays a vital role in motivation. Usually girls are motivated by the presence of boys, whereas boys are motivated by the presence of girls. This is an innate tendency of human beings. Even girls as well as boys try to be smart and active in the presence of opposite sex.

2. **Spectators:** If there is a huge number of spectators, it will have a positive effect on the players. But its effectiveness depends upon the experiences and maturity of athletes. If an inexperienced athlete participates in competition, which is full of spectators, then he will not be able to perform better in comparison to an experienced others.

3. **Hypnotism:** The motivation through hypnotism can be effective but, generally, it is discarded by the public. It has its scientific base. Several studies show its positive effects. Simple and direct strength may be improved through hypnotism if it is properly employed by a trained person.

Q.11 – What do you mean by anxiety? Discuss the management of anxiety in detail.

Ans – The main aim of physical education teachers, trainers, coaches and sports psychologists is to enhance an individual's performance at optimum level. To achieve this aim, they must consider the effect of anxiety on performance. In fact, anxiety is a psychological and physiological state of an individual.

Management of Anxiety

1. **Establish the winning feeling:** Start thinking about the last time you were performing at the top of your game. After that enlist energy detail you might associate with your 'winning feeling'. Then pick out the eight most important aspects of this positive feeling and write them down. Think those winning feelings. Naturally, it will help to create an optimum competitive mindset.
2. **Stop negative thinking:** Stop negative thoughts such as 'I cannot do better no' or 'it is impossible to beat him in the competition'. Instead of these negative thoughts, think positive such as 'I can do much better' or 'I will be the winner'. Even casuistry used to say 'I am the greatest'.

Q.12 – Discuss the points to improve the body image and self-esteem in detail.

Ans–1. **To have a positive and optimistic attitude:** A positive and optimistic attitude can help individuals to improve body image and self-esteem. So one should try muscles or change in body shape and size can be a healthy choice.

2. **To change your life style:** Changes in your life style such as adopting a specific diet and with planned exercise programme in order to lose weight, gain muscles or change in body shape and size can be a healthy choice.

3. **To identify all the aspects of your appearance realistically:** For improving body image and self-esteem, identify all the aspects of your appearance which you can change realistically and which you can't change. It is well known fact that human beings are imperfect.

4. **To stop your intrinsic negative comments:** When you hear negative comments coming from the core of your heart, stop them immediately if you want to improve your body image and self-esteem.

5. **To give compliments about good things done by you:** If you want to improve your self-esteem and body image, do some good things everyday and give compliments to yourself that you really have done good things. This act will give you immense pleasure.

CHAPTER – 10 TRAINING IN SPORTS

Q.1 – What do you mean by training?

Ans – Training means the process of preparation for some task. But here our main task is fitness and conditioning for sports and games. It is only due to that, this term is mostly used in sports and games. So it is called 'sports training.'

Q.2 – What are Isometric Exercises?

Ans – Isometric Exercises are those exercises, which are not visible. In fact, there are no direct movements, hence they cannot be observed. In these exercises, work is performed but it is not seen directly.

Q.3 – What are Iso-kinetic exercises?

Ans – Iso-kinetic exercise are performed on specially designed machines. These exercises were developed by Perrine in 1968. These exercises involve a specific type of muscle contraction, which is usually not applicable in sports and games except in water- sports like rowing and swimming.

Q.4 – Define flexibility?

Ans – Flexibility can be defined as the ability to execute movements with greater amplitude or range. It is affected by muscle length, joint structure tendons, ligaments and other factors.

Q.5 – Define speed?

Ans – **Barrow and McGee**, define speed as the capacity of an individual to perform successive movement of the same pattern at a fast rate.

Johnson and Nelson, define speed as the rate at which a person can propel his body or parts of his body.

Q.6 – Define strength.

Ans – **According to Barrow and McGee**, “strength is the capacity of the whole body or of any of its part to exert force”. According to Mathews “muscular strength is the force that a muscle or group of muscles can exert against a resistance in one maximum effort.”

Q.7 – What do you mean by dynamic strength?

Ans – Dynamic strength can be called isotonic strength because it is related to the movements. In pull-ups and push ups we require dynamic strength. In performing such workout, there is a diminishing tendency in dynamic strength and as a result, after sometimes, muscles refuse to do work

Q8 – Define maximum strength and explosive strength?

Ans 1. **Maximum Strength:** It is the ability to act against maximum resistance. Maximum strength is not usually used in majority of sports. It is Usually used in those sports in which very heavy resistances have to be tackled, eg: Weightlifting, shot-put, hammer throw etc.

2. **Explosive strength:** Explosive strength can be defined as the ability to overcome resistance with high speed. In fact, it is a combination of strength and speed abilities. Explosive strength is generally used in sprint starts, weightlifting, shot put etc.

Q.9 – State basic endurance and general endurance.

Ans – 1. **Basic Endurance:** Basic endurance is also called aerobic endurance. In fact, basic endurance is the ability to perform movements in which large number of body muscles are involved and the activity is performed at slow pace for long duration.

2. **General endurance:** General endurance is the ability to resist fatigue satisfactorily caused by different types of activities. These activities may be aerobic or anaerobic in nature. These activities may be of low or high intensity but for longer duration.

Q.10 – Discuss the types of strength.

Ans – 1. **Dynamic strength:** Dynamic strength can be called isotonic strength because it is related to the movements. In pull-ups and push-ups we require dynamic strength. In performing such workout, there is a diminishing tendency in dynamic strength and as a result, after sometimes muscles refuse to do work. It can be divided into three parts.

- (i) Maximum strength
- (ii) Explosive strength
- (iii) Strength Endurance

3. **Static strength:** Static strength is also called isometric strength. It is the ability of muscles to act against resistance. Static strength can be measured by dynamometer. This type of strength is not run directly. Static strength is not usually applied in sports but in weightlifting it is applied in phases.

Q.11 – Discuss any two methods of improving strength.

Ans – 1. **Isometric exercise:** Isometric exercises are those exercises, which are not visible. In fact, there are no direct movements, hence they cannot be observed. In these exercises, work is performed but it is not seen directly.

2. **Isotonic exercise:** These are those exercises in which movements can be seen directly. Work is done in these exercises. Isotonic exercises tone up the muscles. Muscles become flexible. Length of the muscle can be increased by isotonic exercises are of much values in the field of sports.

Q.12 – Discuss the type of endurance according to the nature of activity.

Ans – 1. **Basic endurance:** Basic endurance is also called aerobic endurance because basic endurance depends mainly on aerobic endurance. In fact, basic endurance is the ability to

perform movements in which large number of body muscles are involved and the activity is performed at slow pace for long duration.

2. **General endurance:** General endurance is the ability to resist fatigue satisfactorily caused by different types of activities. These activities may be aerobic or anaerobic in nature. These activities may be of low or high intensity but for longer duration.

3. **Specific endurance:** Specific endurance is the ability to resist fatigue caused by a specific or particular sports activity. As the nature of fatigue is different from sports to sports.

Q.13 – Discuss Fortlek training method as a means of developing endurance.

Ans – Fortlek training method is used for developing endurance. Gostaholmer developed Fortlek training in 1937. The word 'fortlek' is a Swedish word means 'speed play'. It is such a training method that blends continuous training with interval training. This training method lays emphasis on both the aerobic and anaerobic systems. In this method, pace or speed is not preplanned so it is left upto the individual. He can change his speed according to the surroundings (hills, rivers, forests, muddy roads, metal roads and grassy grounds) self discipline plays a vital role in Fortlek training method.

Q.14 – What do you mean by Speed? Elucidate the methods of improving speed.

Ans – It is the rate at which a person can propel his body or parts of his body.

Methods of improving speed

1. **Acceleration runs:** Acceleration runs are usually adopted to develop speed, specially in attaining maximum speed from stationary position. It should be kept in mind that the technique of any event should be learned in the beginning. Only then, we should switch over to acceleration runs. For example: in 100 m sprint race, we should lay stress on the technique of start and complete running action, we should practice it at a slow speed.
2. **Pace runs or races:** Pace races mean, running the whole distance of a race at a constant speed. In pace races, an athlete runs the race with uniform speed. Generally, 800 meters and above races are included in pace races. As a matter of fact, an athlete can run a distance of 300 meters at full speed. So, in longer races such as 800 m or above races he must conserve his energy by reducing his speed.

Q.15 – What do you mean by flexibility? Elaborate different methods to improve flexibility.

Ans – Flexibility can be defined as the ability to execute movements with greater amplitude or range. It is affected by muscle length, joint structure tendons, ligaments, and other factors.

Methods:

- 1. Ballistic method:** In ballistic method, the movement is performed with a swing in a rhythmic way. The related joint is stretched with a swing. The stretching exercise can be performed rhythmically with a count. At each count, the joint is stretched to the maximum limit and then it is again flexed.
- 2. Static stretching method:** Static stretching method involves gradually easing into the stretch position and holding the position. The amount of time a static stretch is held depends on one's purpose. If it is a part of cool down, then the stretch should be held for 10 seconds.
- 3. Dynamic stretching method:** Dynamic stretching consists of controlled leg and arm swings that take you gently to the limit of your range of motion. Where the event requires a dynamic movement it is appropriate to conduct dynamic stretching exercises.

Q.16 – What do you mean by coordinative abilities? Mention any two types of coordinative abilities.

Ans – Coordinative abilities are those abilities of an individual which enable the individual to do various related activities properly as well as efficiently. Our accuracy, rhythm, flow and constancy depend on our coordinative abilities.

Types of coordinative abilities:

- 1. Orientation ability:** It is the ability to determine the position of the body and its parts in time and space in relation to gravity, moving objects like ball, opponent, partner and playing field etc. This ability depends on functional capacity of sensory organs like eyes and kinesthetic sense organs etc.
- 2. Coupling ability:** Coupling ability is the ability to combine the movements of different body parts for performing perfect sports movements. This ability is very significant for approximately all sports but specially in team games, gymnastics and combative sports (boxing and wrestling etc.). For example in boxing, the movements of hands, head, trunk and feet are essential to couple to achieve a certain goal.
