COMMON PRE-BOARD EXAMINATION: 2022-23

Class-XII Subject - PHYSICAL EDUCATION (048)

MARKING SCHEME

Date: …. /… /2023

General Instructions:

1) The question paper consists of 5 sections and 37 Questions.

2) Section A consists of question 1-18 carrying 1 mark each and is multiple choicequestions. All questions are compulsory.

3) Sections B consist of questions 19-24 carrying 2 marks each and are very shortanswer types and should not exceed 60-90 words. Attempt any 5.

4) Sections C consist of Question 25-30 carrying 3 marks each and are short answertypes and should not exceed 100-150 words. Attempt any 5.

5) Sections D consist of Question 31-33 carrying 4 marks each and are case studies.There is internal choice available.

6) Section E consists of Question 34-37 carrying 5 marks each and are short answertypes and should not exceed 200-300 words. Attempt any 3.

SECTION -A

1. The Committee responsible for liaison with Print media is the _____ Committee.

a. Technical

b. Logistics

c. Marketing

d. Finance

Ans: **c. Marketing**

2.Which of the following tournament helps save time?

a. Knockout tournament

b. League tournament

c. Combination tournament

d. Round Robin tournament

Ans: **a. Knockout tournament**

3.Deformity of the legs is known as

a. Scoliosis

b. Lordosis

c. Knock knees

d. Kyphosis

Ans: **c. Knock knees**

4. Identify the asana:

a. Gomukhasana

b. Mtsyaasana

c. Paschimottasana

d. Ardh Matsyendrasana

Ans: **b. Mtsyaasana**

5.Which asana is of side twist pose?

a. Shavasana

b. Chakrasana

c. Ardha Mastendrasana

d. Parvatasana

Ans: c. **Ardha Mastendrasana**

6.Which is the first step used in classification for Paralympics

a. Medical Assessment

b. Functional Assessment

c. Observation

d. Competition

Ans: **a. Medical Assessment**

7. Nutrition is _____Substance.

a. Biological

b. Chemical

c. Energy

d. Mechanical

Ans: b. **Chemical**

8. Which is NOT a Micronutrient?

a. Macro Minerals

b. Trace Minerals

c. Vitamins

d. Protein

Ans: **d. Protein**

9. 50 Mtr Dash is conducted to test:

a. Strength

b. Acceleration

c. Flexibility

d. Endurance

Ans: b. **Acceleration**

10. Which test can be applied to test Endurance?

a. Sit and Reach

b. Push Ups

c. 600 Mtr Run/Walk

d. Plate Tapping Test

Ans: **600 Mtr Run/Walk**

11. A fracture in which the bone breaks diagonally is called a _____ fracture.

a. Greenstick

b. Impacted

c. Oblique

d. Transverse
Ans: **c. Oblique**

12.The volume of blood pumped during one beat (contraction) is called,

a. Blood flow

b. Stroke volume

c. Veins and arteries

d. Capillaries
Ans: **b. Stroke volume**

13. Friction is a _____

a. Magnetic Force

b. Non-contact Force

c. Contact Force

d. Couple Force

Ans**: c. Contact Force**

14. The motion of a projectile is due to two separates simultaneously occurring components of motion and they are

a. One along the vertical

b. One along the horizontal

c. both a and b

d. none of above
Ans**: c. both a and b**

15. A person who is bold and outgoing is an

a. Introvert

b. Extrovert

c. Ambivert

d. Somatotype
Ans: **b. Extrovert**

16. Which of the following is a legitimate behaviour?

a. Hostile Aggression

b. Instrumental Aggression

c. Assertiveness

d. Proactive Aggression
Ans: **c. Assertiveness**

17. Meso cycle is training of

a. one week

b. 4 to 10 days

c. 3 to 6 weeks

d. Three 3 months
Ans: **c. 3 to 6 weeks**

18. Under which kind of strength would you put Shotput?

a. Strength Endurance

b. Explosive Strength

c. Maximum strength

d. Speed Strength

Ans: **c. Maximum strength**

SECTION -B

19. Why controlling function is important in sports event management?

Controlling refers to all the processes that leaders create to monitor success. It involves establishing performance standards, measuring actual performance and comparing them for irregularities. It is a important function of management as controlling involves imparting instructions to employees and also ensuring that those instructions are followed. To organise any sports event, instructions given to members of the organising committee towards achieving common goal i.e., organising a sports event in this case, must be carried out sincerely for an event to be successful. Higher order management people control lower order people to ensure efficient and effective use to resources.

20. What is meant by Round Shoulders? Mention a few exercises to correct it.

Round shoulders is a postural deformity in which shoulders are bent forward from the ideal alignment, thereby giving a narrow curve to upper back. It leads to postural deviations such as hyperkyphosis, or hunch back and anterior head carriage, or forward head posture. Over time, these postural conditions can progress and lead to other conditions such as chronic neck pain, thoracic outlet syndrome and lack of shoulder mobility.

Corrective Measures

Most important measure to correct rounded shoulders is strengthening and stretching of muscles and trying to correct the imbalance of muscles by doing chest stretches, T stretch, wall stretch, Handclasp stretch and planks, pull ups, reverse shoulder stretch, etc. Developing the habit of keeping the spine straight is also helpful in correcting rounded shoulders. Yoga asanas like *Chakrasana, Dhanurasana,* can be useful in correcting rounded shoulders.

21.Write in detail the benefits of Gomukhanasana.

Benefits

1. The stretch at the hamstrings helps in gaining flexibility
2. Gomukhasana enables greater flexibility of the hip joint.
3. It stretches and tones the muscles of the chest.
4. This asana increases blood supply to the legs and arms.
5. The flexion of the knee joint can be useful to heal certain kinds of weakness in the knees (provided there is no ligament tear).
6. Improves the functioning of the abdominal organs and digestion.
7. Stretching the abdominal area also burns the unnecessary fat at the tummy area and tones the entire torso.
8. Biceps and triceps muscles are strengthened and there's increased flexibility of the shoulder and the upper arms.

22. Discuss the importance of Protein in regard to sportsperson.

During exercise and training, muscle bulk is increased and also there is breakdown of muscle tissues. During prolonged exercises, protein is oxidised to provide energy.
Protein and amino acid supplementation is becoming widely popular in athletes. Markets are flooded with protein and amino acid supplements.

23. What is a sprain? Write its cause, prevention and treatment.

Sprain is the stretching or tearing of ligaments, the fibrous tissue that connects bones in the joints. A sprain occurs when you overextend or tear a ligament while surely stressing a joint. The most common location for a sprain is in your ankle.

Cause - A sprain occurs when one overextends or tears a ligament while severely straining a joint.

***Prevention* -** Regular stretching and strengthening exercises for any kind of sport can be the preventive measure for such kind of sports injury.

Treatment – RICE (rest, ice, compression and elevation)

24. Describe important of self-talk by athletes in sports?

Self-talk is an effective technique to control thoughts and to influence feelings. Thoughts and feelings can influence self-confidence as well as performance. Sports scientists support for the use of self-talk strategies to improve performance in exercise and sport tasks. Every athlete during any action or performance may have thoughts that come into their mind, especially during competition it can be either positive or negative, these thoughts are a form of self-talk. The athlete must learn to control his thoughts and to structure them to his advantage. This is effectively accomplished through self-talk, the athlete must carefully pre-select the actual words and phrases used during self-talk and consider them for maximum effectiveness. The coach or sport psychologist can assist the athlete in this regard.

SECTION - C

25. What is menstrual dysfunction? Write in brief.

Menstrual dysfunction is an abnormal condition in a woman's menstrual cycle. Normal range of the menstruation cycle is 21 to 35 days. If it happens earlier than 21 days or after more than 35 days, then it's a problem. Other menstrual problems include missing three or more periods, menstrual flow heavier or lighter in comparison with usual, cycle happening longer than seven days, any pain, cramping or vomiting during period, bleeding after menopause etc.

Causes of abnormal menstrual cycles or menstrual order are: overweight, stress, dietary disorder, disease, sudden change in exercise schedule, travel, other medical complications etc.

26. Discus about Special Olympic:

Special Olympics is the world's largest sports organization for children and adults with intellectual and physical disabilities, providing year-round training and competitions to 5 million athletes and Unified Sports partners in 172 countries. Special Olympic for children with intellectual disabilities.

The mission of Special Olympics is to provide year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities, giving them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in events like Athletics (Track and Field), Badminton, Basketball,ect.

There are a large number of benefits for people with intellectual disabilities as a result of participating in activities organized by Special Olympics. Apart from physical and health benefits, it provides psychological benefits including higher self-confidence, self-esteem and social competence. The transformative power of

sports in instilling confidence, improving health and inspiring a sense of competition lies at the core of Special Olympics.

27.writr the **beneficial non-nutritive factors of foods:**
Phytochemicals- Phytochemicals are chemical compounds produced by plants, generally to help them thrive or thwart competitors, predators, or pathogens. The name comes from Greek phyton, meaning 'plant'. They are found in fruits, vegetables, grains, beans

Risk of cancer can be reduced by eating more colourful vegetables, fruits, and other plant foods that have certain phytochemicals in them. Some of these phytochemicals are Beta carotene and other carotenoids in yellow, red, green vegetables and fruits, flavonoids in green tea,
Anthocyanins: Anthocyanins give grapes, blueberries, cranberries, and raspberries their dark colour. They have been shown in the laboratory to have anti-inflammatory and anti- tumour properties

Flavonoids or isoflavones: These are found in vegetables, fruits and grains like soybeans, chickpeas and may act a little bit like oestrogen. The oestrogen-like
180 compounds in these plants are called phytoestrogens. These help in lowering the risk of osteoporosis, heart disease, breast cancer and symptoms of menopause

28. Explain type of Injuries
Skin injuries:
Abrasion – injury caused by falling on rough or firm surface.Laceration – tears in the skin.Incision – cut caused by a sharp edge of an object.Puncture wound – wound caused by piercing by a sharp and pointed object. Avulsion – tearing away of a part of the skin.

Soft tissue injuries (eg., muscles, ligaments)

Contusion – bruise caused by a direct blow to some part of the body. eg., knee of a player knocks against the thigh of another person.
Sprain – injury of ligament of joints, caused by the violent overstretching of ligament in a joint or the movement of the joint in abnormal directions. It is characterised by pain, tenderness, swelling at the joint.
Strain – injury of muscle or tendon, three types– mild, moderate, severe.
Joint injuries
Joint injuries are very common in sports. They are known as joint dislocation. "Dislocation is the displacement of contiguous surfaces of two or more bones which are in a joint." It is caused by an external force which forces the joint to move beyond the limits of a joint. If the joint is forced to move in an abnormal direction, this dislocation can be a complete or a partial displacement of the bones.

29. Write **types of equilibrium:**

1. Static equilibrium.
2. Dynamic equilibrium.

Static Equilibrium

For a body or an object to be in static equilibrium it must not be moving or rotating. All the force and torques acting on the body or object must add up to zero.

For an object or body to be in a static or static equilibrium, where it is completely motionless it must meet 3 conditions:

1. The sum of all the vertical forces acting on the body must be zero
2. The sum of all the horizontal forces acting on the body must be zero.
3. The sum of all torques must be zero.

Static equilibrium can be defined as a state when a body is at rest or completely motionless.

Static equilibrium is the balance of the body during rest or stationary position.

Dynamic equilibrium

Dynamic Equilibrium can be defined as a state when all the applied and inertial forces applied to a moving body are in balance, resulting in movement with unchanging speed or direction. To control the equilibrium and achieve balance, stability needs to be maximized.

When the body or an object is moving with a constant velocity - that is with no change in speed or direction it is said to be in dynamic equilibrium.

Dynamic equilibrium or dynamic stability is a balance of the body during movement.

Example: Body position maintained by a sprinter while running on the track, Cyclist while cycling, dribbling of the football by a soccer player etc

30.What is Big Five Theory?

important trait approach which can provide essential insights into the key elements of personality is of the Big Five Factor personality model offered by Paul Costa and Robert McCrae.

Openness to Experience (Imaginative vs Narrow Interest):

Openness refers to dimension of personality which ranges from being imaginative, humorous, intellectual, creative, curious, having broad interests, open to ideas at one end to being closed to experience, suspicious and rigid at the other.

EXTRAVERSION (Enthusiastic vs Reserved)

Extraversion refers to dimension of personality which ranges from having enthusiasm, energy, positive emotions, talkativeness, assertiveness at one end to being reserved, sober and cautious at the other. An individual who scored high on extraversion is characterized by high sociability, is outgoing and has a tendency to seek stimulation in the company of others.

CONSCIENTIOUSNESS (Organized vs Easy-going)

Conscientiousness refers to well-organised, careful, responsible, hardworking and dependable individuals at one end to being relaxed and easy going, spontaneous, disorganized and careless.

AGREABLENESS (Friendly vs Un-Cooperative)

Agreeableness refers to compassionate behaviour of an individual. Dimensions of agreeableness range from being good-natured, cooperative, trusting at one end to being suspicious, irritable and uncooperative at the other.

NEUROTICISM (Composed vs Nervous)

Neuroticism focusses on the emotional stability on an individual. This trait refers to dimensions of personality which range from being poised, calm and composed at one end to nervous, anxious and excitable at the other. Individuals reflecting high neuroticism are characterized by the tendency to experience unpleasant emotions, and are often found to demonstrate impulsive and hostile behaviour.

SECTION - D

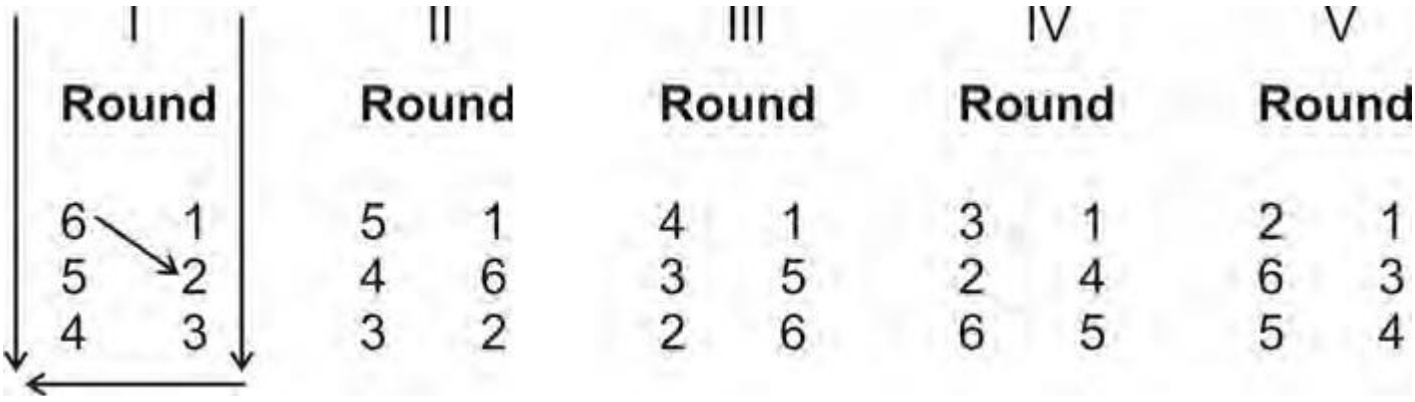
31. what is league mtournament? Draw the fixtures of 6 team and 7 team:

Cyclic Method

In Cyclic Method, one team will be fixed in position and the other will be placed in rotation to complete the cycle. In this method, two situations may arise, first if teams are even numbered, second situation if teams are odd numbered. Let's see how to set fixtures in these two situations.

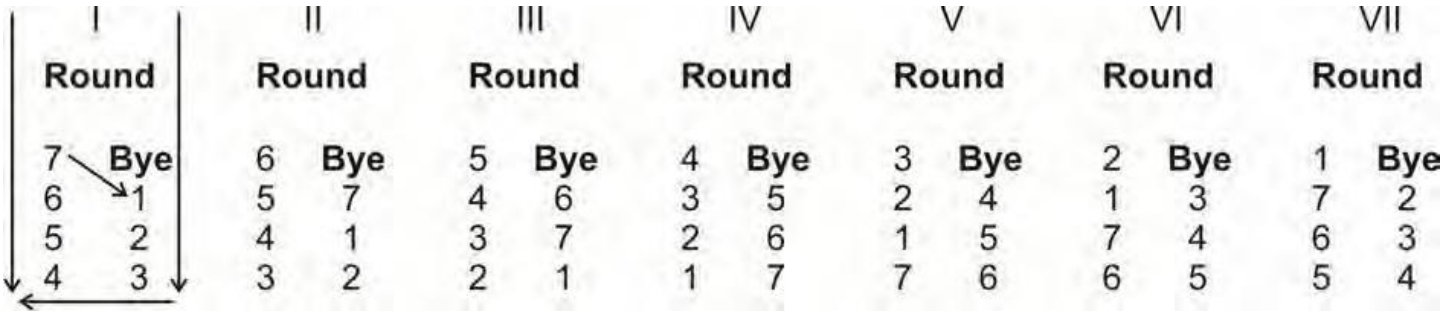
Even number of teams in tournament does not require giving of any bye to any team and to find out number of rounds, formula will be number of teams – 1.

Total number of teams= 6 Total number of rounds = 6–1 = 5



In order to draw fixture for odd number of teams one bye will be given to one team in one round and in next round another team will get a bye. Rounds in the tournament will remain the same.

Total number of teams = 7 Total number of rounds = 7



I Round		II Round		III Round		IV Round		V Round		VI Round		VII Round	
7	Bye	6	Bye	5	Bye	4	Bye	3	Bye	2	Bye	1	Bye
6	1	5	7	4	6	3	5	2	4	1	3	7	2
5	2	4	1	3	7	2	6	1	5	7	4	6	3
4	3	3	2	2	1	1	7	7	6	6	5	5	4

32. Explain in detail Advantages of Physical Activities for CWSN:

It is no secret that physical activities are an important aspect of a healthy lifestyle and can provide significant benefits for children in all developmental stages. Children with special needs have less opportunities to be less physically active and, therefore, are at higher risk for complications associated with inactivity. Regular physical activity for children with special needs provides physical, emotional and social advantages.

1. **Physical benefits –** Scientific studies of disability groups have demonstrated that participation in physical activity and sport leads to improved levels of well-being and physical health. Children with intellectual disabilities may have additional physical disabilities resulting in below age-level performance in typical motor skills.

2. Mode of Recreation and Fun - CWSN frequently miss out on social activities, recreation and fun. Participation in extracurricular and sports activities can help them overcome this obstacle, providing them with the ability to engage in social interactions, make friends and initiate social skills.

3. **Improved Emotional Health -** Including physical activity in a healthy lifestyle is proven to decrease rates of depression. CWSN often tend to have more emotional problems like depression. Participating in regular exercise can be a life-changing benefit by improving mental health and wellbeing. Physical activity can also improve general mood and wellness, which aids in empowering the lives of children with special needs.
4.**Channelizing the Surplus Energy –** Children with disabilities like ADHD display hyperactivity which, if appropriately directed, can bear positive results related to cognitive benefits and constructive behaviour.
5.Psychological benefits – Regular participation in sports and physical activities is not just beneficial for the body, it is beneficial for the mind, too. Physical activity improves general mood and wellness in CWSN by improving their self-esteem, social awareness, and self- confidence, all of which are factors essential for empowering their lives.
6. **Healthy lifestyle –** CWSN are about twice as likely as other children to be overweight or obese often due to the greater likelihood of being sedentary due to their disability.
7. **Behavioural Benefits –** The energetic nature of physical education leads to cognitive improvements in CWSN, allowing them to develop skills that they may not develop in a traditional classroom setting.

33. write Advantages and disadvantages of friction in the **field of sports:**

Advantages

Friction is essential in the field of sports. Without appropriate friction, we will not be able to grip any sports equipment effectively. The advantages of friction in various sports can be explained as follows:

Athletics: In Athletics, the shoes (spikes) are designed to increase friction so that better speed can be generated. The shoes used for short-distance running events have spikes in the front potion only. Whereas the long-distance runner uses completely different shoes.

Badminton: The grip in badminton plays a major role in performing a shot perfectly during a match. That is why a good grip in rackets, will increase the friction with the hand, helping the shot to count and preventing the racket from slipping.

Basketball: Friction between the shoes and the court helps players to maintain control of movement. They wipe their shoes often to get more friction for better movement control.

Cricket: The cricket players, essentially the fielders wear shoes that have spikes. The helps them increase the friction with the ground and hence, helps the cricketer during the run-up for balling, running between the wickets, and preventing from slipping

Cycling: The friction between the tires and the surface prevents cyclists from slipping and skidding. The friction between the brakes and the wheel help cyclists slow down their bikes.

Football: In Football, a footballer kicks and catches the ball. Friction helps him/her to run, change and maintain his/her position on the ground. Better friction helps him/her to tackle the opponent correctly.

Gymnastics: It is due to friction that a gymnast is able to perform actions on the Horizontal bar. In fact, he uses lime powder on his hands to increase the friction between his palm and the bar

Javelin: Friction between the hand and javelin allows the thrower to grip the javelin and friction between shoes and track helps them to generate a perfect ground reaction force for throwing the javelin in the right direction. Without friction, the javelin would just fall out of their hands.

Running: Friction between the shoes and the track enables an athlete to run fast, deaccelerate, stop and change direction. If friction is low, the athlete would slip and even fall.

Soccer: In soccer also number and size of spikes between a striker to a defensive player are different, this technical difference is based on the type of friction required by the players.

h**Weightlifting:** In weightlifting, the weightlifters needs more friction between their feet and the floor to prevent slipping while lifting heavy weights, for which they use specially designed shoes.

Disadvantages

Bicycling: During cycle racing the tires get heated up due to friction. Due to more heat, tires may burst and it may lead to serious accidents.

Weightlifting and Gymnastics: In weightlifting and gymnastics, the skin in the palm gets damaged due to friction and the athlete even may slip while performing the lift. Hence, gymnasts and weight lifters are advised to use powder on their palms and wear special shoes to maintain appropriate friction

Pole-Vault: During Pole-Vault, a vaulter may lose grip on the pole if less friction is there between palms and pole. Hence, pole vaunters are advised to use adhesive on the palm to increase friction and perform correctly.

Friction makes movements difficult: Any time you want to move an object, friction can make the job more difficult, as movement is directly affected by mass and force applied and also on the surface condition.

Excess friction means extra energy: in other words, more friction means more force to overcome it and more force means more energy. Thus, energy is wasted due to friction.

Consequently, it can be said that it is friction can be is advantageous or disadvantageous depending on the use, time, and place of using it. To some extent, some force of friction is required in various sports. The requirement may differ or vary from sport to sport.

SECTION - E

34. Explain Asthma. Write about the procedure, benefits and contraindications of Paschimottanasana.

Asthma is a chronic (long-term) condition that affects the airways in the lungs. The airways are tubes that carry air in and out of your lungs. If you have asthma, the airways can become inflamed and narrowed at times. This makes it harder for air to flow out of your airways when you breathe out.

Paschimottasana

The word paschimottasana comes from the Sanskrit words paschima meaning west or back of the body and uttana meaning intense stretch or extended. In this asana one has to sit and intensely stretch the back forward.

Technique

1. Sit, stretching both the legs together in front, hands by the side, palms resting on the ground. Fingers should remain together pointing forward.

2. Loosen your back muscles and bend the body forward as far as it is possible.

3. Maintain this position and loosen your hands and place them where they are comfortable. It would be better if they are put on the thighs.

4. Practice it daily and keep bending forward a little more. Finally hold the big toes with forefingers of respective hands and place the forehead on the knees.

5. After a few seconds raise the head, release the toes and come to the original position.

Breathing awareness

Breathe slowly and deeply during the final position or release breath out if holding for a short duration.

Inhale while returning to the starting position.

Benefits

1. It stretches the muscles of the back from head to the ankles. It contracts the muscles of the anterior part of the body.
2. Improves the process of respiration and the functions of the intra-abdominal glands, especially the secretions.
3. Improves flexibility of the lumbar region, the hips and thighs (back side of thighs and calves).
4. Massages and tones the abdominal and pelvic region including all organs such as the liver, pancreas, kidneys, adrenals, spleen and intestines.
5. Improves blood circulation in the back region and tones the spinal nerves.
6. Improves alignment of the vertebral column.

Contraindications

In case of a painful and enlarged liver or spleen, herniated discs or acute appendicitis you should not do paschimottanasana until you are relieved of the symptoms.

35.Explain in detail SAI KHELO Fitness Test In School Age group 9 to 18

AGE GROUP: 9-18+ YEARS | CLASS 4 to 12 For Class 4 to 12,

BODY MASS INDEX (BMI)

Purpose: Body Composition refers primarily to the distribution of muscle and fat in the body. Body size such as height, lengths and girths are also grouped under this component.

Infrastructure/Equipment Required: Flat and Clean surface, Weighing Machine, Stadiometer/Measuring Tape pasted on a wall

Procedure:

Measuring Height Accurately

Remove the participant's shoes, bulky clothing, and hair ornaments, and unbraid hair that interferes with the measurement. Take the height measurement on flooring that is not carpeted and against a flat surface such as a wall with no moulding. Have the participant stand with feet flat, together, and back against the wall. Make sure legs are straight, arms are at sides, and shoulders are level.

Measuring Weight Accurately

Use a digital scale. Avoid using bathroom scales that are springloaded. Place the scale on firm flooring (such as tile or wood) rather than carpet. Have the participant remove shoes and heavy clothing, such as sweaters. Have the participant stand with both feet in the center of the scale. Record the weight to the nearest decimal fraction (for example, 25.1 kilograms).

Scoring: The test performed is Body Mass Index (BMI), which is calculated from body Weight (W) and height(H). BMI = W / (H x H), where W = body weight in kilograms and H = height in meters.

ABDOMINAL (PARTIAL CURL-UP)

Purpose: The curl up test measures abdominal muscular strength and endurance of the abdominals and hip flexors, important in back support and core stability.

Infrastructure/Equipment Required: Flat clean cushioned surface with two parallel strips (6 inches apart), Stopwatch, Recording sheets, Pen

Procedure: The subject lies on a cushioned, flat, clean surface with knees flexed, usually at 90 degrees, with hands straight on the sides (palms facing downwards)

Scoring: Record the maximum number of Curl ups in a certain time period (30 seconds).

PUSH UPS (BOYS)/MODIFIED PUSH UPS (GIRLS)

Purpose: Upper body strength endurance, and trunk stability.

Infrastructure/Equipment Required: Flat clean cushioned surface/Gym mat

Procedure: A standard push up begins with the hands and toes touching the floor, the body and legs in a straight line, feet slightly apart, the arms at shoulder width apart, extended and at a right angles to the body. Keeping the back and knees straight, the subject lowers the body to a predetermined point, to touch some other object, or until there is a 90-degree angle at the elbows, then returns back to the starting position with the arms extended.

Scoring: Record the number of correctly completed pushups.

SIT AND REACH

Purpose: Common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test is important because tightness in this area is implicated in lumbar lordosis, forward pelvic tilt and lower back pain.

Infrastructure/Equipment Required: Sit and Reach box with the following dimensions: 12" x 12" (sides) 12" x 10" (front and back) 12" x 21" (top).

Procedure: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the Sit and Reach box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down.

Scoring: The score is recorded (difference between initial position and final position), in cm and mm, as the distance reached by the hand.

600 MTR RUN/WALK

Purpose: Cardiovascular Fitness/Cardiovascular Endurance

Infrastructure/Equipment Required: Stopwatch, whistle, marker cone, lime powder, measuring tape, 200 or 400 mts with 1.22 mt (minimum 1 mt) width preferably on a flat and even playground with a marking of starting and finish line.

Procedure: Participants are instructed to run 600 mts. at the fastest possible pace. The participants begin on signal, "ready, start". As they cross the finish line, the elapsed time should be announced to the participants.

Scoring: Time taken for completion (Run or Walk) in min and sec.

50 MTR DASH (STANDING START)

Purpose: Determines acceleration and speed

Infrastructure/Equipment Required: Measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 60 metres.

Procedure: A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line.

Scoring: Time taken for completion.

36.Explain**Projectile in Sports?**

A projectile is a force that acts under the influence of gravity and air resistance. A projectile would travel in a continuous straight line if gravity were not present. A projectile is any object which once projected or dropped continuously in motion by its inertia and is influenced only by the downward force of gravity. A projectile is an

object upon which the only force acting is gravity. Projectiles travel with a parabolic trajectory due to the influence of gravity.

In simple words, an object in flight after being thrown a project is called projectile motion.

Examples from sports involve projectile motion:

Objects acting as projectiles: basketball, football, shot-put, hammer, discus, javelin, golf ball, volleyball, tennis ball, etc

The body acts as a projectile in high jump, long jump, gymnastics, diving, figure skating, ski jumping etc.

The motion of a projectile is due to two separates simultaneously occurring components of motion

(a) One along the horizontal direction

(b) Other along the vertical direction

- With constant acceleration due to force of gravity

FACTORS AFFECTING PROJECTILE TRAJECTORY/ FLIGHT **PATH**

(a) **Gravity-** Gravity is the force exerted by the earth on any object towards the centre of the body, and it is directly proportional to the mass of the body. Without gravity, the body will travel in a straight line after being thrown.

(b) **Air Resistance-** Several vital factors bring air resistance into play W ***Surface area:*** The larger the surface area, the more air resistance will affect the object. Example: Basketball compared to a golf ball.

Speed: As speed increases, so does air resistance. Example: The Space shuttle.

Surface of the object: If the surface is rough, then air resistance will be greater.

Example: Swinging ball in cricket.

Mass: The smaller the mass (lighter the object), the more air resistance will affect it. Example: Movement of the shuttle in badminton.

(c) **Speed of release:** This refers to how fast the object is released (thrown or hit). The muscle force largely determines a projectile speed of release. Generally, the greater the release rate, the greater the distance gained. Example: Speed of release in throwing events like javelin, discus, etc.

(d) **Angle of release/ projection angle:** This refers to the pitch at which the object is thrown or hit into the air. In sporting situations, the angle of release varies according to the activity. A basketball angle above 45 degrees is required in activities such as shooting. In activities such as tennis, a lower, around 3-to-15-degree grade is required.

(e) **Height of release:** This refers to how high above the ground an object is released. Increasing the height of release improves the horizontal distance an object can be projected. For a given speed and angle of release, the greater the height of release, the greater the distance gained. Example: Height of release in throwing events like javelin, Hammer throw, etc.

(f) **Spin:** Spin happens as a ball moving through the air will move in the direction of at least air pressure. This helps the projectile maintain its course and can cause it to change height or direction. When applying force to a projectile below, above, or the side of the centre of gravity, you will impart spin to the projectile. Example: principle of spin in basketball shooting.

APPLICATION OF PROJECTILE IN SPORTS

Sports

Projectile motion is very common in sports since most sports involve the motion of a projectile (usually a ball). By using physics, we are able to determine the optimal angle of a ball's flight in order to maximize speed or distance.

Baseball

Pitching analysis

Projectile motion is applicable in both throwing and hitting. A thrown ball undergoes projectile motion when it is mid-air since the only force that affects the ball is the acceleration due to gravity. A variety of factors will go into the trajectory of a pitch, including a pitcher's height, arm angle, and the spin being applied to the ball.

37. What is Strength? What are various methods for developing Strength? Write in detail

Strength

Strength is one of the most crucial motor components of fitness and plays a significant role in sporting events as it is a direct product of muscle contraction. It is a conditional ability that depends on the energy liberation process in the muscles. The amount of force muscles can produce to complete a task is known as strength.

In simple words, strength is the ability of a group of muscles to overcome resistance.

As all the movements in sports are caused by muscular contraction, it can be said that strength is part and parcel of all motor abilities, technical skills, and tactical actions.

Static Strength

Static strength is also called isometric strength. It is the ability of the muscles to act against resistance. Static strength can be measured with a dynamometer. This type of strength is not seen directly. Some static strength is not usually applied in sports, but it is used in phases in weightlifting. Example: plank or yoga asanas.

Dynamic Strength

Dynamic strength is also known as isotonic strength. In pull-ups and push-ups, we required dynamic strength. In performing such a workout, there is a diminishing tendency in dynamic strength, and as a result, muscles refuse to do work after some time. The man cannot do even one extra pull-up or push-up at this stage. Movements are visible when someone uses dynamic strength. It is recognized by rhythmic muscular contractions with changes in muscle length, using a relatively small force. Example: push up and full squats.

a. Maximum Strength

The muscle can overcome maximum resistance in a single repetition or muscular contraction. Maximum strength means exerting force against resistance in the maximal effort. A muscle can overcome the resistance of maximum stimulus intensity in a single muscular contraction.

Though maximum strength does not hold much importance in most sports but is undoubtedly required in sports like long jump, shot put, javelin throw, weightlifting, discus throw, etc. These sporting events require the tacking of heavy resistance.4

b. Explosive Strength.

The muscles can overcome resistance as fast as possible. In other words, it can be said that it is a combination of strength and speed. Explosive strength is always used in motor movements and is a form of dynamic strength. Muscle can get over the resistance of sub-maximum intensity of stimulus as possible.

Explosive strength is particular to the nature of movement and is greatly influenced by motor coordination, i.e., inter and intramuscular coordination. This strength is mainly used in volleyball spiking, jumps in basketball, sprint events, etc.

c. Strength Endurance

The muscle can overcome resistance under fatigue or for as long as possible. Same as explosive strength, strength endurance is a product of two motor abilities: strength and endurance. A muscle can get over the resistance of a medium-intensity stimulus for as long as possible.

Strength endurance can be a form of static or dynamic strength depending upon whether the movement is isometric (static) or isotonic (active). This strength is mainly used in long-distance races of athletics, swimming, distance cycling, etc.