Chapter 6
Test and Measurement in Sports

TEST AND MEASUREMENT IN SPORTS

SHORT ANSWER TYPE QUESTIONS (1 MARK EACH)

Q1. What do you mean by a test?

Ans. A Test is a tool which is used to evaluate the quality, performance and reliability of the task completed by a person.

Q2. What do you mean by Measurement?

Ans. Measurement is about collection of data and information about certain skills or levels of fitness of an individual by using tests and relevant techniques.

Q3. Define Test.

Ans. A test is a tool which is used to evaluate the skill, knowledge, capacities or aptitudes of an individual or a group.

Q4. Define Measurement.

Ans. Measurement is the process of administrating a test to obtain a quantitative data.

Q5. Write the formula to calculate the B.M.I.

Ans. $B.M.I. = \frac{Weight \text{in} \text{kg}}{Height in m^2}$

Q6. What do you mean by somato types?

Ans. Somato types basically means body types which is further classified into three types i.e.

Endomorph, Mesomorph and Ectomorph.

Q7. What do you mean by waist hip ratio?

Ans. Measurement of waist circumference divided by hip circumference is called waist hip ratio.

Q8. Write the formula to calculate the waist hip ratio.

Ans $waist\text{circumference} = \frac{Waist\text{Circumference}}{Hip\text{Circumference}}$

Q.9. State the uses of Anthropometric measurements.

Ans. Anthropometric Measurements of height, weight, arm and leg length, waist circumference and skin fold etc. are significant indicators of health which enable us to know the physical growth and development and health problems of an individual.

QUESTION CARRING (3 MARKS EACH (60 WORDS)

Q1. Explain the procedure of measuring somatotypes in brief.

Ans. Somatotypes means human body shape, and physique types. two- types helps the physical education and sports teachers to classify the students for particular sports and games on the basis of physical, mental, and practical aspects.

The procedure of measuring somatotypes is based on the classification by W.H.SHELDON-

1. Endomorphy-
Such individuals have short arms and legs and rounded physique. The upper parts of arms and legs are significantly thicker than the lower parts. Their excessive mass hinders their ability to compete in sports.

2. Mesomorphy-
Such individuals have balanced body compositions and athletic physique. They are able to increase their muscle size quickly and easily and have rectangular shaped body. Their chest and shoulders are broader in comparison to their waist line.

3. Ectomorphy-
These individuals are generally slim because their muscles and limbs are elongated. As they have weak constitution of body and usually difficulties in gaining weight. Their light body constitution makes them suited for aerobic activities like gymnastics.

Q2. Discuss the procedure of measurement of arm length and upper arm length.

Ans. Procedure of measurement of arm length -

The subject must stand with his arms hanging by the side of his body with his fingers outstretched a measurement is made from the acromial i.e. the bony tip of the shoulder to

the tip of the little finger.

Procedure of measurement of upper arm length -

The subject must stand upright with body weight distributed equally on both the feet. The right arm should be bent at 90 degree from the elbow with palm facing upwards. A measurement is made from acromial to the bony part of the mid elbow. Measurement must be taken to the nearest 0.1 cm. and recorded.

Q3. Elaborate the procedure of measurement of leg length and upper leg length.

Ans. Leg length -
The leg length of a child or adult is measured with a flexible tape from the bottom to the upper edge of greater trochanter.

Upper leg length-
The subject is made to sit on a box with one of the knee bent at 90 degree angle with his back upstraight. measure the upper leg length from the inguinal crease to proximal border of patella. Record the measurement to the nearest 0.1cm.

Q4. Calculate the BMI of a male person whose weight is 80 kg and height is 1.6 m. Also state the category in which he falls.

Ans. $BMI = \frac{\text{Weightinkg}}{Heightinm^2}$
$BMI = \frac{80}{1.6 \times 1.6} = \frac{80 \times 100}{16 \times 16}$
BMI = 31.25 kg/m
The above person falls in class - I category.

Q5. What do you mean by BMI? Write down the scale of BMI.

Ans. BMI is a statistical measurement that let us know whether the person is under weight, normal weight or over weight.
BMI is categorized as below -

Category BMI

Underweight	< 18.5
Normal weight	18.5 - 24.9
Overweight	25.0 - 29.9
Obesity class I	30.0 - 34.9
Obesity class II	35.0 - 39.9
Obesity class III	> 40.0

Q6. Explain in brief the procedure of Anthropometric measurement of weight?

Ans. The scale should be placed on hard floor sur so that the beam gets into balanced position.
Procedure for weight measurement -

1. The subject must wear light clothes.

2. He should stand in the centre of the platform of the weighing machine with his body weight equally distributed on both the feet.

3. Read the measurement in front of the needle and record it to the nearest 0.1kg.

Q7. Explain in brief the procedure of Anthropometric measurement of height?

Ans. The child or adult should remove socks, shoes, jackets or any other heavy clothing. The floor sur should be plane and hard. The height should be measured using a stadiometer.
Procedure for height measurement -

1. The subject should stand with his feet flat and together on the floor. Arms should be by the sides and knees and back should be straight. The back of head, buttocks, calves, heels and shoulder blades should touch the measuring sur.

2. After that the horizontal sliding part of the stadiometer is lowered gently so that hairs get pressed flat and subject should be asked to stand still.

3. Height of the subject should be read to the nearest half in centimeter and recorded.

LONG ASWER TYPE QUESTIONS

(5 MARKS EACH) (150 WORDS)

Q1. Explain in detail the importance of Test and Measurement in the field of sports.

Ans. In a physical education and sports programme it is important to select a target. lf a person desires to improve himself in different aspects of fitness he will have to undergo fitness programmes. Test and Measurement in physical education are the devices that are needed to collect the details regarding the needs, abilities and attitudes of a sports person.

A test is basically a situational presentation where specific responses are col- lected from the subject. These responses are measured both qualitatively and quantitatively. Measurement is about collection of data of performance or task completed by a sports person by using test and scientific techniques.

Test and Measurement is an important feature in the field of physical education and sports.

The following points indicate the importance of Test and Measurement in the field of sports-

1. To frame the objectives:

Test and Measurement helps in setting the target or goal according to the need and requirement. By adopting the Test and Measurement techniques the physical education teachers gets an accurate idea about the progress made by the students.

2. To evaluate the learners:

In the field of physical education and sports Test and Measurement helps in collection of data which further helps in evaluating the learners ability separately. lt also helps the sports person in enhancing his sports performance.

3. To evaluate teaching programme:

Test and Measurement is a scientific tool which helps the teacher to adopt correct methodology upon the sportsman so that desired results may be achieved.

4. To know capacities and capabilities -

Through Test and Measurement the teachers get aware of the ability and capacities of the students which provides a platform in preparation of fitness programme.

5. To discover the needs and requirements of the participants -

Needs of the participants are correctly assessed by the scientific approach of Test and Measurement. lt helps in knowing where more emphasis is needed so that target may be achieved.

Q2. Explain the procedure for fixing marks for skinfold measurement.

Ans. The marking of skinfold measurements should be proper for taking accurate anthropometric measurements. So, for proper marking of skinfold measurements the following procedures should be taken into consideration.

1. Triceps skinfold -

The child or adult must stand upstraight with arms relaxed. With the help of a measuring tape mark a point with a pen at the centre of triceps. This is the point or mark from where the skinfold measurement should be done with the help of a skinfold caliper.

2. Sub scapula skinfold-

Find out the exact location of scapula. The skin fold area is just below the inferior angle of scapula. Skin fold measurement should be done with the help of skin fold calipers.

3. Suprailiac skinfold -

The intersection of a line joining the spinal and front part of armpit and horizontal line at the level of iliac crest can be marked for skinfold measurement.

4. Abdomen skinfold -

The abdomen muscles of the subject must be relaxed. He may be asked to hold the breath if any movement interferes the process of measurement.

A point should be marked 3 cm to the rightand 1 cm below the midpoint of umbilicus.

5. Thigh skinfold -

The child or adult whose measurement is to be taken must sit on a chair with his back completely straight. Now mark a point exactly between the knee cap and the inguinal crease on the thigh for skinfold measurement.

Q3. Explain the procedure of skinfold measurements in detail.

Ans. Skinfold measurements are also called as “fat fold thickness”. These measurements provide the information or data of the thickness of double folds of the skin and sub cutaneous adipose tissue at specific sites of the body. ln simple words skinfold provides the information about general fatness of the body.

The procedure of skinfold measurements is as under-

1. Triceps Skinfold -

The arm of the subject or child should be hung loosely. Stand behind the subject and pull the vertical skinfold about 1/2 inch from the spot already marked. Keep the skinfold caliper perpendicular to the length of the fold centering the mark. Record the measurement to the nearest millimeter.

2. Sub scapula skinfold-

After locating the marked point on the sub scapular region, pull a skin fold for about 34 inch above and keep the skin fold caliper perpendicular to the length of skinfold. Release the caliper and note the measurement to the nearest millimeter.

3. Suprailiac skinfold-

The subject should stand straight with his feet together and arms relaxed. Pull a skinfold 34 inch above the marked point with the thumb and index finger. The skinfold caliper should be kept perpendicular to the length of skin fold. Release the caliper and note the reading on

the dial to the nearest of millimeter and record it.

4. Abdomen skinfold -

After locating the already marked point, pull a horizontal skinfold to about 34 inch. Place the skinfold caliper perpendicular to the length of skinfold. Release the caliper and note the reading to the nearest of millimeter and record it.

5. Thigh skinfold -

The person is made to stand with his weight on the left leg and right leg forward with knee slightly bent. Grip a skinfold on the already marked area on the mid-thigh. Place the skinfold caliper and note the reading to the nearest of millimeter and record it.