AMRITA PUBLIC SCHOOL, NEW DELHI

PHYSICAL EDUCATION – O48

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CHAPTER – 1

MANAGEMENT OF SPORTING EVENTS

1. Concept of Management: Management is the process of getting things done with the aim of achieving goals efficiently and effectively.

2. Planning: Planning is a preparation for any action. It is the first requirement of good administration and efficient working of programs and activities of games and sports.

3. Organising: It is the management function of assigning duties, grouping tasks, establishing authority and allocating resources required to carry out specific plan.

4. Staffing: It simply means finding the right people for the right job. For example maintaining a satisfactory and satisfied workforce to successfully completing the tournament.

5. Directing: Directing involves leading, influencing and motivating coaches/officials/mangers to perform the tasks assigned to them. For example a qualified coach can create a best environment that motivate players to work hard.

6. Controlling: It is the management function of monitoring organizational performance, establishing standards of performance and taking corrective actions where any deviation is found.

7. Fixture: It is a competition held among various teams in a particular activity according to a fixed schedule and time. The competition among teams is arranged on the basis of lots. It is important to see the previous year's winner and runners-up team so that they are in different halves.

8. Knockout: In this type of tournament the team which is defeated, gets eliminated and does not have another chance to play.

9. League: This type of tournament is also called Round Robin tournament. In this a player or team plays against every other player or team, irrespective of winning or losing.

10. Single league: Every team/player will play with every other team atleast once. Number of matches will be n(n - 1)/2.

11. Double-League tournament: In this format, every player/team has to play twice with every other competitor or competing team. The position of the team/player at the end of league is decided by the point system.

12. Combination tournament: In these tournaments we combine two fixtures together i.e. league cum knock out and knockout out cum league to declare the true winner.

13. Bye: A team which gets a bye will not play in the first round. Bye is a privilege given to a team generally by drawing of lots, exempting it from playing a match in the first round.

14. Method of deciding Bye: We check whether team participating is a power of two or not. Such as 2, 4, 8, 16, 32, 64, 128 etc. In case the team is not a power of two then Bye shall be given. e.g., if number of teams participating are 13. Next higher power of two is 16. Number of Bye 16 13 = 3 Bye

15. Seeding: It is a way of spotting the teams and fitting them into fixtures in such a way that strong teams do not meet in earlier rounds. This method is applicable only when the standard of the teams is known to the organizers. It is recommended that byes are generally given to the seeded teams.

16. Drawing a fixture: For a certain number of teams competing, the number being the power of two. (2, 22, 23, 24, 25, i.e. 2, 4, 8, 16, 32 respectively), in this case bye shall not be given. When number of teams competing is not the power of two i.e. 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17 etc. in that case Bye shall be given to a specific number of teams in the first round, number of byes to be given shall be decided by subtracting the number of teams from its next higher number, which is the power of two.

17. Formation of committee at higher levels tournament: It requires careful planning and organization in order to be successful. Many persons work together to achieve the desired objective. Different committees are required such as-

- Organizing committee Finance committee Publicity committee
- Purchase committee
- Reception committee
- Transport committee
- Boarding and lodging committee
- Officials as per event/sport/game
- Opening and closing ceremony committee
- Awards committee

18. Intramural: These are the competitions conducted between the players of the same Institutes or within the walls of institute e.g., inter-sections.

19. Extramural (between the Institutions): Competitions are conducted between the players of two or more institutes. e.g., Interschool, Intercollege.

20. Objectives of Intramural and Extramural:

· To provide an opportunity to students within the institute that will be conducive to their overall development.

- To display their skills in various physical activities.

To have exposure to the competition.
To gain experience in conducting and organizing intramurals as a part of their training.

21. Formation of committee for organizing sports events at intramural: It comprises Intramural Director (usually the head of Department of Physical Education) followed by Assistant Director, assistant teachers, a secretary and a joint secretary.

22. Officials: Qualified and competent officials are necessary for a sound intramural program. They should be fair and transparent in their decisions so that they are accepted by the participants.

23. Tournaments: It is a large contest of many rounds among various teams. We can also say that a tournament is a competition held among various teams in a particular activity according to a fixed schedule where a winner is decided.

24. Types of tournaments: There are four main types of tournaments such as .Knockout or single elimination tournament League or Round Robin Tournament. Combination Tournament Challenge Tournaments

25. Community sports program: It includes health run, run for fun, run for unity, run for awareness, run for specific cause, etc.

26. Health run: Running is a natural human activity. Running meets our biological and physiological needs. It is enjoying and satisfying. Health run programs are usually carried out in the army or camps to improve the fitness of Jawans. Generally, people run individually according to their convenience.

27. Run for fun: It means participating in running programs for fun and enjoyment and not for competition. It is a relaxed way of running. It is for the people of all ages. The main purpose for these runs is fun and to create awareness about running in children and adults.

28. Run for unity: In such runs, efforts are made to include people from every corner for peace and unity in the world. At national level such runs can develop the feeling of patriotism in the children and students that they all belong to one nation.

29. Run for specific cause: It means running or walking by a group of people for cause. Such as control of pollution, save earth, national integration, save water, blood donation camps, etc., just to inform the public about the importance of such items and encourage them to give their maximum contribution in aid of a cause.

30. Sports Day: It is the main event of any school program where all the students participates in Race, Dance, Drills, yoga show, Aerobics, pyramids drills etc. It is the best filled activity for growth and development of school children.

31. Special Seeding: A method of seeding in which the players or teams directly participate in the quarter final or semi-final matches thus avoiding their participation in the initial rounds.

32. Fixture: Any tournament whether it is knock-out or league, is arranged according to a set procedure which is known as fixture.

33. Specific Sports Programmes : Programmes which are not usually related to competitions.

CHAPTER - 2
CHILDREN AND WOMEN IN SPORTS

1. Motor development: Motor development involves the underlying biological, environmental and task demands influencing both motor performance and movement abilities of Individual from infancy through older adulthood. It goes on all the time from conception until the late teens. At the same time, the nervous system matures. For any movement the brain, nerves and muscles have to work together.

2. Fine motor skill: Fine motor development involves skills of the smaller muscles of the body, such as fingers and hands e.g., holding a pencil, grasping small objects, picking up toys with fingers, etc.

3. Gross motor skill: It refers to movements involving large muscles, such as arms, legs or entire body. Performing plenty of movements for developing coordination among different muscles is Gross motor skill. For example, walking, kicking, sitting, lifting, throwing, etc.

4. Stages of motor development: There are four stages of motor development in children. (a) Infanthood (0-2 years) (b) Early childhood (2 - 5 years) (c) Later childhood (6 - 11 years) (d) Adolescent (12 - 18 years)

5. Factors affecting motor development: There are various factors which affect motor development. They are: (a) Heredity (b) Nutrition (b) Immunization (d) Lack of opportunities to children (e) Environment (f) Lack of physical activity.

6. Posture: It means the position of a body in regard to the environment at any given instant. In medical terms, the posture means an unconscious adjustment of tone in different muscles involved in active movement or a static position, for- (a) making the movement or position accurate. (b) For maintaining the line or point of gravity constant.

7. Standing posture: Standing posture is balanced, free from muscular and ligamentous strain, that the line of gravity of the center of the head, chest, abdomen and

pelvic fall in straight line. In standing position, weight should be equally distributed between the ball of the foot and the heel.

8. Causes of bad posture: Various causes that result in bad posture or postural deformities are: • Congenital Bad habits or faulty posture • Overstraining of muscles Weak bones or muscles • Lack of body exercise • Due to accident or disease • Excessive body weight

9. Common postural deformities: Our posture deviates from Anatomical position and causes various posture deformities. They are knock knee, bow legs, kyphosis. Lordosis, round shoulders, scoliosis, etc.

10. Kyphosis (Round upper back): It is the exaggeration of the normal dorsal curve of the spine resulting in slouching attitude, flat or depressed chest protruding abdomen and drooping head.

11. Lordosis: In case of lordosis, there is increased forward chest, shoulders goes back, chest cavity enlarges, and protruding abdomen and the head is held forward.

12. Flat foot: It means there is 'no arch' in the foot and the foot is totally flat which may give rise to pain in foot. It may happen due to loss of muscle supporting the foot which results in flattening of the arch.

13. Round shoulders: It is a postural defect in which shoulder looks like round in shape. The muscles of the shoulder become weak and sometimes bend inside due to over load and weakening of muscles.

14. Knock knee: In proper anatomical posture, there should be some gap between the knees. If there is no gap, the knee touches or overlaps. When a person walks, the knees knock every time.

15. Bow legs: Bow legs is also called rickets. This is a posture defect in which the lower long bones of the legs get bent. This results in an unnatural gait leading to uneasiness in walking and running.

16. Scoliosis: Scoliosis is a postural defect in which there is one large lateral curve extending through the whole length of spine or there may be two curves. It is mostly associated with some loss of strength in all the body muscles.

17. Menarche: The average age of the first menstruation has been found from 11 to 14 years. The exact timing of the menarche is influenced by genetic, racial, socio-economic and climatic factors. If periods do not occur, physical examination should be done by the doctor.

18. Menstrual Cycle: This cycle is the regular natural changes that occur in the uterus and ovaries that make pregnancy possible. This cycle is repeated after every 28 days. Therefore a female is uncomfortable during the early phase of having menstrual flow. There appears to be high degree of variability among females, the duration of periods is 3-7 days.

19. Menstruation and exercise: Many females have few or no menstrual difficulties under any conditions whether they are active or sedentary but on the other hand some females have dysmenorrhea (painful menstruation) during this time they should avoid exercise.

20. Dysmenorrhea: There are menstrual difficulties. Sometimes, before the onset of menstruation, tension rises. It increases arousal level. There is lot of pain during the menstruation.

21. Pregnancy: The first sign of pregnancy is usually a missed period. If intercourse without contraception has taken place, pregnancy is most likely to occur. Its duration is 9 months' time. The pregnancy test kit can also detect/confirm the pregnancy.

22. Pre-menstrual syndrome: PMS are aggression, irritability, depression, bloated feeling, back pain. Doctors believe that it is directly related to problems with production and balance of progesterone and estrogen in the body.

23. Menopause: Menopause or change of life is the time in women's life when her menstrual periods stop. It generally comes between the age of 45 and 55. The main effect of menopause is that a woman can no longer become pregnant.

24. Female athlete triad: Triad is a serious illness with lifelong consequences. It include eating disorder, osteoporosis and amenorrhea. These diseases are inter-related that is why we call it as triad.

25. Role of RBC in Anemia: RBC's carry hemoglobin, which is an iron rich protein. Hemoglobin binds with oxygen in the lungs and carries it to tissues throughout the body.

26. Osteoporosis: In osteoporosis, the bone mineral density is reduced because of menopause, old age and prolonged history of medication. It is a condition in which the bones become brittle and break easily.

27. Amenorrhea: It is absence of menstrual period in a woman of reproductive age. It is of two types-Primary and Secondary Amenorrhea. In case of Primary Amenorrhea, the menstrual cycle never starts (no menarche) and in case of Secondary Amenorrhea, the menstrual cycle ceases or premature menopause occurs.

28. Causes of Amenorrhea: (a) Insufficient eating, (b) Stress, (c) Weight loss, (d) Excessive exercises, (e) Induced drugs, (f) Lactation.

29. Sports participation of women in India: Men have an upper hand in all spheres of life. Gender inequality is a deep rooted issue. Special attention was given to Indian women from 1975. Government of India instituted various sports festivals for Indian women along with scholarship to increase the participation of women athletes.

30. Reasons for less participation: Less budget, facilities, equipment, coaching and competitive opportunities for a position in the world of athletics as compared to that enjoyed by the males.

31. Primary areas of differences in gender: Include physique (body size), body composition, strength, energy system, cardiovascular endurance capacity, motor skill development and athletic abilities.

32. Psychological aspect of women athlete: Psychological aspect focuses on how females learn through interpersonal communication. Other psychological aspects are aim, attitude, self-presentation etc.

33. Sociological aspects of sports participation: Physical activities and games are the natural tendencies of a child. By means of sports activities, they come in contact with other persons and acquire different kinds of social qualities, such as helpfulness, sympathetic attitude, coordination and socially adjusted individuals, with bonding. They try to adopt the social dealings in the social environment and become a civilized being.

34. Eating disorder: It is a serious condition in which person is preoccupied with food and weight loss. Eating disorder can cause serious physical problems leading to a threat to life, e.g., Anorexia nervosa and Bulimia.

35. Anorexia Nervosa: Anorexia means lack of appetite. It is an eating disorder with food restriction and irrational fear of gaining weight as well as a distorted body self-perception. Those suffering from this disorder try to keep their weight low by starving themselves or exercising excessively. Such disordered people have fear of weight gain, even when they are under weight.

36. Bulimia: Bulimia nervosa is an eating disorder characterized by binging and purging. During binging a person consumes a large amount of food rapidly or in a short amount of time. It is commonly accompanied with fasting over an extended period of time. Going on crash diet also qualifies as bulimia.

37. Physical and Physiological benefits of exercise on children: Children who are active often possess good health and fitness. Following are the benefits of exercise on children: (a) Strengthens the heart (c) Reduces blood sugar level (e) Controls obesity (g) Improves mental health Directions for Questions: (b) Strengthens our lungs (d) Tones up the muscles (f) Regulates blood pressure (h) Improves learning and productivity, etc.

CHAPTER - 3
YOGA AS PREVENTIVE MEASURE FOR LIFESTYLE DISEASE

1. Meaning of Yoga: The word yoga has been derived from the Sanskrit word 'yuj' which means to join, to connect, to yoke and to unite the individual soul with the soul of the divine. It is a science which creates a balance between mind and body. Yoga is the unification of Atma with Parmatma.

2. Importance of Yoga: Physical purity, cure and prevention of diseases, reduces mental tension, contributes to good posture, spiritual development, increases flexibility improves overall health, reduces obesity, beautifies the body.

3. Asanas: Asanas means position or posture of the body. Asanas can be done in sitting, standing and lying down position. Asanas are performed to keep the body flexible, agile and young.

4. Types of Asanas: Corrective asanas, relaxative asanas and meditative asanas. Asanas have different effects on various organs of the body. Asanas are for all age groups.

5. Pranayama: It is the process of having good control on breathing. It is a breathing practice namely inspiration, expiration and retention and helps control the mind. Prana means 'Life giving force' and Ayama means 'to control' or restrain. Through pranayama vital forces can be controlled by concentration and breathing.

6. Meditation: It is a complete concentration of mind over a period of time without any distraction. It is a state of deep concentration or state of Dhyana.

7. Arthritis: It in a common disorder that affects your joints. It can cause pain and smelling, making it difficult to move or stay active. For example osteoarthritis, Rheumatoid arthritis.

8. Prevention and management of common lifestyle diseases: Regular exercise, avoid eating junk/fast food, proper rest, avoid alcohol, smoking etc.

9. Tadasana: The asana, Tadasana is derived from the word 'tada' which means the mountain. In this asana the body posture is kept erect with feet together. Weight of the body is distributed equally, knee and hips are tightened. Arms are brought at shoulder level in front of the chest and slowly taken overhead. Fingers are stretched towards the roof. We come slowly on toes for 30 seconds and come back to the original starting position. This asana helps in keeping the mind alert and is helpful in gaining height besides reducing stress.

10. Vajrasana: This is a sitting posture with folded legs. In this asana, toes are joined and we sit on the feet with heels pointing to the sides. The spine is kept erect and hands placed on the knees. Keep the head up and look straight. Remain in this position for 5 minutes. It makes the body strong and helps in improving digestion.

11. Ardh Matsyendrasana: In this asana, one sits on the floor with legs straight. Now bend left leg, raise the seat and place the left foot under the buttocks in such a way that the left heel is placed under the left buttock. Now bend the right leg from the knee, lift it up and place it on the outer side of the left thigh so that the right ankle touches the thigh. The trunk is turned towards the right by about 90° till the left armpit comes over the right knee. Look back and take normal breath and hold this position for a few seconds.

12. Bhujangasana: In this asana one lies down in proline position face downward. Palms are placed on the side of chest. The head and trunk are raised slowly like the hood of a serpent. The spine is bent backwards the feet are stretched backwards. So that the toes touch the ground for 6 to 8 seconds. Now comeback to initial stance.

13. Paschimottanasana: In this asana, one sits on the floor with stretched legs, with knees straight. Now bends the trunk forward and holds the feet with the thumbs and middle fingers. We exhale, touch the head with the knees and draw the abdomen in while bending forward for 30 seconds.

14. Pavanmuktasana: This asana is excellent for releasing abdominal gas. Pavana means wind while Mukt means relieve or release. In this asana, one lies on one's back with feet together and arms beside the body. Breathe in and as one exhales the right knee is brought towards the chest. The thigh is pressed on the abdomen with clasped hands. Breathe in again and as one exhales the head and chest are lifted off the floor and chin is made to touch right knee. Hold it there for 10-30 seconds. Yoga as Preventive Measure for Lifestyle Disease 59

15. Gomukhasana: Go means cow and mukha means face. In this asana, the performer's posture resembles a cow-head. The left heel is placed on the left side of the anus. The right leg is bent in such a way that the right knee rests on the left knee and the sole of right foot touches the lower part of the left thigh.

Aasanas Postures

Tadasana, Katichakrasana, Pavanmuktasana, Matsyasana, Halasana, Paschimottanasana, Dhanurasana, Ustrasana, Surya Bhedna Pranayama, Bhujangasana, Shalabhasana, Supta Vajrasana, Ardh Matsyendrasana, Mandukasana, Gomukhasana,

Yoga Mudra Asana, Kapalabhati, Urdhva Hastottanasana, Uttana Mandukasana, Vakrasana, Anulom Vilom, Pranayama, Ardha Halasana, Makarasana, Uttanpadasana, Shavasana, Sheetali Pranayama, Ardh-chakraasana, Nadi-shodhana, Bhadrasana, Saral matsyasana ,Vajrasana

16. Obesity: Excessive accumulation of fat in the body. It is not only a lifestyle disease but it also leads to many other complications.

17. Hastasana: Also called upward salute which is performed in a standing position.

18. Trikonasana: Also called triangle pose which creates three triangles and performed in a standing position.

19. Diabetes: It is a common metabolic and lifestyle disorder which is caused by high levels of sugar in in blood and urine.

20. Asthma: A chronic respiratory disorder, in which air passage is blocked or narrowed due to swelling of tissues.

21. Sukhasana: It is a relaxing pose and is one of the easy poses performed for meditation.

Chakrasana: It is also called Urdhav dhanurasana or wheel posture is named so as it assembles a wheel.

22. Parvatasana : Parvatasana or Mountain in sanskrit Parvat means mountain and is a sitting/standing pose.

23. Matasyasana: The name Matasyasana has derived from the sanskrit word Matasya meaning fish. It is a primary sitting asana.

24. Hypertension: It is an increased blood pressure exerted on the walls of blood vessels due to blood flowing through them.

25. Tadasana: Also known as palm tree pose which means assuming a standstill pose.

26. Ardh Chakrasana: The name has derived from the sanskrit words Ardha means half and chakra means wheel which together means half-wheel pose.

Shavasana: It is a relaxing posture. The name shavasana resembles the posture of a dead body.

27. Back Pain : Back pain experienced when there is pressure, on spinal nerves, damage to the ligaments or misalignment of the intervertibral discs in the spine.

CHAPTER - 4

PHYSICAL EDUCATION AND SPORTS FOR CWSN

1. CWSN: stands for Children With Special Needs.

2. Divyang: Instead of using the term 'Viklang' we should use the term 'Divyang', a change in name for empowerment of persons with Disabilities.

3. Meaning of Adapted Physical Education: It can be defined as "a diversified programme of developmental activities, games, sports and rhythms, suited to the interest, capacities and limitations of students with disabilities.

4. Concept of Adopted Physical Education: Children with various types of disabilities, such as mental retardation, deafness or any other hearing impairment, speech or language impairment, orthopedic impairment, poor body mechanics and health impairment etc. have the right to develop their abilities through the process of education. So, it becomes the duty of all schools to provide them such opportunities as may help them develop their abilities.

5. Rehabilitation Council of India: It is a statutory body under RCI act, 1992 that came in a force on 31st May, 1993. This council is responsible for regulating training policies and programs for various categories of professionals in the area of disability, uniformly, throughout the country.

6. Organizations promoting disability sports: There are three main organizations which are promoting disability sports. They are special Olympic, Paralympics and Deaflympics.

7. Aim of special Olympic: To create role models who will inspire the children and also motivate parents into sending their children to school and participate in sports and extra-curricular activities.

8. Special Olympic Bharat: SOB is a National Sports Federation registered under the Indian Trust Act 1882 in 2001 and is accredited by Special Olympics international to conduct Special Olympics program in India.

9. Paralympic Movement: The word Paralympic is derived from Greek preposition "para" (beside or alongside). Paralympics are the parallel games to the Olympic and illustrates how the two movements exist side-by-side. Its vision is 'to enable para athletes to achieve sporting excellence and inspire and excite the world.

10. Paralympic Games: It is a major International multi-sport event involving athletes with a range of physical disabilities.

11. PCI: The Paralympic Committee of India is the body responsible for selecting athletes to represent India at paralympic games and other international meets and for managing the Indian teams at the events. The organisation was founded in 1992 as the physically handicapped sports federation of India.

12. Deaflympics: ICSD (International Committee of Sports for Deaf) is the main governing body responsible for the organisation of Deaflympics and other world deaf championships. This was founded in 1924. The games were originally known as 'international silent games' before they became the 'world games for the deaf'. The

most recent name 'Deaflympics was formally adopted in 2001.

13. Aim and objectives of Deaflympics: To organize successful summer and winter Deaflympics, to promote and contribute to the development of opportunities and competitions from grass root level. Also to promote sports for deaf athletes without discrimination for political religious, economic, disability, gender, or race reasons.

14. Strategies to make physical activities accessible for children with special needs: Children with special needs should be involved in physical activities to enhance their motor skills. Various strategies are: (a) Clear communication (b) Modified rules and regulations as per need (c) Encourage community based programs (d) Use different method of instructions (e) Regular medical checkups Use of special equipment strategy

15. Impaired muscle power: It is a health condition that either reduces or eliminates their ability to voluntarily contract their muscle in order to move or to generate force.

16. Limb deficiency: It means total or partial absence of bones or joints as a consequence of trauma or illness,

17. Hypertonia: Athlete with hypertonia have an increase in muscle tension and a reduced ability of muscle to stretch caused by damage to central nervous system.

18. Disability: Any restriction or lack of ability to perform any activity in a manner or within the range considered normal or within the range considered normal for a human being.

19. Physical Disability: Abnormality of physiological and anatomical structure of the body.

20. Mental Disability: The psychological disability that prevents the individual to perform any activity within the range considered normal for a human being.

21. Disorder: A condition characterized by lack of normal functioning of physical or mental process.

Cognitive Disability: A neurological disorder that creates hindrance for an individual to store process and produce information.

22. Emotional Disorder: An ability to develop or maintain satisfactory interpersonal relationship with peers and adults.

23. Autism: Development disability importantly affecting verbal and non-verbal communications and social integration.

24. Exercise Therapy: To accelerate the patient's recovery from injury and disease.

25. ADHD: A behavioural disorder which is common in children.

26. SPD: A neurological disorder in which sensory information is not expressed properly.

27. ODD: A disruptive behaviour disorder, one of the most common mental health disorders found in children.

28. ASD: A complex developmental disorder that affects the normal brain and development.

29. OCD: A mental disorder that brings repeated unwanted thoughts.

30. Disability Etiquettes : A set of guidance for dealing with people having different kinds of disabilities.

CHAPTER – 5
SPORTS AND NUTRITION

1. Balanced diet: A diet that contains right amount of carbohydrates, proteins, fats, minerals, salts, vitamins, roughage and water is called a balanced diet.

2. Carbohydrates: Carbohydrates give us energy to work. Sugar and starch are carbohydrates, Potatoes, rice, bread, banana and grapes are rich sources of carbohydrates. These are called energy giving foods.

3. Proteins: Proteins are nutrients that help to build the body and make new cells. They help us repair worn-out tissues. They are especially important for growing children. They are called body building food. Milk, eggs, cheese, pulses, meat and fish have lots of proteins.

4. Fats: Fats provide us with twice as much energy as carbohydrates. We can store extra fat in our body to be used later. Butter, ghee and nuts are rich sources of fats, too much of fat can lead to diseases like blood pressure, heart problem and obesity.

5. Vitamins: Vitamins are needed by our body in very small amount. They keep us healthy by helping the body fight diseases. They also help our eyes, nerves, gums, skin, etc., to function properly. Vitamins consist of two groups-fat and water soluble.

6. Vitamin A: Keeps the eyes and skin healthy.

7. Vitamin B: This is good for muscles and nerves.

8. Vitamin C: Makes gums strong and heals wounds quickly.

9. Vitamin D: Makes teeth and bones strong.

10. Minerals: Minerals are needed in very small quantities to keep us fit and healthy. Calcium, a mineral, is used for building strong bones and teeth. It is present in milk and green leafy vegetables. Iron is another mineral which helps our blood to carry oxygen. They are called protective foods.

11. Water: Almost two third of our body is made up of water. Water helps us to work well and maintain our

body temperature. We need to drink at least 10-12 glasses of water every day to sustain ourselves.

12. Roughage: The fibre present in food helps to eliminate wastes from the body.

13. Elements of Diet: A diet which contains all the foodstuff necessary to maintain the body in good shape is made up of carbohydrates, proteins, fats, minerals, vitamins and water. These elements are essential for our body and required in a balanced diet.

14. Functions of diet: (a) It provides energy for the various activities of the body. (b) It helps body to grow and replace worn-out tissues. (c) A healthy diet helps control body functions and protects it from diseases.

15. Macro-nutrients: These are the chemical compounds/ elements which humans consume in large quantities to store energy, for example proteins, carbohydrates, fats and water.

16. Micro-nutrients: Vitamins and minerals are commonly referred to as micro-nutrients. They are called micro because our body needs only small quantities of them for survival. Various micro- nutrients are Vitamins A, B, C, D, E and K and minerals such as iron, calcium, magnesium, iodine, etc.

17. Nutritive components of Diet: A balanced diet provides proper nutrition. By understanding the primary components of nutrients we can plan a balanced diet. Proteins, carbohydrates, fats, vitamins and minerals comprise nutritive components of diet.

18. Non-nutritive components of Diet: Non-nutritive food components are materials with no nutritional value added to food and beverages. These ingredients and additives are used to make the food smell better, taste better like diet sodas, food colouring and processed fats.

19. Eating for weight control: We must have healthy eating habits to keep our weight under control. Diet must be balanced with all the nutrients. If the diet is not proper it leads to one being underweight, average, overweight or obese.

20. A Healthy Weight: A Healthy person is one with a BMI between 13.3 and 24.9 A healthy weight is essential a load a baby quality of life as it reduces the risk of heart diseases and hypertension

21. Methods to maintain healthy weight: Some of the methods to ensure a healthy weight are to exercise regular, take balanced diet, check one's calorie intake, avoid too much carbonated beverages, oily Bods and eat lots of fruits and salad

22. Role of Diet performance: A proper diet is essential good performance. The total energy requirement for a person engaged in physical activity ranges from 3500 to 6000 calories. This depends upon the size, physical condition and severity of the activity performed. Adequate supply of proper diet is essential for a good performance. Diet mainly aims to enhance performance. Diet improves body composition and increases strength and speed. It creates more capacity for practicing and training and enhances performance.

23. Diet before competition: One should take a pre-competition diet which is high in carbohydrates. Low in fats and proteins. Sometimes many athletes feel nervous before taking part in competition and avoid eating. Our phosphogen stores should be full to provide constant energy before the competition otherwise it can adversely affect our performance. The meal should be taken at least 3 hours before a performance or exercise.

24. Pitfalls of Dieting: Nowadays people do not have patience. Everyone wants to lose weight very fast so they start dieting. Various drawbacks of dieting are: it impairs functions of various body organs, leads to serious health problems, generates stress and anxiety and also causes exhaustion.

25. Food Intolerance: It means a person has difficulty in digesting a particular food. It leads to problems of digestion. Generally food intolerance is caused by partial or complete inactivity of the enzymes responsible for breaking down or absorbing the food elements. It can be hereditary also.

26. Symptoms of Food Intolerance: Fatigue, pain in joints, dark circles under eyes, diarrhea, nausea, Night sweat, rashes on skin, eczema.

27. Food myths: Food myths prevail all over the world. These are unscientific and lacking in truth. Some of the myths are: eggs are bad for heart, starvation is a proper way to lose weight, a high protein diet is ideal for everyone, don't drink milk after eating fish, eat only bland food to protect yourself from hypertension, etc.

28. Food supplement for children: Food supplements are concentrated sources of nutrients taken as a dietary ton-up. They are given in addition to the regular diet. Food supplements are vitamins, minerals, herbs etc. We take these in the form of pills, capsules, powder, drinks and energy bars. Food supplements can add missing nutrients to diet.

29. Nutrition: The biological and physiological process by which an organism uses food to support its life.

30. Nutrient : A substance that is needed to keep a living thing alive and to help it grow.

31. Diet: A variant of foodstuff. This helps in protecting us from diseases and in the repair of worn-out tissues.

32. Minerals: Protective foods which are needed in very small quantities to keep us fit and healthy. Calcium,

a mineral is used for building strong bones and teeth. It is present in milk and green leafy vegetables.

CHAPTER - 6

TEST AND MEASUREMENT IN SPORTS

1. Measurement: Measurement is the process of estimating the ratio of magnitude of a quantity to a unit of the same type. A measurement is the result of such a process, expressed as the multiple of a real number and a unit, where the real number is the ratio.

2. Importance of measurement: It is important to know the level of achievement in various physical education activities and sports. Measurement is taken to determine the outcome of an event, specific rules, and regulations, dimensions, for preparation of effective planning, comparison purpose, and need of the participants and to know the achievement in future.

3. BMI: The Body Mass Index formulae was developed by Belgium Statistician Adolphe Quetelet. It is an Internationally used measure of obesity.

4. Calculation of BMI: The metric BMI formulae accept weight measurement in either centimeters or metres. $$\text{BMI} = \frac{\text{Weight in kg}}{(Height\ in\ metre)^2}$$

5. Sit and reach test for measurement of flexibility: From long sitting position place your feet against the box. The subject reaches forward along the measuring line as far as possible. Hands are put on top of each other. Reach the maximum beyond toes and record in inches. The position must be held for 2 seconds.

6. Chair stand test for lower body strength: Sit in the middle of the chair, hands crossed over chest. Rise to stand position and then sit in original position, the number of stand-ups performed in 30 seconds is the score. Movement of arms is not allowed.

7. Arm curl test for upper body strength: This test tests the strength in the upper body. The subject performs curl-ups by sitting on chair. The number of curl-ups performed within 30 seconds will be the score of the individual. The arm must be fully bent and fully stretched while performing the movement. Likewise, as per the norms the subject is graded.

8. Chair sit and reach test for lower body flexibility: Sit on the chair, bend one leg and place the foot flat on surface. Now stretch the other leg, knee must be straight. Now reach towards your toes by bending at hip. Hold to your maximum in this position for 2 seconds. The aim is to reach beyond toes up to a few inches.

9. Back scratch test is for upper body flexibility: It measure the flexibility by bringing one hand up at upper back and other hand at lower back. Now try to hold with index finger.

10. 8 foot up and go test for agility: The subject is asked to take 8 steps, turn around the cone and then again take 8 steps and sit on the chair. Time taken will be the score.

11. Six minute walk test: The purpose of this test is to measure aerobic endurance. On the signal the subject walk for 6 minute and then stops. Heart rate is measured and distance covered is measured.

12. Measuring heart rate: There are two methods to check the heart rate. (a) Radial pulse (wrist): Place your index and middle fingers together on the wrist. Find the pulse and count the number of beats you feel within a period of one minute or count for 10 seconds then multiply by 6 or count for 15 seconds then multiply by 4. (b) Monitor method: A heart rate monitor or ECG can be used to get a more accurate heart rate measurement. This is usually used during exercise. During movement, this method gives a clear measurement.

13. Anaerobic work: The work in which the amount of oxygen that the body can supply is less than the amount necessary to perform the task. Anaerobic work can be performed only for short period of time, since an oxygen debt is incurred and there is build-up of lactic acid in the blood stream.

14. Skinfold measurement: Skinfold calipers are used to measure the thickness of fat from various parts of the body and the body density is calculated.

15. SAI Khelo India Fitness Test: These are the fitness tests for school children to provide a comprehensive and inclusive physical fitness and health profile for all school going children across India. It includes flamingo test, plate test, push up test, sit and reach test etc.

16. Objectives of Khelo India programme: Its main twin objectives are mass participation and promotion of excellence in sports.

17. Age Group for Khelo India Fitness Assessment: The age group included is 5-8 years and 9-18 years.

18. Flamingo Balance Test: It is the ability to balance successfully on a single leg. It helps to increase strength of the leg, pelvic and trunk muscles. It is a static balance test within one minute.

19. Plate tapping test: It is a reaction test using an alternating tapping action which measures upper body reaction time, hand eye quickness and coordination.

20. Number of tests in Khelo India Assessment test: There are eight tests. Two tests are for classes 1-3, Directions for Questions: Test and Measurement in

Sports 107 (Flamingo test and Plate tapping test). There are six tests for classes 4-12, (50 m, 600 m, sit and reach, partial curl up, push-ups and modified push up).

21. Basal Metabolic Rate (BMR): You can estimate minimum amount of calorie you need to take into line, which help you evaluate the total number of calories you should provide to your body daily.

22. Computing BMR: Measure your weight, height, age, sex. After entering it in formulae, BMR calculator will show your minimum calorie intake.

23. BMR Formulae: BMR (kcal/day)
Weight+Height - Age + Kcal/day
Where sex is +5 for males and -161 for females.
Results BMR = kcal/day

24. Harvard step test: The subject start performing step ups on 20 inch bench for five minutes continuously. After the signal stop he is asked to sit down now take the pulse for checking his aerobic capacity.

25. SAI: Sports Authority of India (SAI) came into existence as a registered society in 1984. Khelo India Test: Khelo India program has been introduced to revive the sports culture in India.

26. Motor Fitness Test: Ability of an athlete to perform a physical activity.

27. General Motor Ability: Ability to execute different motor movements from the simple ones to the complex ones.

28. Cardiovascular Fitness: Ability of the heart and the lungs to supply oxygen-rich blood to the working muscle tissues, and the ability of the muscles to use that oxygen to produce energy, for movements.

29. Harvard Step Test: A test of aerobic fitness.
Rockport Fitness Walking Test: This test is suitable for individuals with 'low' fitness level.

30. Rikli and Jones Senior Citizen Fitness Test: A battery of tests for measuring upper body strength of older adults.

CHAPTER - 7
PHYSIOLOGY AND INJURIES IN SPORTS

1. Physiology: It is the study of human body functions. How our organs, systems, tissues, cells and molecules within cells work and how their functions are put together to maintain our internal environment is physiology.

2. Exercise physiology: It is the study of how body's structures and functions are changed as a result of exercise.

3. Anatomy: It is a science which deals with body structure and relationship among structures. It includes the structure of muscles, nerves, blood vessels and the various organs of the human body.

4. Skeletal system: It is the framework for the body. Our skeletal structure consists of 206 bones. The skeleton forms a strong framework that supports the body and protects the internal organs like heart, lungs, brain and spinal column. The skeleton works together with muscles enabling the body to move.

5. Muscular system: About half the weight of our body is of our muscles. They make our body move. There are about 650 muscles and each one helps in producing a particular movement. Our muscles work together to perform several movements.

6. Respiratory systems: The cells in our body need oxygen to release energy from the digested food. The process of releasing energy from food is called respiration. The respiratory system consists of organs responsible for taking in oxygen for respiration and releasing carbon dioxide and water vapour, which are the waste products, formed during respiration.

7. Nervous system: The nervous system controls and regulates the activities of all other systems of the body. It is made up of brain, spinal cord and a network of nerve fibres. It receives and sends messages. The brain is like a switch. Nerves are like incoming and outgoing phone lines. The spinal cord is like a group of telephone lines making up a main cable.

8. Types of bones: Bones are classified on the basis of their shapes and structure. There are long bones (humerus, ulna, femur, tibia), short bones (wrist and ankle), flat bones (skull, the ribs and shoulder bones), irregular bones (spinal column) and sesamoid bones. Sesamoid bones are seed like and develop in the tendons, like patella, pisiform, etc.

9. Internal respiration: Exchange of gases between the blood and cells.

10. External respiration: Exchange of gases between the blood and lungs.

11. Blood vessels: There are three types of blood vessels found in circulatory system. They are arteries, veins and capillaries.

12. Arteries: They carry blood from the heart.

13. Veins: They carry blood towards the heart. Veins are such blood vessels through which the blood flows towards the heart.

14. Capillaries: Capillaries connect the arteries and veins. They are the smallest and thinnest vessels in the circulation. The inter-change of gases and substances between blood and tissues takes place here.

15. Vital capacity: The total volume of air that can be voluntarily moved in one breath, from full inspiration to

maximum expiration or vice versa is termed vital capacity.

16. Tidal volume: It is the volume of air moved during inspiration or expiration phase of each breath. The average tidal volume of normal individual at resting condition is about 500 ml of air per breath.

17. I.R.V.: Inspiratory Reserve Volume is the amount of O, inspired as deeply as possible in one breath.

18. Minute ventilation: The amount of air we can inspire or expire in one minute.

19. Cardiac output: Cardiac output is the amount of blood pumped in one minute by either the left or right ventricle of the heart. Cardiac output = Stroke volume x Heart rate

20. Physiological factors determining components of physical fitness: (a) Strength (b) Speed (c) Endurance (d) Flexibility

21. Effect of exercise on muscular system: (a) The size of muscle fibres increases. (b) Capillary density per fibre increases. (c) Blood supply in the muscles increases. (d) Number of mitochondria increases.

22. Effects of exercise on Cardio-Respiratory system: (a) Increase in cardiac output. (b) Increase in Heart rate. (c) Improves the stroke volume. (d) Lowers resting heart rate. (e) Slows down the onset of fatigue. Extracts a greater percentage of oxygen at the cellular level and is able to extract a greater percentage of waste products from the working muscles. (g) Reduces level of cholesterol.

23. Sports injuries: Extra stress/strain put on muscles, facial bones, joints, tendons and ligaments results in injuries to an athlete. These are known as sports injuries.

24. Types of injuries: There are three types of injuries: soft tissue injuries, joint injuries and bone injuries.

25. Soft tissue injuries: These include sprain, strain, abrasion, contusion, incision, and laceration.

26. Joint injuries: Injuries to the muscles, fibre, tendons, ligaments are joint injuries which include dislocation. When bones of a joint are partially displaced it is called subluxation. When bones of a joint are completely displaced it is called luxation.

27. Bone injury: It includes fractures. Fracture is known as broken or cracked bone. Various types of fractures are: green stick fracture, oblique fracture, comminuted, impact, multiple and transverse fracture.

28. Abrasion: It is a soft tissue injury. Abrasion is caused by friction with some equipment or fall. Abrasion is a scraping injury to the skin and part of skin is lost.

29. Contusion: A blow anywhere on the surface of the body, causing bleeding from ruptured small capillaries below the skin while the outer skin remains unbroken. The part becomes blue black in colour. Such injury occurs in hockey, boxing, gymnastics, etc.

30. Symptoms of contusion: Discolouration under the skin. It starts from redness and turns blue black in 2-3 days. There is stiffness around the area, swelling and pain on touching. In severe cases muscles become completely inactive.

31. Laceration: Severe bruise is termed laceration. If the skin breaks and bleeds, the injury is called laceration. Pain and Redness occur with swelling.

32. Incision: It means cut made into the body during surgery. Here in sports it is used as cut because of same sharp object or implement.

33. Sprain: When ligaments are stretched or torn but not with enough force to dislocate the joints. Sprain is caused directly or indirectly by a fall or a blow or knock or jump or slip or slide while walking or running. It is an injury to a joint which results in tearing of ligaments. It is associated with pain and discolouration, swelling and tenderness. In case of severe sprain you are unable to move the affected body part or movement at joint.

34. Mild sprain: In this type of sprain there is slight tearing of some of the ligaments fibres and there is no loss of function of joint.

35. Moderate sprain: There is some rupture of ligaments and there is some loss of function of joint.

36. Severe sprain: In this there is total rupture of ligament and they are also separated from bone and total loss of any movement.

37. Symptoms of sprain: Swelling, inflammation, severe pain, tenderness and the affected part becomes red.

38. Strain: It is injury to muscles generally known as 'muscle pull'. Strain causes tearing and overstretching of muscle fibres. It happens mostly to athletes (sudden overstretching of hamstring and quadriceps muscles) and is common in basketball.

39. Causes of sprain and strain: Caused by direct or indirect fall, blow to the body that knocks a joint out of position, overstretching, dive, after jump land on one side of foot, running on uneven surface or ground, slip or slide, etc.

40. Symptoms of strain: Pain, muscle spasm, muscle weakness, sometimes swelling, inflammation and cramping.

41. Dislocation: It is a joint injury. It is a dislocation of surfaces of bones. The joint is displaced from its original position either luxation or sub-luxation.

42. Luxation: When a joint in which adjoining bones are fully displaced from its normal position.
43. Sub-luxation: When a joint in which adjoining bones are partially displaced from its original position.
44. Fracture: Break or crack in the bone.
45. Types of fracture: Simple, multiple, comminuted, oblique, transverse, impacted and green stick.
46. Stress fracture: It is an overuse injury. It occurs when muscles become fatigued and are unable to absorb added shock. The fatigued muscle transfers the overload of stress to the bone causing a tiny crack called a stress fracture.
47. Causes of stress fracture: Intensity of activity is too rapid, impact of unfamiliar surface, improper equipment, increased physical stress, less flexible shoes, etc.
48. Green stick fracture: The break occurs only part way through the bone. It develops crack without being completely broken. It is common in children.
49. Comminuted fracture: The bone splinters, shatters usually due to a crushing injury.
50. Impacted fracture: When the broken ends of both the bones drive into one another.
51. First aid: It is the immediate care given to a suddenly injured person or a temporary assistance until competent medical care is provided.
52. First aider: It should be quick and reliable to recognize the emergency, decide to help, contact emergency immediately, assess the victim, render the first aid.
53. R.I.C.E: It stands for rest, ice, compression and elevation.
54. Physiotherapy: Includes cryotherapy, thermotherapy, ultra sound, TENS. These modalities seems to reduce pain, edema, and muscle spasm during the first phase of inflammation, permitting early mobilization and reducing the time of disability.
55. Cryotherapy: Rest, ice, elevation and compression after acute injury counteract the body's initial response to trauma. Cryotherapy decreases temperature, inflammation, metabolic rate, muscle spasm and pain.
56. Rehabilitation: After medical treatment and recovery rehabilitation is essential for repair and restoration of strength of the injured part to the normal function or pre-injury level. Unless injured player recovers physically, mentally, functionally and emotionally to participate in physical activity or sports, he should never be allowed to do the same otherwise there are chances of re-injury and that particular part Directions for Questions: Physiology and Injuries in Sports 123 becoming weak. Therefore, to regain the original position rehabilitation of injury is a must for a player.
57. Bruises: These are not clearly seen because the upper skin remains unaffected but inner tissues are damaged. It is an injury on the surface of the body produced by a sharp blow or fall.
58. Physiological changes due to ageing: Human system grows and develops at its own pace. As we grow older the physiological system is affected which causes a lot of changes due to ageing as follows. (a) Efficiency at work reduces. (b) General health problems start. (c) Weakness in muscle structure. (d) Fatigue or easily tired. (e) Reduction in efficiency of cardiorespiratory system. More prone to cardiovascular diseases.
59. Role of Regular exercise on ageing process: (a) One becomes active and energetic. (b) It helps in delaying ageing process. (c) Improvement in efficiency of cardiovascular system. (d) Improvement of physical fitness components such as strength, speed, endurance and flexibility. (e) Reduces recovery time after illness or injury.
Physiological Factors Determining Components of Physical Fitness. • Strength Speed Endurance • Flexibility
60. Ageing It is the process of becoming older. It represents the accumulation of changes in a person over time.
61. Strain is caused by twisting or pulling a muscle or tendon.
62. Abrasion is an injury generally occurs due to friction with certain equipment or a fall over the area where bone is very close to skin.
63. Bruises are not clearly seen.
64. Laceration is a wound that is produced by tearing of soft body tissue.
65. Joint Injuries : • Dislocation of the jaw. • Dislocation of Shoulder joint • Dislocation of Wrist • Dislocation of Hip joint
66. Bone Injuries : • Simple Fracture • Compound Fracture • Complicated Fracture • Green Stick Fracture • Comminuted Fracture • Impacted Fracture
67. First Aid : It is an emergency assistance given to an individual who is ill or injured.

CHAPTER – 8
BIOMECHANICS AND SPORTS

1. Biomechanics: It focuses on the application of the scientific principles of mechanical physics to understand movements and actions of human bodies and its different parts (e.g. a tennis racket).

2. Importance of biomechanics: The main goal of biomechanics is to improve sports performance, technique, improved sports equipment, prevention and management of injury.

3. Kinesiology: It is the scientific study of human motion. It is concerned with the anatomical and physiological elements that carry out movement's specifically-bones, tissues, muscles and nerves.

4. Kinetics: It is that aspect of dynamics which considers the force or forces which cause objects or bodies to move.

5. Force: It is a push or pull by one body acting upon another. It tends to change body's state of rest or motion. It is measured in newton and is denoted by N.

6. Newton's first law: It is the law of inertia. The body will remain in its state of rest or of constant linear velocity unless it is acted upon by some external unbalanced force.

7. Newton's second law: It is the law of acceleration. The acceleration of the body is directly proportional to the force acting on it and inversely proportional to the mass of that body or object, and is in the same direction as that of force.

8. Newton's third law: For every action, there is an equal and opposite reaction.

9. Friction: The force acting along two surfaces in contact which opposes the relative motion of one body over the other is called force of friction. It is independent of the area of contact.

10. Types of friction: There are three types of friction: (a) static friction, (b) kinetic friction, and (c) rolling friction.

11. Static friction: The opposing force that comes into play when one body tends to move over another surface but the actual motion has not yet started is called static friction.

12. Limiting friction: It is the maximum opposing force that comes into play when one body is just at the verge of moving over the surface of another body.

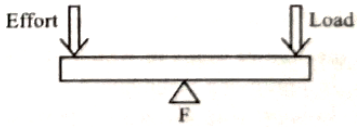
13. Kinetic friction: It is the opposing force that comes into play when one body is actually moving over the surface of another body.

14. Velocity: It refers to speed and direction of a body and involves the change of position of a body per unit of time. Because the body in motion is continually changing position, the degree to which the body's position changes within a definite time span is measured to determine its velocity.

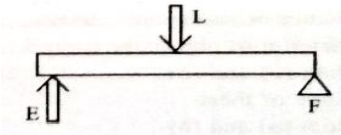
15. Lever: A lever system is a rigid bar that moves on a fixed point called fulcrum when a force is applied to it. Movement is made possible in the human body by lever systems that are formed by our muscles and joints working together.

16. Types of levers and their application in sports: A lever system is made up of three parts: An effort, a load and a fulcrum, effort is provided by muscles, the load is the weight of the body and any resistance and the fulcrum is the joint itself. F.L.E.

17. Frist class lever: In first class lever, the fulcrum (F) is the middle component and lies between effort and load e.g., Extension of elbow during throwing events or tennis stroke.

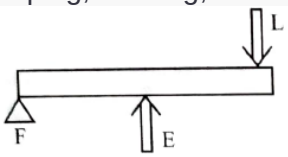


18. Second class lever: In second class lever load is the middle component and lies between fulcrum and effort (E) e.g., going up on toes, calf raise, and layup in basketball.



19. Third class lever: In third class lever system, the effort is the middle component and lies between fulcrum and load e.g. Running, jumping, Kicking, flexion and extension of knee joint.

20. Projectile: An object thrown into space either horizontally or an acute angle under the action of gravity, e.g., putting a shot or Javelin. The object is called a projectile and its path is called a trajectory.



21. Factors affecting projectile trajectory: There are three main factors which affect the trajectory (a) speed of release, (b) angle of release, (c) height of release.

22. Mechanics-It is a branch of physics which is concerned with the description of motion and how forces create motion.

23. Flexion-Flexion is a movement that decreases the angle between two bones attached to a joint.

24. Extension-It is a movement that increases the angle between two body parts.

25. Abduction-It is a movement in the frontal plane which takes the body away from the mid-line or towards an imaginary centre line.

26. Adduction-A movement in the frontal plane that returns a body part towards the body's mid-line or takes it away from the imaginary centre line.

27. Dynamic Friction - It is the opposing force that comes into play when one body is actually moving over the surface of another body is called dynamic friction.

28. Sliding Friction - When a body slides over another body when the friction force exerted by the body is called sliding friction.

29. Rolling Friction - When a body rolls over the surface of another body is called rolling friction.

30. Fluid Friction - When a body moves in fluid or air, then there exists a resistive force which slows down the motion of the body is called fluid friction force.

CHAPTER - 9
PSYCHOLOGY AND SPORTS

1. Psychology: The science of seeking to describe, understand and predict the behaviour of an organism. Psyche (soul) and logos (science). For the first time, Rudolf Goeckel used the word Psychology as meaning the study of the mind. Unfortunately the word mind could not be clearly defined therefore Rene Descartes regarded psychology as a study of consciousness. Consciousness is awareness a domain of personal and private experiences chiefly based on sensation, perception and cognition. Woods worth remarked "first Psychology lost its soul, then it lost its mind, then consciousness, but it still has a behaviour of a kind."

2. Definition of Psychology: According to Me Dougall "Psychology is a science which aims to give us better understanding and control of the behaviour of the organisms as a whole." According to Woods worth: "It is the science of activities of an individual (organism) in relation to his environment." both

3. Meaning of Sports Psychology: Physical education and sports make an art of science dealing with movement, motion, activity, play, recreation, etc. The branch of psychology which is intimately connected with human behaviour on the play field under practice and competitive situations - with a view to bringing about qualitative improvement in performance, is called sports psychology. In sports greater emphasis is on psychological training, coping strategies, mental skills, such as acquisition, motivation, growth and development.

4. Definitions of Sports Psychology:

• According to Browne and Mahoney: "Though its content areas begin with a behavioural emphasis, sports psychology is now looking at dynamics and interactional variables - the athlete's perceptions and cognition."

• According to Cratty: "Educational sports psychology aims at educating physical educators, coaches, athletes and even sports administrators to understand and modify behaviour."

5. Personality: Majority of people consider personality of a human being as only outward appearance. It can also be understood as the effect one leaves on others. It is the total sum of his being and includes physical, mental, social, emotional and intellectual aspects,

6. Definition of personality: According to Munn, "Personality may be defined as the most characteristic integration of an individual's structures, modes of behaviour, interests, attitudes, capacities, abilities and aptitudes.

7. Role of sports in personality development: Sports are conducive to growth and development of the physique. The person carries himself with grace and agility, Games and sports unfold the hidden talents and desires. It provides a large platform for social interaction to develop moral values which are a very essential attribute of personality

8. Aggression: It means forcefulness. It's a feeling of anger resulting in hostile or violent behaviour, readiness to attack and often harmful.

9. Types of Aggression: It is of two types - Direct and Indirect aggression or physical or verbal behaviour. In case of physical Individual intend to harm another person. The second one is Defensive aggression which stimulates your brain called Induced aggression resulting into irritation.

10. Causes of Aggressive behaviour: Some of the reasons are physical health, mental health, family structure. Relationship with others, work or school environment, and life experiences etc.

11. Big five theory: It is also called 'OCEAN". The five basic dimensions of personality often referred as BIG FIVE personality traits.

O - Openness.
C - Conscientiousness
E - Extraversion
A - Agreeableness
N – Neuroticism

12. Carl Jung Theory of personality trait:

He defined eight personality types

(a) Extraverted sensing	(b) Introverted sensing
(c) Extraverted intuition	(d) Introverted intuition
(e) Extroverted thinking	(f) Introverted thinking
(g) Extroverted feeling	(h) Introverted feeling

13. Psychological benefit of exercise: Cognitive development is met while participating in various games and sports. Players, who excel in various sports, are having higher intelligent quotient. Sports makes them mentally tough to deal with actual situations of life. They attain high emotional stability from participation in sports activities.

14. Self-esteem: It is a term used in psychology to reflect person's overall evaluation of his/her own worth. It is what we think about self-positive or negative evaluations. It is a feeling of personal capacity and worth.

15. Goal setting: Goal setting is necessary in games/sports. Achieving performance goal is a sign of motivation. The goal must be set as per your capacity and ability.

16. Types of self-esteem: It is of two types

• Positive • Low self-esteem

Positive self-esteem is a healthy level of self-esteem. One is able to enjoy a great variety of activities. They trust their own judgement and does not feel guilty whereas low self-esteem can result from physical appearance, mental health issues, socio- economic status and peer pressure.

17. Motivation: The word motivation is derived from latin term "Movere" which means to move. It is considered as a process by which the individual is inspired or coaxed in to doing something. To motivate is to induce movement. Motivation can be defined "as any condition that might energize and direct our actions." Crook and Stein.

18. Motive: In order to understand motivation, it is necessary to understands motives, drives and needs. Motive is a tendency within the person directing his thoughts, feelings and actions towards the service of goals or functions. Motives, therefore, are purposes or intentions directing our behaviour. Motive is induced by a need, needs are considered as the backbone of motives. Needs create drive in the organism, thereby increasing the intensity and tempo of action. Motives do three important things:

(a) They mobilize organism energy and energize action.
(b) Direct behaviour towards a goal.
(c) Determine suitable response.

19. Drive: Drive is 'thrust forward' or a force impelling the organism to move towards a pre-determined goal The drive originates either in internal stimulation or stress and strains existing outside the body. It is an impetus to action or an energizer of action. The stronger the drive, the more intense the effort and more persistent the activity in which the individual is already engaged.

20. Importance of motivation in physical education and sports: Motivation is one of the most essential attributes for effective performance. It is the driving force which compels the athlete to accomplish difficult and challenging tasks. Study of elite athletes reveals that they have an exceptionally strong urge, need and drive to achieve. We know the fact that excellence cannot be achieved overnight it is the result of high level of sports skills attained only after years of motivated practice. Secondly successful athletes, with high level of motivation seems to be able to deal with stress and arousal in a wide range of situations. We say: Performance Learning Motivation.

21. Techniques of motivation: In order to motivate players or teams to give their best performance, coaches and sports psychologists uses various techniques to motivate intrinsically as well as extrinsically:

Techniques of Intrinsic Motivation:

(a) Provide successful experience
(b) Develop sense of responsibility
(c) Set realistic goals
(d) Develop interest
(e) Acceptance of praise and criticism

Techniques of Extrinsic Motivation:

(a) Recognition (b) Attention (c) Prizes
(d) Money (e) Position or status
(f) Expectations of others, etc. (g) Scholarships

22. Types of motivation: There are two types of motivation

(a) Intrinsic (b) Extrinsic

23. Intrinsic motivation: Intrinsic means something inherent. Intrinsic motivated behaviour is a behaviour which is motivated by person's innate need to feel competent and self-determining in dealing with his or her environment. It comes from within, a feeling of pure enjoyment or satisfaction and provides a sense of personal competence.

24. Extrinsic motivation: When an individual initiates and sustains an activity as a result of external pulls, attractions, forces, incentives, etc., it is called extrinsic motivation e.g. an athlete takes part in any activity with the object of winning a medal or trophy or securing a position or job. Such motivation is regulated by external means or factors such as reward, prize, recognition, position, etc.

25. Strategies for enhancing Adherence to exercise:

(a) Workout with friends.
(b) Choose an activity you like.
(c) Learn a new activity.
(d) Begin easy and slowly increase your effort.
(e) Cross train or variety of activities.
(f) Pick a fixed time to exercise.

26. Personality- Personality is the combination of unique characteristics of an individual.

27. Endomorphs- These individuals have round physique and limbs are short. They are jolly and sociable.

28. Mesomorphs- These individuals have athletic body and balanced composition. They are very optimistic and risk taker in life.

29. Ectomorphs- These individuals are slim and have elongated limbs. They are very irritable and have anxiety.

30. Openness- Person who likes to learn new things, new concepts and enjoy new experience.

31. Conscientiousness- Persons who are organized, systematic, laborious and complete in all respects.

32. Extroversion- Persons who are energetic, talkative and assertive.

33. Agreeableness- Persons who are friendly, cooperative, compatible, kind and gentle.

34. Neuroticism - Persons who are characterized by sadness, moodiness and emotional instability.

35. Motivation- A general level of arousal of action or the state of readiness to act in a specific situation connected to goals or consequences.

36. Exercise adherence- To maintain an active involvement in physical exercise. An individual with strong exercise adherence continue participating in physical activity despite opportunities and pressures to withdraw.

37. Aggression- Any behaviour directed toward intentionally harming or injuring another person or any living being or objects around us.

38. Hostile or Reactive aggression- Primary goal of such aggression is to inflict injury or psychologically harm someone.

39. Instrumental aggression- This kind of aggression may reflect a violent action but not necessarily hostile behaviour. The aim of such behaviour is just to gain advantage over the opponent and take away the external reward rather than to injure him/her.

40. Definitions of Sports Psychology:

"Psychology is a science of behaviour or scientific study of the behavioural activities and experiences." Sports psychology is the 'scientific study of the individual, which deals with behaviour and experience.' - Wood, Worth John B. Watson

"Sports psychology is the investigation of human and animal behaviour and of the mental and physiological processes associated with the behaviour" - Howilson and Jackson

"Sports psychology is an area which attempts to apply psychological facts and principles to learning performance and associated human behaviour in the whole field of sports" - John D. Lawther

CHAPTER – 10
TRAINING IN SPORTS

1. Training: The term 'Training' means 'the process of preparation for some task. This term is widely used in sports. This process invariably extends to a number of days, months and years.

2. Sports training: The term 'sports training' denotes preparing the sports persons for the highest level of performance. Sports training is the physical, mental, intellectual, psychological and moral preparation of an athlete or a player by means of physical exercises.

3. Aim of sports training: The aim of sports training is to lead a sportsman to the highest level of performance through physical, technical, intellectual, psychological and moral preparation by means of physical exercise.

4. Training methods: Sports training methods include, among others, continuous method, interval training method, repetition method, circuit training method, fartlek training method, weight training means and methods and plyometric training means and methods.

5. Strength: It is the ability of a muscle to exert force in single muscle contraction or to overcome resistance. e.g. Medicine ball throw.

6. Maximum strength: The greatest force that is possible to overcome a resistance in a single maximum contraction, eg, weightlifting, shot put, discus, hammer throw as part of track and field events.

7. Explosive strength: It is the ability of a muscle to get over resistance of sub-maximum intensity of stimulus as fast as possible, e.g., sprints, jumps, smashing in volleyball, etc.

8. Strength endurance: It is the ability of muscles to get over resistance of medium intensity of stimulus for as long a time as possible. For example, long distance races, swimming, distance cycling, wrestling, boxing, etc.

9. Endurance: A very important component of physical fitness, it is defined as "tendency of the body to work for long without getting fatigued." It is the ability of the muscle to sustain localized muscle group activity for extended period of time. For example, long distance running. Methods of endurance development. There are three methods of developing endurance: (a) Continuous method (b) Interval training method and (c) Fartlek training method.

10. Continuous method: This method consists of long distance running without break, recovery or pause. This method is further divided into following parts. Slow continuous method: It consists of long distance running

slowly without any break or pause with low intensity, e.g. cross country run.

Fast continuous method: In this method, intensity is higher but requires less time. The duration is upto 20 minutes without any break. The heart rate reaches 160-180 beats per minute. Fast pace method is effective for improving amount of oxygen consumed by the working muscles, heart and lungs. e.g. Aerobic dance.

Variable pace method: It is a combination of slow and fast continuous methods. The running is done with variable intensity. The activity is done continuously but the pace is changed. This can be done from 15 minutes to 60 minutes and the heart rate should remain between 140-180 beats per minute, e.g. Fartlek.

11. Fartlek: It means 'speed play. It is a type of cross country running usually conducted over hilly regions. Along with running, some exercise may also be included in this type of training.

12. Speed: Quickness of movement of limb, whether this is the leg of a runner or arm of the shot putter. In other terms speed is known as the ability to make rapid movements of the same type in the shortest possible time.

13. Reaction speed: It enables a sportsperson to react quickly and effectively to different types of stimuli, i.e., visual, auditory and tactile.

14. Acceleration speed: It is the ability to increase speed from stationary position or jogging to running and sprinting. This form of speed, to a great extent, depends upon explosive strength, frequency of movement and technique.

15. Speed Endurance: Ability to perform motor movements as quickly as possible under conditions of fatigue. It is a combination of speed and endurance abilities.

16. VO_2 maximum: Amount of oxygen consumed by the working of muscles per minute.

17. Flexibility: It is the ability of the body to stretch without any damage or strain, in simple terms we can say the range of motion around joint is called flexibility.

18. Circuit training: Circuit training is a formal type of training in which an athlete goes through a series of selected exercises that are arranged in a circuit or performed in a sequence. There are usually 7-10 stations in a circuit. The athlete performs a specific exercise at each station and then goes to the next station. Circuit training is designed to develop strength, endurance, speed, flexibility and neuromuscular coordination.

19. Dynamic strength: Also known as isotonic strength, which comes into play by the muscle movements i.e., muscles' contraction or muscles' extension.

20. Static strength: The ability of the muscle to act against resistance without considerable change in its length.

21. Isometric or Static exercises: Those exercises which are not visible. In these exercises, a group of muscles carries out tension against the other group of muscles without any changes in the length of the muscles.

22. Endurance: The ability to sustain an activity exert itself and to resist, withstand, recover from and have high degree of immunity to injuries or fatigue.

Basic endurance: The ability to perform movements in which a large number of body muscles are involved and the movements are performed at a slow and constant pace for a longer duration.

General endurance: The ability to tolerate endurance exercises and satisfactorily resist fatigue caused by different types of activities.

Specific endurance: The ability to resist fatigue caused by a particular sport activity.

23. Interval training method: Usually used for the improvement of speed and endurance. This method is based on the principle of effort and recovery.

Flexibility: The range of motion of joints or the ability of joints to move freely. Two types of flexibility are active flexibility and passive flexibility.

24. Coordinative abilities: Abilities that are relatively stabilized and generalized patterns of motor control and regulation process.