Test and Measurement in Sports

1. In partial curl up test the difference between two parallel lines is _____ . (2024)

(a) 8 inches

(b) 4 inches

(c) 6 inches

(d) 10 inches

Ans. (c) 6 inches

2. Enlist four test items of Johnson – Metheny Test of Motor Educability. (2024)

Ans.

I. Front Roll

II. Back Roll

III. Jumping Half-Turns

IV. Jumping Full-Turns

3. Mr. X performs the Harvard step test for 275 seconds and his pulse in 1 - 1.5 min after exercise was 100. Write the formula of fitness index score for Harvard step test and calculate the fitness index score of Mr. X. (2024)

Ans. Harvard step test fitness index score:

Duration of exercise

= 275 seconds pulse count of 1 – 1·5 min after exercise

= 100

Formula

= Duration of the exercise in seconds × 100/5·5 × pulse count of 1 – 1·5 min after exercise

= (275 × 100) / (5.5 × 100)

= 27500 / 550 = 50

6.1 Fitness Test : SAI Khelo India Fitness Test in School

MCQ

1. Match the following.

	List-I		List-II
I.	Plate Tapping Test	1.	Upper body strength endurance of boys
II.	Push-up	2.	Speed and coordination of limb movement
III.	Partial Curl up	3.	Upper body strength endurance of girls
IV.	Modified push up	4.	Abdominal strength

Choose the correct option from the following :

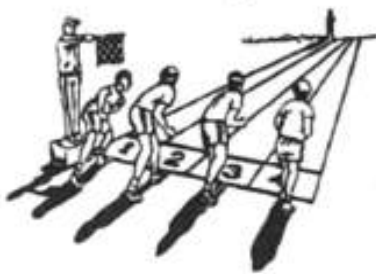|	I	II	III	IV
(a)	2	1	4	3
(b)	2	3	1	4
(c)	1	3	2	4
(d)	2	3	4	1

(2023) [Ap]

2. In 50 mt. standing start of Motor Fitness Test, time is taken nearest to
   - (a) 10th of a second
   - (b) 9th of a second
   - (c) 5th of a second
   - (d) 20th of a second.

   (Term-I, 2021-22)

3. Name the test shown in the picture:

   - (a) 4 × 10 mt. relay
   - (b) 50 mt. standing start
   - (c) 600 mt. run/walk
   - (d) Standing board jump

   (Term-I, 2021-22)

4. The chief aim of physical activities during 5 to 17 years of age groups is to improve cardio-respiratory and muscular fitness, bone health, cardiovascular and to reduce symptoms of anxiety and depression. Rate at which activity is performed is known as-
   - (a) Volume
   - (b) Intensity
   - (c) Type of activity
   - (d) Frequency.

   (Term-I, 2021-22) [Ev]

5. Sit and reach test is conducted for
   - (a) Flexibility
   - (b) Motor fitness
   - (c) Endurance
   - (d) Speed.

   (2020)

6. Barrow Fitness Test does not include :
   - (a) Medicine ball put
   - (b) Zig-zag run
   - (c) 600 metres run
   - (d) Standing broad jump.

   (2020)

6.3 Measurement of Cardio Vascular Fitness : Harvard Step Test

MCQ

7. Which of the following tests is conducted to measure cardiovascular fitness ?
   - (a) Back scratch test
   - (b) Rockport one mile test
   - (c) Harvard step test
   - (d) Both (b) and (c)

   (Term-I, 2021-22)

8. Rockpost test is used to measure
   - (a) VO_3 Max.
   - (b) VO_4 Max.
   - (c) VO_5 Max.
   - (d) VO_2 Max.

   (Term-I, 2021-22)

9. What is the minimum number of steps to be done in one minute for 5 minutes, as shown in the figure:

   - (a) 25
   - (b) 30
   - (c) 35
   - (d) 40

   (Term-I, 2021-22) [An]

10. Rockport test may be useful for those who are unable to run due to sedentary lifestyle or for older individual or for those of law fitness level or injury. In Rockport test gender value for men is-
    - (a) 1
    - (b) -1
    - (c) 0
    - (d) +1.

    (Term-I, 2021-22)

11. Rockport one mile test is conducted to measure
    - (a) Cardio-vascular fitness
    - (b) Senior citizen's fitness
    - (c) Vital capacity
    - (d) Muscular strength.

    (2020)

12. What is the formula for computation of the Fitness Index? *(Delhi 2019)* [An]

13. What test would you suggest for Senior Secondary student to measure Cardio Vascular fitness? *(Delhi 2016 C)*

14. Explain in brief "The Harvard Step Test". *(AI 2015)*

15. Calculate the Physical Fitness Index using short formula for a 12 years old boy having completed Harvard Step Test for duration of 3 minutes and a pulse rate of 54 beats for 1 to 1.5 minute. *(Delhi 2015)*

16. Explain the procedure of Harvard step test in detail. *(2020)*

OR

Write a detail note on Harvard Step Test. *(Delhi 2017)*

17. Explain the Rockport Test. *(AI 2017)*

6.4 Rikli and Jones – Senior Citizen Fitness Test

18. Which test is to be conducted to measure agility?
    (a) Standing board jump
    (b) 4 × 10 shuttle run
    (c) Partial curl up
    (d) Push-ups *(Term-I, 2021-22)*

19. Identify the odd component of fitness depicted here-

(a) 1   (b) 2   (c) 3   (d) 4
(Term-I, 2021-22) [Ap]

20. What will be the distance between the chair and marker cone, to measure agility and co-ordination of senior citizens shown in the figure?

(a) 8 feet
(b) 12 feet
(c) 16 feet
(d) 18 feet *(Term-I, 2021-22)*

21. In a residential area, a camp was organised to check the functional fitness level of the senior citizens. During testing, it was found that there was a less range of motion in the joints of upper extremities in most of the elderly people.
Which test is administrated to check this functional fitness component?

1   2   3   4

(a) 1   (b) 2
(c) 3   (d) 4
(Term-I, 2021-22) [Ev]

22. What motor quality does a senior citizen lack, who finds difficulty in tying the shoe laces while sitting on a chair? *(Delhi 2017)* [R]

23. List down the test items of Rikli and Jones fitness test and explain the procedure of any one. *(2020)*

OR

What are the components of Rikli and Jones Test? Explain the purpose and procedure of any one test. *(Delhi 2019)*

24. Explain the "Eight Foot Up and Go" Test for measuring agility and dynamic balance. *(2018)*

25. What is the purpose of Rikli and Jones fitness test? Explain the procedure of its any two test items in detail. *(2023)* [R]

26. Your grandmother feels that she has reduced her upper body flexibility and therefore she wants to test herself. Which test would you suggest to her? *(AI 2017, Delhi 2015)*

27. What test would you suggest to measure upper body strength for aged population? *(Delhi 2016)*

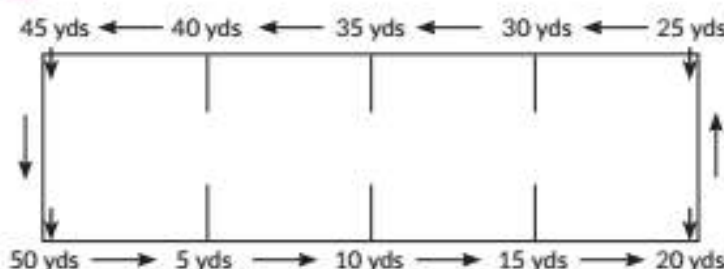## 6.1 Fitness Test : SAI Khelo India Fitness Test in School

MCQ

1. Match the following.

1.		(A) Lower body strength
2.		(B) Lower body flexibility
3.		(C) Upper body strength
4.		(D) Abdominal strength

	A	B	C	D
(a)	3	1	4	2
(b)	4	1	3	2
(c)	3	2	4	1
(d)	4	2	3	1

(Term-I, 2021-22) **Ap**

2.

Identify the test for which this pattern is followed.
(a) 600 mtr
(b) 50 yard dash
(c) 400mtr
(d) 6min walk

(Term-I, 2021-22) **An**

VSA (2 marks)

3. Write down the objective and administration of the flamingo balance test. (2022-23)

SA (3 marks)

4. List the components of Motor Fitness Test. Explain any two of them in detail. (2020-21) **Eu**

6.3 Measurement of Cardio Vascular Fitness : Harvard Step Test

MCQ

5. Harvard step is performed to check which kind of fitness?
(a) Cardiovascular
(b) Explosive strength
(c) Muscular strength
(d) Reaction ability

(Term-I, 2021-22) **An**

6. What will be the fitness index score of a girl if the test duration was 300sec and the pulse count (1min-1.5min) was 80.
(a) 73.2
(b) 62.8
(c) 68.1
(d) 85.3

(Term-I, 2021-22) **Ev**

7. Harvard step test is also called the Aerobic Fitness Test. It was developed by Brouha and others in 1943. It is used to measure aerobic fitness by checking the recovery rate.

Few students were asked to conduct Harvard step test for their classmates and they were asked to note down the complete details of their aerobic capacity. For conducting tests they required a bench separate for boys 20 inches and girls 16 inches with one stop watch to note down the timing and their recovery rate.

How many times is the reading taken for calculating a long term fitness index ?
(a) 5
(b) 3
(c) 2
(d) 4

(Term-I, 2021-22) **U**

8. What is the value placed for Male in VO_2 MAX formula?
(a) 1
(b) 0
(c) 0.85
(d) 0.72

(2020-21)

SA (3 marks)

9. Name the tests used to calculate cardio vascular fitness. Write the formula for short term and long term fitness index and calculate long term fitness index if duration of exercise is 300 sec and sum of heart rate is 230. (2020-21)

6.4 Rikli and Jones – Senior Citizen Fitness Test

MCQ

10. Match the following.

	List-I		List-II
I.	Plate Tapping Test	1.	Upper body strength endurance of boys
II.	Push-up	2.	Speed and coordination of limb movement

III.	Partial Curl up	3.	Upper body strength endurance of girls
IV.	Modified push up	4.	Abdominal strength

Choose the correct option from the following :

	I	II	III	IV
(a)	2	1	4	3
(b)	2	3	1	4
(c)	1	3	2	4
(d)	2	3	4	1

(2022-23)

11. Which test is developed to test fitness in senior citizens?
    (a) Harvard step
    (b) Rikli and Jones
    (c) AAHPER
    (d) Rockport   *(Term - I, 2021-22)*

12. Which test is used to test the functional ability amongst senior citizens?
    (a) Rockport one mile test
    (b) Harvard step test
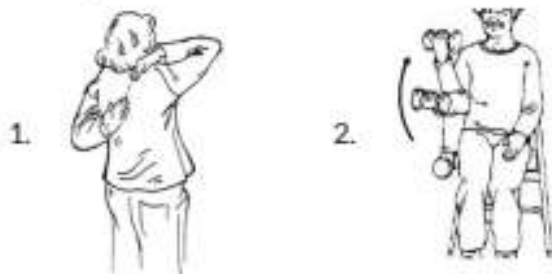   (c) Rikli and Jones test
    (d) Fitness Index score   *(Term - I, 2021-22)*

13. What is the test duration for the Arm curl test?
    (a) 1 min
    (b) 2 min
    (c) 30 sec
    (d) Number of repetitions   *(Term - I, 2021-22)*

14. Identify the odd one.

1.   2.

3.   4.

(a) 4   (b) 3   (c) 2   (d) 1

(Term - I, 2021-22)

15. Mr. Lakshman, aged 65 years worked as a civil engineer in a construction company. He had to walk and climb a lot as part of his job. After retirement, he settled with his son and spent time with his grandchildren. Nowadays he is experiencing difficulty in doing certain chores which involve physical movement.

The test shown in the picture is performed to assess which component?
    (a) Agility   (b) Endurance
    (c) Speed   (d) Strength

(Term - I, 2021-22)

SA   **(3 marks)**

16. What is the purpose of Rikli and Jones fitness test? Explain the procedure of its any two test items in detail.   *(2022-23)*

ANSWERS

Previous Years' CBSE Board Questions

1. (a) : I-2, II-1, III-4, IV-3
2. (a) : 10th of a second
3. (b) : 50 mt. standing start
4. (b) : Intensity
5. (a) : Flexibility
6. (c) : 600 metres run
7. (d) : Both (b) and (c)
8. (d) : VO$_2$ Max

9. (b) : 30
10. (a) : 1
11. (a) : Cardio-vascular fitness
12. (I) Fitness Index score
$$= \frac{100 \times \text{Test duration in seconds}}{2 \times \text{sum of heart beats in the recovery periods}}$$
    (II) Fitness Index score
$$= \frac{100 \times \text{Test duration in seconds}}{5.5 \times \text{pulse count between 1 to 1.5 minutes after exercise}}$$
    (Any one)

13. Harvard Step Test

14. Harvard Step Test is a type of cardiac stress test for measurement of fitness and a person's ability to recover after a strenuous exercise. The more quickly the heart rate returns to resting rate of beats, the better shape the person is in computes the capability of a person to exercise continuously for extended intervals of time without tiring.

15. Physical Fitness Index =

$$\frac{\text{Duration of exercise in seconds} \times 100}{5.5 \times \text{pulse count of 1 to 1.5 minute after exercise}}$$

$$= \frac{180 \times 100}{5.5 \times 54} = 60.60$$

The result falls in the 'low average' category.

Physical condition	PFI
Excellent	90 and above
High average	65 to 79
Low average	55 to 64
Poor	54 and above

16. Harvard step test is a type of cardiac stress test for measurement of fitness and a person's ability to recover after a strenuous exercise. The more quickly the heart rate returns to the resting rate of beats, the better shape the person is in. The test computes the capability of a person to exercise continuously for extended intervals of time without tiring.

Equipment : A stopwatch, 20-inch (50 cm) high bench, metronome (a device that produces an audible beat—a click or other sound—at regular, stable intervals that the user can set in beats per minute), or tape recorder (optional), stethoscope (optional).

17. The Rockport Walking Test is a sub-maximal field test to estimate VO$_2$ max in males and females ages 20 to 69 years. The participant is required to walk one mile (1.6 kilometers) as quickly as possible. The test is easily administered and is well-suited for sedentary and/or older individuals.

Equipment : One mile (1.6 km) track (not on a treadmill) and stopwatch(s)

Procedure :

(a) A level, one mile (1.6 km) course is required. The inside lane of a one mile (or 400 m) track is preferred, but any uninterrupted course of precisely one mile (1.6 km) is suitable.

(b) Participants should wear appropriate clothing plus shoes and perform 5-10 min of light stretching before commencing the walk. There should not be a strong wind on the day of the test.

(c) Instruct the participant to walk the one mile as quickly as possible (but not speed walking).

(d) Record the participant's heart rate (HR) immediately upon the completion of the mile. It is preferable to have the participant wear a heart rate monitor for this measurement but the assessment of HR via palpation

(using a 15 sec count from the carotid or radial artery) is a suitable alternative.

(e) Estimate the participant's VO$_2$ max using the following formula which incorporates his/her body weight (lb), age (yr), gender (males = 1, females = 0), time to complete one mile (min), and post exercise heart rate (bpm):

Estimated VO$_2$ max ml·kg-1 min-1 =

132.853 – 0.0769 (Weight) – 0.3877 (Age) + 6.315 (Gender) – 3.2649 (Time) – 0.1565 (HR)

It is important to note that completion time must be converted to minutes.

- There are various types of tests such as AAPHERD youth fitness test, Hardvard Step Test and Sit and Reach test.

18. (b)   19. (c)   20. (a)   21. (c)

22. The senior citizen lacks lower body flexibility.

23. Rikli and Jones Test is a test for senior citizens. It has the following test items :

(i) Chair stand test
(ii) Arm curl test
(iii) Chair sit and reach test
(iv) Back scratch test
(v) Eight foot up and go test
(vi) Six minutes walk test

Six minute walk test :

Purpose : This test helps in early identification of participants at risk. The individuals health and fitness level can be known better with the help of this test or to check aerobic fitness/aerobic endurance of a person.

Procedure :

Equipments – a stop watch and measuring tape

Walking course in a rectangular area of 50 yards or 45.72 mts.
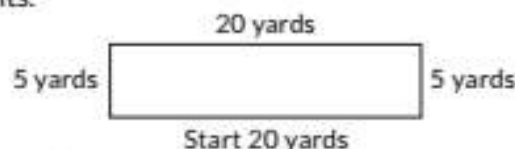
The person has to walk maximum distance as quickly as possible for six minutes. He/she may stop at any time it desires so.

The total distance covered in six minute is recorded to the nearest yards/meters.

- Rikli and Jones test can be essential for senior citizens whose age is 60 years and more. This test helps in identifying weakness that causes mobility problems.

24. **Eight Foot Up and Go Test for Agility**

Purpose : The '8 Foot Up and Go' is a coordination and agility test for the elderly. This test measures speed, agility and balance while moving. Agility/dynamic balance, is important in tasks that require quick maneuvering, such as getting off a bus in time or getting up to attend

to something in the kitchen, to go to the bathroom or to answer the phone.

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

Procedure : Place the chair next to a wall (for safety) and the marker 8 feet (2.44 m) from the chair. Clear the path between the chair and the marker. The subject starts fully seated, hands resting on the knees and feet flat on the ground. On the command, "Go," timing is started and the subject stands and walks (no running) as quickly as possible (and safely) to and around the cone, returning to the chair to sit down. Timing stops as the subject sits down.

Scoring : The stopwatch measures the number of seconds required to get up from a seated position, walk 8 feet (2.44 m), turn, and return to seated position.

Risk zone : More than 9 seconds

25. Improving functional mobility and delaying physical weakness and frailty among older adults are the most important goals of fitness advisors for senior citizens. Their quality of life largely depends on being able to continue to do what they wish to do without pain or inconvenience. Suggesting effective exercise programs that can help the senior citizens to maintain or improve their mobility requires two prerequisites :

1. Knowing about the physical attributes needed for mobility in later years
2. Assessing physical attributes, so that weak areas can be identified and then improved upon.

Chair Stand Test for lower body strength

Purpose and Daily Benefit : The purpose of the Chair-Stand is to measure the strength of lower body of adults over 60 years of age. Lower body strength is important for activities, such as getting out of a chair, on the bus, out of the car, and rising up from a kneeling position in the house or garden. The strength of the lower body also reduces the chances of falling.

Equipment : Chair without arms, stopwatch.

Procedure : Place the chair against a wall where it will be stable. Sit in the middle of the chair with your feet flat on the floor, shoulder width apart, back straight. Cross your arms at the wrist and place them against your chest. The test partner will tell you when to begin and will time you for 30 seconds, using the stopwatch. You will rise up to a full stand and sit again as many times as you can during the 30 seconds interval.

(a) Each time you stand during the test be sure you come to a full stand.

(b) When you sit, make sure you sit all the way down. Do not just touch your backside to the chair. You must fully sit between each stand.

(c) Do not push off your thighs, or off the seat of the chair with your hands to help you stand unless you have to.

(d) Keep your arms against your chest crossed and do not allow the arms to swing up as you rise.

(e) If you are on your way up to stand when time is called, you will be given credit for that stand.

Scoring : The score is the number of completing correct chair stands in 30 minutes.

Risk zone : Less than 8 unassisted stands for men and women

Arm Curl Test for Upper Body Strength

Purpose : To assess upper body strength, needed for performing household and other activities involving lifting and carrying things, such as groceries, suitcases and grandchildren.

Equipment - Required : 5 Pound (lbs.) -2.27 kg, weight for women and 8 pound (lbs.) -3.63 kg weight for men. A chair without armrests, stopwatch.

Procedure : The aim of this test is to do as many arm curls as possible in 30 seconds. This test is conducted on the dominant arm side (or strongest side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is moving (tester may assist to hold the upper arm steady).

Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow.

Repeat this action as many times as possible within 30 seconds.

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

Risk zone : Less than 11 curls, for men and women

26. The Back Scratch Test measure flexibility of the upper body. Upper body's flexibility affects one's ability to reach for items that may be high on a shelf, change a light bulb, combing ones hair, putting on overhead garments, etc.

Equipment : Ruler

Procedure : The test is performed in a standing position. Place the left arm straight up in the air above your left shoulder. Bend the left arm at the elbow to reach towards the back, with fingers extended. The elbow should point toward the ceiling.

Place the right hand behind the back with palm facing out

and the fingers extended up. Reach up as far as possible and attempt to touch the fingers of the two hands together. Some people are not able to touch at all, while other's fingers may overlap. Take two practice stretches with each arm, determining which side is more flexible. You will be measuring and recording only your more flexible side.

Without shifting your hands, your test partner will position your fingers so that they are pointing toward each other.

Scoring : The distance between the finger tips of one hand and the other is measured to the nearest half inch or centimeters. If the fingers overlap, the amount of the overlap is measured. Fingertips just touching receive a score of "0". If the fingers do not touch, a negative score of the distance between the fingers, measured to the nearest half inch or centimeters is given.

Risk zone : Men : Minus (-) 4 inches or more Women: Minus (-) 2 inches or more

27. Arm Curl Test for Upper Body Strength

Purpose : To assess upper body strength, needed for performing household and other activities involving lifting and carrying things, such as groceries, suitcases and grandchildren.

Equipment - Required : 5 Pound (lbs.) -2.27 kg, weight for women and 8 pound (lbs.) -3.63 kg weight for men. A chair without armrests, stopwatch.

Procedure : The aim of this test is to do as many arm curls as possible in 30 seconds. This test is conducted on the dominant arm side (or strongest side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is moving (tester may assist to hold the upper arm steady).

Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow.

Repeat this action as many times as possible within 30 seconds.

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

Risk zone : Less than 11 curls, for men and women

CBSE Sample Questions

1. (b) : 4 1 3 2 (0.80)
2. (d) : 6 min walk (0.80)

3. Flamingo Balance Test

This test is total body balance test, and forms part of the Eurofit Testing Battery.

Its purpose is to check the balance and strength ability of an individual on the single leg. This single leg balance test assesses the strength of the leg, pelvic, and trunk muscle as well as Static balance.

Equipment required for this test are : Non-Slippery even surface, Stopwatch, can be done on just standing on beam.

Test administration :

(i) Stand on the beam. Keep balance by holding the instructor's hand (if required to start).

(ii) While balancing on the preferred leg, the free leg is flexed at the knee and the foot of this leg held close to the buttocks.

(iii) Start the watch as the instructor lets go of the participant/subject.

(iv) Pause the stopwatch each time the subject loses balance (either by falling off the beam or letting goes of the foot being held).

(v) Resume over, again timing until they lose balance. Count the number of falls in 60 seconds of balancing.

(vi) If there are more than 15 falls in the first 30 seconds, the test is terminated.

Participants should be encouraged to eyes focused on stationary object straight ahead. (2)

4. Components of motor fitness test :
(i) 50 m Standing Start
(ii) 600 m Run/Walk
(iii) Sit &Reach
(iv) Partial Curl Up
(v) Push Ups (Boys), Modified Push-Ups (Girls)
(vi) Standing Broad Jump
(vii) Agility × 10 m Shuttle Run.

50 m Strength test

Purpose : The aim of this test is to determine acceleration and speed.

Equipment required : Measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 70 meters.

600 m Run/Walk

Purpose : This test measures aerobic fitness in the young or those of low fitness level.

Equipment required : Running track, stopwatch.

Procedure : The aim of this test is to complete the required distance in the fastest possible time. On the signal, "ready," all participants line up behind the starting line. On the command 'Go!' the clock will start, and they will begin running at their own pace. Cheering or calling out the elapsed time is also permitted to encourage the participants. Walking is permitted but not encouraged. (3)

5. (a) : Cardiovascular (0.80)
6. (c) : 68.1 (0.80)
7. (b) : 3 (0.80)
8. (a) : 1 (1)

9. Rockport Walk Test (One Mile Test) The formula used to calculate VO_2 max is:

132.853 – (0.0769 × weight) – (0.3877 × age) + (6.315 x gender) – (3.2649 × time) – (0.1565 × Heart Rate)

D. Harvard Step Test

The Harvard Step test is a test of a erobic fitness, developed by Brouha and his associates (1943) in the Harvard Fatigue Laboratories during WWII for college students. It was a very simple and promising field test for measuring cardiovascular endurance of human beings by using easily available and in expensive equipment.

Fitness Index (short form) = 100*test duration (seconds) /5.5*pulse count (1-1.5min)

Fitness Index (long form) – (100 × test duration in seconds) /(2 × Sum of hearts beats in Pulse 1, 2 and 3)

Ans = 65.2 (3)

10. (a) : I–2, II–1, III–4, IV –3 (1)

11. (b) : Rikli and Jones (0.80)

12. (c) : Rikli and Jones test (0.80)

13. (c) : 30sec (0.80)

14. (a) : 4 (0.80)

15. (a) : agility (0.80)

16. Improving functional mobility and delaying physical weakness and frailty among older adults are the most important goals of fitness advisors for senior citizens. Their quality of life largely depends on being able to continue to do what they wish to do without pain or inconvenience. Suggesting effective exercise programs that can help the senior citizens to maintain or improve their mobility requires two prerequisites:

(i) Knowing about the physical attributes needed for mobility in later years

(ii) Assessing physical attributes, so that weak areas can be identified and then improved upon.

(a) Chair Stand Test for lower body strength

Purpose and Daily Benefit : The purpose of the Chair-Stand is to measure the strength of lower body of adults over 60 years of age. Lower body strength is important for activities, such as getting out of a chair, on the bus, out of the car, and rising up from a kneeling position in the house or garden. The strength of the lower body also reduces the chances of falling.

Equipment : Chair without arms, stopwatch.

Procedure : Place the chair against a wall where it will be stable. Sit in the middle of the chair with your feet flat on the floor, shoulder width apart, back straight. Cross your arms at the wrist and place them against your chest. The test partner will tell you when to begin and will time you for 30 seconds, using the stopwatch. You will rise up to a full stand and sit again as many times as you can during the 30 second interval.

(a) Each time you stand during the test be sure you come to a full stand.

(b) When you sit, make sure you sit all the way down. Do not just touch your backside to the chair. You must fully sit between each stand.

(c) Do not push off your thighs, or off the seat of the chair with your hands to help you stand unless you have to.

(d) Keep your arms against your chest crossed and do not allow the arms to swing up as you rise.

(e) If you are on your way up to stand when time is called, you will be given credit for that stand.

Scoring : The score is the number of completing correct chair stands in 30 minutes.

Risk zone : Less than 8 unassisted stands for men and women

(b) Arm Curl Test for upper body strength

Purpose : To assess upper body strength, needed for performing household and other activities involving lifting and carrying things, such as groceries, suitcases and grandchildren.

Equipment Required : 5 Pound (lbs.) or 2.27 kg, weight for women and 8 pound (lbs.) or 3.63 kg weight for men. A chair without armrests and stopwatch.

Procedure : The aim of this test is to do as many arm curls as possible in 30 seconds. This test is conducted on the dominant arm side (or strongest side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow.

Repeat this action as many times as possible within 30 seconds. (3)