

FOOTBALL

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History



1. HISTORY

Football is also known as *soccer*. The history of football is very old, as similar versions of the game were played in many civilizations. *Greeks* play the game '*Sphaira*' which resembles football. There was tough fight to snatch the ball from opponents (by any mean) and reach towards opponent end line. Roman people also play '*Calcio*' in which they use legs to make the ball to go towards opponent end line. Chinese people also play '*Tsu Chu*' in which bladder (leather filled) was kicked by legs.

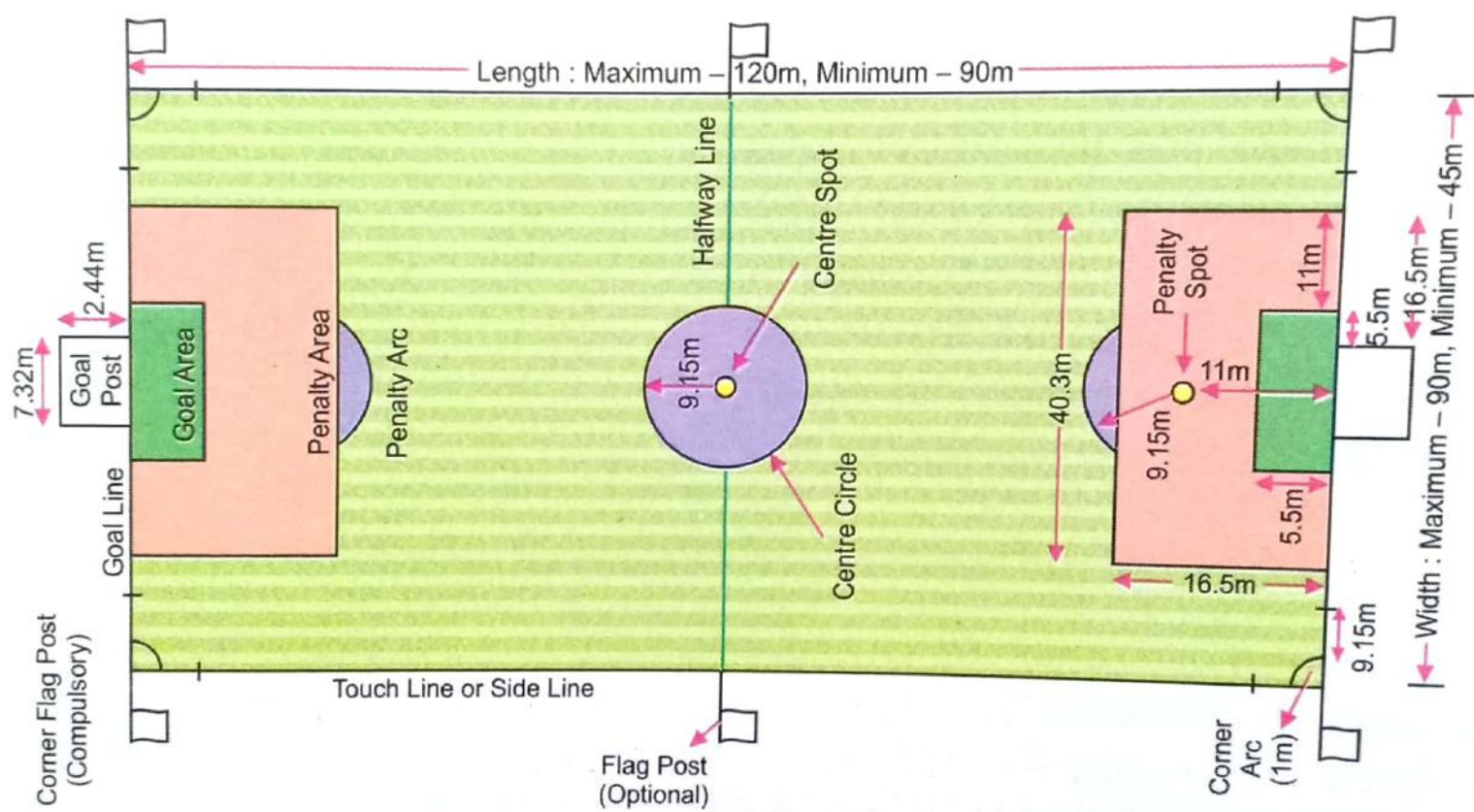
The modern version of game came from England in 1848, when first match was played between two local teams. '*Sheffield Football Club*' developed proper football team in 1863. The first recorded match was played in 1872 between England and Scotland. *Federation Internationale de Football Association (FIFA)* was formed in 1904 which regulates the rules and development of football. Football became official event in Olympic Games in 1908 from London (after demonstration game in 1900 and 1904 Olympics). The first World Cup of football was organised in 1930.

Today, football is universally accepted game as its rules are simple. It is a very popular game among Europeans, Latin Americans, Asians and African countries. FIFA has more than 200 nations as its members. Many clubs are formed for participation in European league, which has heightened football standards.

In India, the *Britishers* brought this game and formed football associations in 1878. Football became very popular in Bengal. Many clubs were established to improve football in Bengal. India has also started the second oldest football tournament known as '*Durand Cup*' in 1888 in Shimla. Later, this venue was changed to New

Delhi from 1940. There are many clubs associated with football in India like Mohan Bagan, Mohammedan Sporting; East Bengal, JCT, Salgaokar, Mahindra and Mahindra, etc.

Field



Football Ground

Tips to Remember

- (i) Ground Dimension
 - = Standard ground is 120 yards (110 m) $\times$ 80 yards (73 m) but it can be 100 to 130 yds in length and 50 to 100 yds in breadth.
- (ii) Officials of Match
 - = 1 Referee, 2 Asstt. Referees or Linesmen
 - 1 Commissioner, 1 Injury Timekeeper (depending upon tournament)
- (iii) Weight of the Football
 - = 14 to 16 ounce (425 g $\pm$ 25 g)
- (iv) Circumference of Football
 - = 27 to 28 inch (71.1 cm)
- (v) No. of Players in Team
 - = 16 (11 playing and 5 substitutes)
- (vi) Minimum no. of Players
 - = 7 (in case of expelled players)
- (vii) Substitution Allowed
 - = 3 (Three) in a match
- (viii) Duration of Match
 - = 2 halves of 45 minutes (M) and 40 minutes (W)
- (ix) Extra Time
 - = 2 halves of 15 minutes
- (x) Goalpost Dimension
 - = 8 yds (7.3 m) $\times$ 8 ft (2.44 m) with 5 inches thickness of post
- (xi) Width of Line
 - = 5 inches (12 cm)
- (xii) Player Equipments
 - = Studs (football shoe), Shin Guard, T-shirt with No., Shorts, Stocking.
- (xiii) Centre Circle Radius
 - = 10 yards (9.15 m)
- (xiv) Corner Arc
 - = 1 yard (91 cm) at corners
- (xv) Height of Flags
 - = 5 feet (1.5 m) at corners
- (xvi) Penalty Point
 - = 12 yds (11 m) from Goal Line
- (xvii) Goal Line
 - = 5 inches (between Goalpost) for considering goal

*Latest
general
rules*

2. LATEST RULES OF THE GAME

- (i) The objective of soccer is to send the ball into the opposing team's goal, by propelling it with the feet or any other part of the body but not with the arms or hands.
- (ii) Two teams, with a maximum of 11 players each (1 goalkeeper and 10 field players), play.
- (iii) Two halves of 45 minutes period each is the time.
- (iv) Game is started with push-pass in opponent's field from centre circle.
- (v) Referee keeps a check on the time and may extend the period beyond the regulated 45 minutes (if it seems necessary injuries due to the change of the player, undue delay, etc). The Referee is assisted by two linesmen or Assistant Referee.

Tie Rule :

- (i) During a knockout tournament, if there is a tie at the end of regulation time, then the teams play for 30 minutes extra time of two halves of 15 minutes each overtime period. In this duration if any team makes the goal, wins the match. Earlier there was golden goal period in which the team who scored the goal first won the game but now it is said as silver goal period.
- (ii) If there is still a *tie* after the overtime period, a penalty shoot-out takes place (*Sudden-Death*). The referee decides which goal will be used for the penalty kicks; the team to kick first is determined by a toss. Each team chooses 5 players to take the kicks in turn. The team that has the most goals after 5 kicks wins the game.
- (iii) If the teams are still tied after 5 kicks each, the teams keep taking penalty kicks until one team wins. The goal is scored when ball crosses the goal line (may be on surface or in air).

RULES OF THE GAME

1. There are two teams in a football match. Each side has 18 players including the goalkeeper, with 11 players on the field and 7 extras. A total of 3 players can be substituted from extra players.
2. Since football is a sport that must be completed within the stipulated time period of 90 minutes (two halves of 45 minutes each and a 15 minutes half time in between), the team with the maximum scores at the end of the given period is declared the winner. A goal is scored when the entire ball crosses the goal line, between the goalposts and under the crossbar.
3. The game starts with a kick-off, which is generally decided by the referee's coin toss. The winning team can either choose to start or decide which goal they would like to attack. Whenever a goal is scored, the opponent team gets the kick-off to restart the game.
4. The ball is considered out of play when it has wholly crossed the goal line or touchline whether on the ground or in the air, or play has been stopped by the referee. However, the ball is still in play if it remains within the goal and touchline even after striking the goalpost or referee.

5. In case of a tie after the given time period, two halves of 15 minutes each are given as extra time. If the tie is not broken even in the given extra time, the winner is decided by penalty shot. If the teams are still tied, sudden-death is employed. In sudden-death, each team takes a further one penalty each, repeated until any team scores, resulting in the winning of the game by that team.
6. The goalkeeper is now allowed to move on the goal line at the time of the penalty kick. They can also run while holding the ball without bouncing it, but it must be done without any delay.

FOULS AND PENALTIES IN FOOTBALL

- ❖ **Direct Kick:** A direct kick is awarded when a player kicks or attempts to kick an opponent; strikes or attempts to strike an opponent; pushes, holds or spits at an opponent, and handles the ball deliberately.
- ❖ **Yellow Card:** A yellow card is awarded for dissent by words or action, delaying the restart of a game, entering or exiting the field without the referee's permission, and failure to respect the required distance when delivering a corner kick, free kick or throw-in.
- ❖ **Red Card:** A red card is awarded when a player receives a yellow card twice; exhibits violence and uses abusive language or gestures; unfairly handles the ball in such a way that the opponent team is blocked from getting an obvious goal-scoring opportunity.
- ❖ **Free Kick:** Free kicks can be direct free kick or indirect free kick. A direct kick can be shot directly into the opponent's goalpost without touching any other player. An indirect kick can go into the goalpost only after being touched by another player.
- ❖ **Penalty Kick:** The penalty kick must be taken from the penalty spot while all other players remain outside the penalty area. They can enter the area only after the shot has been taken.
- ❖ **Throw-in:** Goals cannot be scored directly off a throw-in. It is awarded when a player of opponent team plays beyond the touchline. A throw-in is done by releasing the ball with both hands while feet are placed firmly on the ground.
- ❖ **Corner Kick:** The attacking team is awarded a corner kick when the defending team plays beyond its goal line. A corner kick comes into play when the ball is placed within the corner area and kicked back by the offensive team.

Fundamental Skills

FUNDAMENTAL SKILLS OF FOOTBALL

Some fundamental skills required to play football properly are kicking (instep kick, outstep kick, low kick, high kick, etc.), passes (short passes, long passes, through passes), traps (sole trap, inside foot trap, front step trap, outside step trap, thigh trap, head trap, chest trap, etc.), ball control, dribbling, tackling, etc. Some of them are described below:

Short Passes: Short passes are usually given to the teammate in the immediate vicinity. Since this pass is done by using the inside of the foot, it cannot create much force. These passes are, however, very accurate.



Instep Kick: Instep kick is considered an important skill in football. This kick is generated by using the quadriceps muscles of the thigh. For execution of instep kick, the toes are not used, rather the ball should be in contact with that part of the foot where the laces are tied, ankles should be locked and toes curled. The non-kicking leg should be firmly positioned near the ball. With a swing, the ball must be propelled with a rapid extension of the kicking leg. At this time, the player should slightly lean his body in the forward direction.



Outstep Kick: This kick is quite similar to the instep kick. While the upper part of the foot is used in instep kick. While the upper part of the foot is used in instep



kick, an outstep kick utilises the outside of the upper part of the toe. And this is done with a slight twist of the foot to the left or right before propelling the ball.

Trapping: This skill can be performed in many ways as mentioned earlier. Sole trap is explained as it is the most fundamental and commonly used. In this skill, the foot should be lifted 3–4 inches above the ground and toes pointing up. The player uses the sole of the foot to stop the incoming ball.

Heading: It can be performed in a stationary position, by jumping or diving forward. Usually the forehead is used to propel the ball. To head a ball effectively, the flight of the ball should be considered before taking a jump. The player should bend the body backwards from the waist, and hit the ball with a forward swing of the head as the ball comes near the player. Since this move can give stress to the neck, player must remain firm at the moment of execution.

DRIBBLING

Dribbling: It is one of the most effective yet difficult skill in football. It is the technique of having sole control of the ball by moving it with small kicks, while

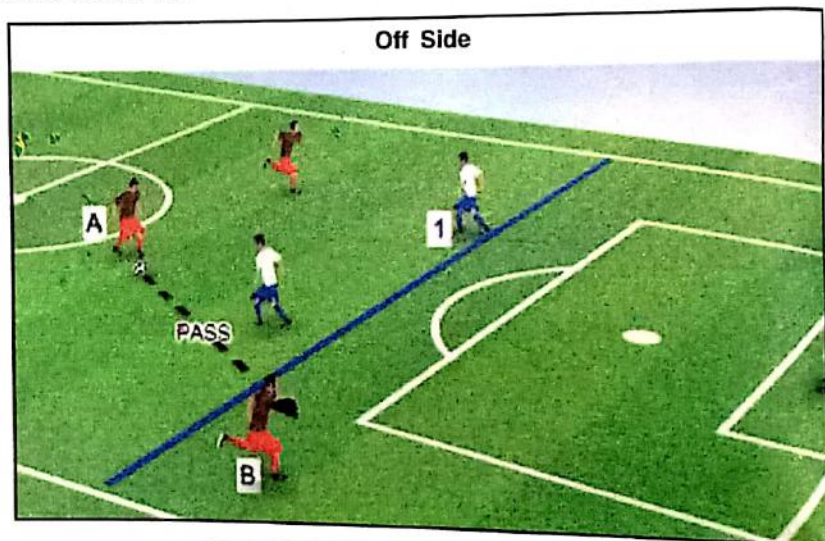
shielding it from the opponent. The ball should be carried forward in the desired direction by using light strokes so that the player can retain possession of the ball. Heavy strokes can result in loss of possession of the ball. For proper control of the ball, using the inside of the foot is preferred. An ace player can, however, dribble comfortably using the outside foot. Usually the front part of the foot is used to tap the ball. While doing so, the player should ensure that the ball does not get far away from their legs. A famous dribbling move, Cruyff turn is named after Dutch footballer Johan Cruyff.

Terminologies

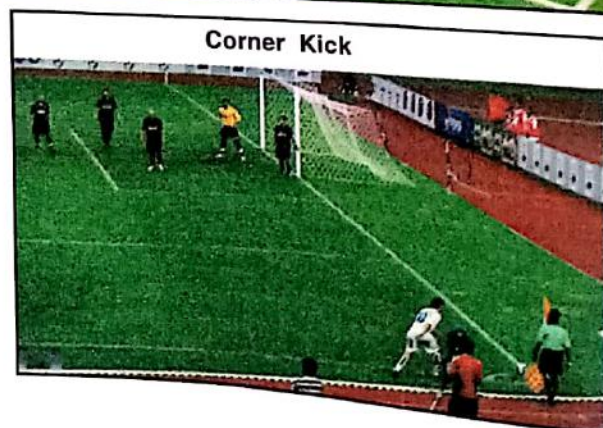
4. TERMINOLOGY

Throwing-In : It is given to opponent if ball passes over the sideline on ground or in air. This is taken by the player from the sideline. Player throws the ball over the head to give the pass to his player. Both the feet are in contact with ground. A goal cannot be scored directly from throw in.

Offside : A player is offside when he is close to the opposing goal line without the ball, unless two defenders are between the attacker and the goal line. This offside is also considered as a defensive tactic (the entire defensive line moves rapidly in a wave to put the attackers offside). Offside is given by linesman by raising red flag. Goal is not considered in that case and opponent is awarded with indirect kick.



Corner-Kick : It is also known as flag kick. Corner-kick is awarded when a defender puts the ball out of the play behind his team's goal line. An attacking player then tries to send the ball in front of the goal for another attacker to head or make a short pass to a teammate to convert it into goal. It is taken from *corner-arc* or quarter-yard circle.



Free-Kick : A free-kick is awarded when a player has been fouled when referee shows the warning-card to the player. In the direct kick, the ball can be kicked directly at the goal. In the indirect kick, the ball must be passed to a teammate before being directed at the goal. Opponents' players must be 10 yards away from where it is to be taken.



Penalty-Kick : A penalty-kick is awarded when a foul is committed by a defender in the penalty area / technical area. The ball is placed on the penalty spot and the attacking player tries to kick it directly into the goal and goalkeeper only defends it.



Dropped-Ball : In case of struggle for ball possession when both players commit simultaneous foul, in that case the Referee stops the game for sometime and afterwards drops the common ball to get the possession of the ball. (This is rarely used now).

Through-Pass : In this the ball is passed between two or more defenders and the own teammate collects the ball and moves further.

Defence-Lapse : When the defending player fails to intercept or tackle the ball which has been approaching towards goalpost.

Goal-Scored : The Referee will signal goal when the ball completely crosses the goal line between the goalpost and under the crossbar of goalpost. It must be scored in a fair manner.

Injury-Time : The time for which game has been stopped temporarily due to injury of the player. This stopped duration of game and is added in regular time after each half.

Extra-Time : The time allotted to decide the match in case of draw. This time is awarded after expiration of normal duration.

Warning (Yellow Card) : The players receive a warning if they regularly break the rules; do not respect the referee's decision; delay the start of play; are argumentative or show unsportsman conduct ; goalkeeper keeps the possession of the ball for more than six seconds, etc.

Expulsion (Red Card) : Player is expelled if he commits a serious foul; is violent; strikes, charges; kicks or attempts to kick; trips on opponent, holds opponent; handles the ball intentionally; uses abusive language, offensive or insulting language; receives a second yellow card during the game.

Goal-Kick : When ball passes over the goal line without goal scoring by the attacking player, then ball is kicked by placing from the penalty area.

Kick-Off : It is starting the game (in beginning or after half-time or after the goal has been scored or in extra-time). During kick-off players remain in their own half. Opponent team player does not enter 10 yard circle until ball is pushed or kicked forward. Kick-off player should not touch the ball consecutively second time until played by another player.

Substitution : Though there are five reserve players but only two substitutes are permitted during match that too with permission from referee.

Duties of Match Referee : An official responsible for the conduct of game under rules and regulations. His decision shall be final for the result of match. He is authorised to exercise his powers under the rules. He enforces the rules of game over both teams, gives decision on controversies and disputes over ground. Referee keeps the record of the game and acts as timekeeper. He stops the game if player has been seriously injured and restarts the game after stoppage. He is to check the equipments of the game and see that ground is fit for conduct of the game.

Duties of Assistant Referee : There are two *Assistant Referees or Linesmen*. They assist or help the *Match Referee* during the game. Their duties are to indicate *Match Referee* by various signals like ball is out of play; which team to get corner-kick or throw-in or goal-kick or offside. They are equipped with flags.

Duties of Captain : He represents the team to decide the toss, make strategies of the team in the field. He decides the team members and their position. He guides the team actions in the playing field like which player to take throw-in, corner-kick, penalty-kick, etc. Captain encourages team member to play better, checks the conduct of team members in the playing field.

TERMINOLOGY

Direct Free Kick: A direct free kick is awarded for a foul. It is legal to score directly from a free kick by kicking the ball into the goal.

Golden Goal: It is the first goal scored in extra time to decide the winner. This rule is no longer used in football. Golden ball is different from golden goal. The Golden Ball Award is given to the best player at each FIFA world cup.

Lofted Kick: Kicking the ball by lifting it into the air high enough to pass opponent players. It is executed by kicking the lower part of the ball in touch with the ground while the non-kicking foot is placed firmly to enhance the player's balance.

Loose Ball: The ball which is not in the possession of any player during the game is called loose ball.

Scissors Kick: It is a kick which is executed around waist height or a little higher. The hip flexor is used to lift the player off the ground to kick the ball sideways.

Tackle: It is a technique generally used to secure possession of the ball from the opponent, stop the opponent from moving towards the goal, or prevent the opponent from making a pass. The player should be able to estimate the accurate timing to stick out the foot to secure the ball from the opponent's possession, avoiding unnecessary physical contact in the process.

Throw-in: A throw-in is used to restart the game when the ball goes over the side. If team A was the last to touch the ball before it went out, team B gets to do the throw-in, and vice versa. The ball must be thrown from behind the head using both hands. A goal cannot be scored directly from a throw-in.

Important Tournaments

IMPORTANT TOURNAMENTS, VENUES, PERSONALITIES AND AWARDS

Important Tournaments

FIFA World Cup, FIFA Women's World Cup, FIFA Confederations Cup, Olympic Games, AFC Asian Cup, Asian Games, Santosh Trophy, Durand Cup, I-League, IFA Shield, Indian Super Cup.

Important Venues

India: Salt Lake Stadium (Kolkata), Jawaharlal Nehru Stadium (Kochi), Jawaharlal Nehru Stadium (New Delhi), Jawaharlal Nehru Stadium (Chennai), Greenfield Stadium (Thiruvananthapuram), JRD Tata Sports Complex (Jamshedpur).

International: Wembley Stadium (London, England), Old Trafford (Manchester, England), San Siro (Milan, Italy), Olympiastadion (Berlin, Germany), Allianz Arena (Munich, Germany), Estadio Azteca (Mexico City, Mexico), Camp Nou (Barcelona, Spain), The Maracana (Rio de Janeiro, Brazil).

International Personalities

Pelé (Brazil), Diego Maradona (Argentina), Lionel Messi (Argentina), Johan Cruyff (The Netherlands), Alfredo Di Stéfano (Argentina), Ferenc Puskás (Hungary), Franz Beckenbauer (West Germany), Zinedine Zidane (France), Paolo Maldini (Italy), Garrincha (Brazil), Cristiano Ronaldo (Portugal), George Best (England), David Beckham (England).

Equipments

Specifications of Playfield and Basic Requirements/Equipments :

- A rectangular ground of length 90m-120m and width 45m-90m.
- Sports gear (Jersey or shirt, shorts, socks, shoes, gloves for the goal keeper.)
- Cones
- Markers
- Football

Officials

Officials

Total no. of officials	=	04
Match Referee	=	01
Linesmen	=	02
Table official	=	01
Duration of match	=	45-10-45 min. (Two Halves of 45 min.)
If interval	=	10 to 15 min.
Extra time	=	Two Halves of 15 min.

Aapher Physical Fitness Test

MODIFIED AAHPER ADMINISTRATION

PULL-UPS FOR BOYS



Purpose: To measure arms and shoulder strength.

Equipment: A metal or wooden bar approximately 1½ inches in diameter and a stopwatch.

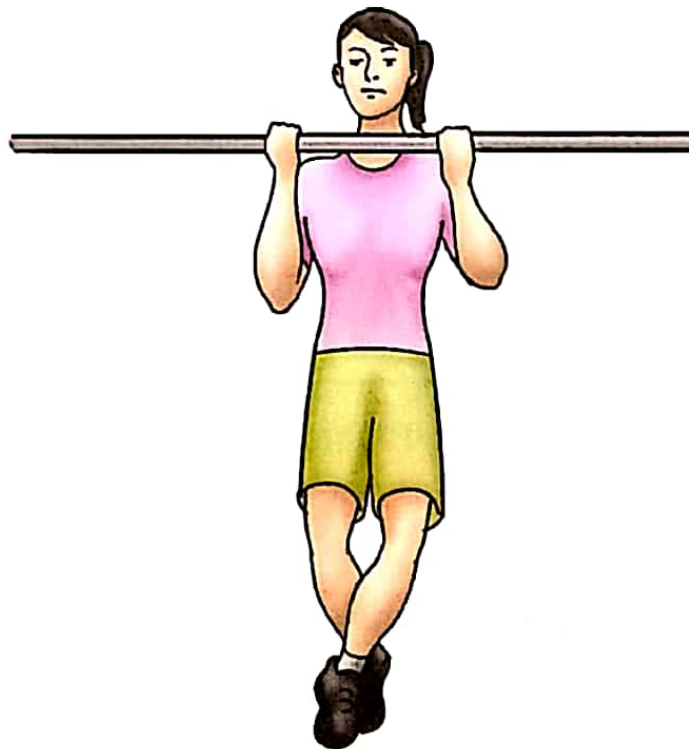
Procedure: The height of the bar is adjusted according to the height of the student. The student holds the bar

with his palms facing away from him and raises his body so that the chin reaches above the level of the bar. This test measures the total number of repetitions without taking rest by noting the number of pull-ups done. One score is awarded for every pull-up.

Rules: The student should not swing his body. The pull should not be a snap movement. In case this happens, the guide should extend his arms across the front of the student's thighs.

Scoring: The number of completed pull-ups is recorded to the nearest whole number.

FLEXED ARM HANG FOR GIRLS



Flexed arm hang for girls

Purpose: To measure arms and shoulder strength.

Equipment: A metal or wooden bar approximately 1½ inches in diameter and a stopwatch.

Procedure: The height of the horizontal bar is adjusted approximately equal to the standing height of the

Scoring: The score is counted as the maximum number of sit-ups done in 1 minute.

SHUTTLE RUN



→ Shuttle run

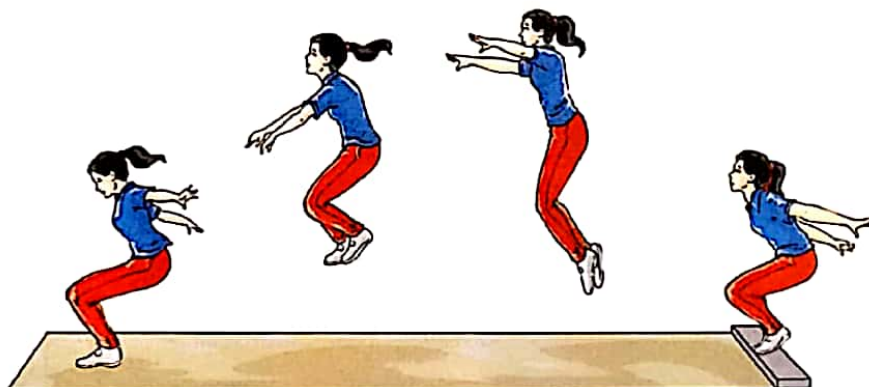
Purpose: To measure speed and agility.

Equipment: Two blocks of wood (2 × 2 × 4 inches) and a stopwatch.

Procedure: Two parallel lines are marked on the ground 30 feet apart, and two blocks of wood 2 × 2 × 4 inches are placed behind one of the lines. The student stands behind the other line. On start, the student runs towards the wooden blocks, picks one of them and runs back to the starting line, places it behind the starting line. They then run back and pick up the second block and carry it to the starting line. Two trials are allowed.

Scoring: The time taken in both trials are noted down and the best one is taken as final score.

STANDING LONG JUMP



→ Standing long jump

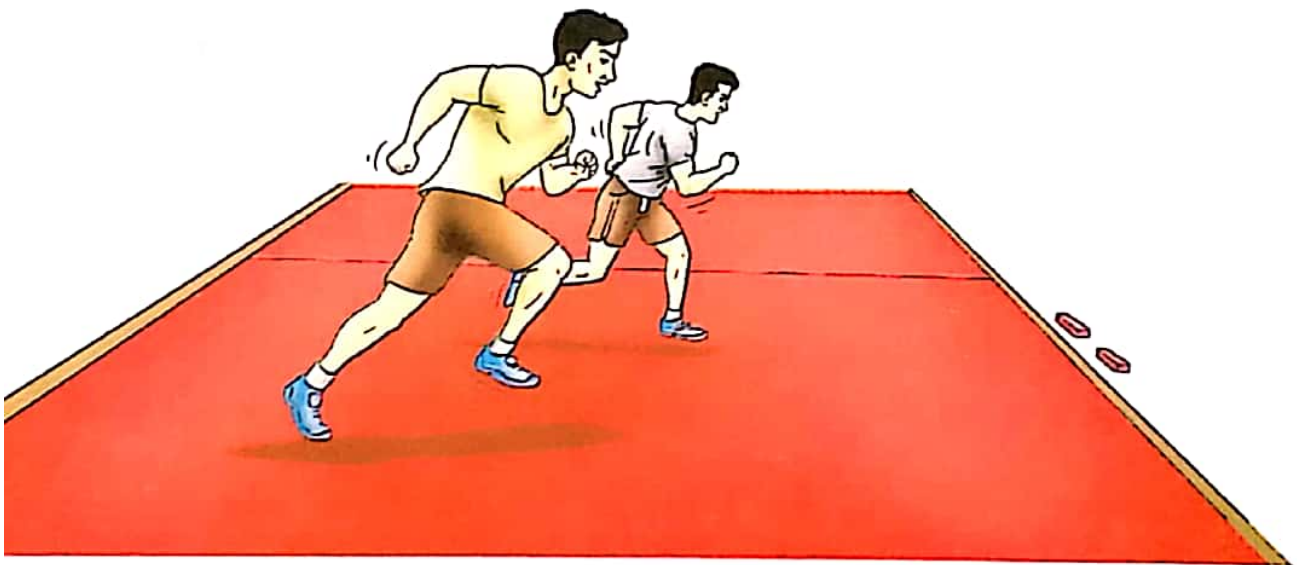
Purpose: To measure power.

Equipment: A mat or clean floor and a measuring tape.

Procedure: A take-off line is marked on the ground and the student stands behind this line with both feet apart. The student then swings the arms and bends the knees, and then jumps into the long jump pit. The distance from the take-off line to the heel or other part of body that touches the ground nearest to the take-off line is measured and noted in feet and inches. Three trials are given.

Scoring: The best score of the three is recorded as the final score.

50-YARD DASH



- 50-yard dash

Purpose: To measure speed.

Equipment: Stopwatch

Procedure: The students are asked to run 50 yards.

Scoring: The time taken is recorded as the score in seconds to the nearest tenth of a second. The time

taken is the amount of time between the starter's signal and the instant the student crosses the finish line.

600-YARD RUN



- 600-yard run/walk

Purpose: To measure endurance.

Equipment: Stopwatch.

Procedure: The students are asked to run or walk for a distance of 600 yards from a starting line.

Scoring: The time taken is recorded in minutes and seconds.

Senior Citizen Fitness Test

Even in old age, people want to be fit and be able to continue to do their work without pain as long as possible. It requires proper fitness regime during old age. In the beginning, there were not enough tests to assess functional fitness. This test is also known as **Fullerton Functional Test** of senior citizens. **Rikli and Jones** developed the Senior Citizen Fitness Test in 2001. This test has proved to be beneficial for senior citizens. It helps the early identification of at-risk participants. Along with this, it is significant to plan safe and effective physical exercise programmes for senior citizens because individual's health and fitness level can be known better with the help of this test. The Senior Citizen Fitness Test includes the following test items.

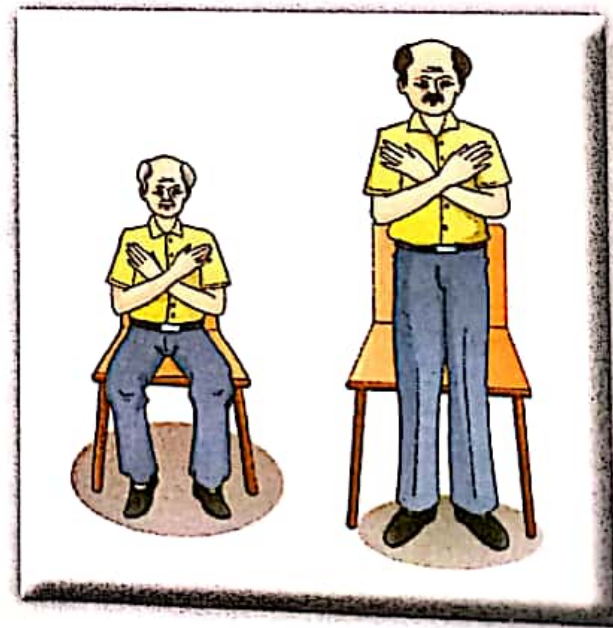
A. Chair Stand Test

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

Equipment Required. A chair with a straight back and a seat of at least 44 cm and a stopwatch.

Instructions for Participants

1. The participant should sit in the middle of the chair.
2. He should keep his hands on the opposite shoulder crossed at the wrists.
3. The feet should be flat on the floor.



Chair stand test

4. His back should be erect.

5. Repeat standing up and sitting down for 30 seconds.

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

Scoring. The score is the total number of completed chair stands during the given 30 seconds. The following table shows the recommended ranges for this test for different age groups.

Recommended Ranges for Chair Stand Test

Norms for Men			
Age	Below Average	Average	Above Average
60-64	<14	14 to 19	>19
65-69	<12	12 to 18	>18
70-74	<12	12 to 17	>17
75-79	<11	11 to 17	>17
80-84	<10	10 to 15	>15
85-89	<8	8 to 14	>14
90-94	<7	7 to 12	>12

Norms for Women			
Age	Below Average	Average	Above Average
60-64	<12	12 to 17	>17
65-69	<11	11 to 16	>16
70-74	<10	10 to 15	>15
75-79	<10	10 to 15	>15
80-84	<9	9 to 14	>14
85-89	<8	8 to 13	>13
90-94	<4	4 to 11	>11

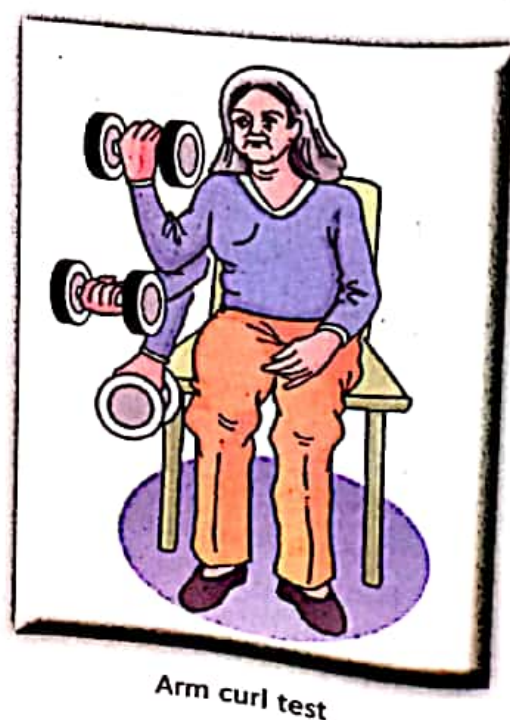
B. Arm Curl Test

The arm curl test is a test to measure the upper body strength. It is a part of the senior citizen fitness test. It is designed to test the functional fitness of aged people.

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

Equipment Required: A 5-pound weight for women and a 8-pound weight for men, a chair without arms and a stopwatch.

Procedure: The aim of the test is to find out the maximum number of arm curls that one can complete in 30 seconds. Arm curl is performed with the dominant arm side. The participant sits on the chair, holds the weight in the hand using a suitcase grip. It means the palms should be facing towards the body. The arm should be in



a vertically downward position. The upper arm should not move but lower arm should move freely. Curl the arm up through a complete range of motion gradually keeping the palm up. When the arm is lowered through the complete range of motion, gradually return to the starting position. The arm should be completely bent and then completely straightened at the elbow. This complete action should be repeated by the participant as many as times as possible within 30 seconds.

Scoring. The score is the total number of arm curls performed within the given 30 seconds duration. The following table shows the recommended ranges for the test for different age groups.

Recommended Ranges for Arm Curl Test

Norms for Men			
Age	Below Average	Average	Above Average
60-64	<16	16 to 22	>22
65-69	<15	15 to 21	>21
70-74	<14	14 to 21	>21
75-79	<13	13 to 19	>19
80-84	<13	13 to 19	>19
85-89	<11	11 to 17	>17
90-94	<10	10 to 14	>14

Norms for Women			
Age	Below Average	Average	Above Average
60-64	<13	13 to 19	>19
65-69	<12	12 to 18	>18
70-74	<12	12 to 17	>17
75-79	<11	11 to 17	>17
80-84	<10	10 to 16	>16
85-89	<10	10 to 15	>15
90-94	<8	8 to 13	>13

C. Chair Sit-and-Reach Test

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

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

Procedure: The participant sits on the edge of the chair (kept against a wall for safety purpose). One foot should remain flat on the floor while the other leg should be extended forward with the knee in straight position.

Heel should be on the floor and ankle should be bent at 90°. Place one hand on the top of the other with tips of the middle fingers at the same level. Instruct the participant to inhale and then as he exhales, reach forward towards the toes by bending at the hip. His back should be straight and head up. Avoid any jerk or bounce and never stretch too much. Keep the knee straight and hold the reach for 2 seconds. The distance is measured between the



Chair sit-and-reach test

tip of the finger tips and the toes. If the finger tips touch the toes then the score is zero. If they do not touch, measure the distance between the fingers and the toes (negative score). If they overlap, measure the distance (positive score).

Scoring. The score is noted down to the nearest 1/2 inch or 1 cm as the distance reached either a negative or positive score. The following table shows the recommended norms in inches for this test for the different age groups.

Recommended Ranges for Sit-and-Reach

Norms for Men (in inches)				Norms for Women (in inches)			
Age	Below Average	Average	Above Average	Age	Below Average	Average	Above Average
60-64	<-2.5	- 2.5 to 4.0	>4.0	60-64	<- 0.5	- 0.5 to 5.0	>5.0
65-69	<-3.0	- 3.0 to 3.0	>3.0	65-69	<- 0.5	- 0.5 to 4.5	>4.5
70-74	<-3.5	- 3.5 to 2.5	>2.5	70-74	<- 1.0	- 1.0 to 4.0	>4.0
75-79	<-4.0	- 4.0 to 2.0	>2.0	75-79	<- 1.5	- 1.5 to 3.5	>3.5
80-84	<-5.5	- 5.5 to 1.5	>1.5	80-84	<- 2.0	- 2.0 to 3.0	>3.0
85-89	<-5.5	- 5.5 to 0.5	>0.5	85-89	<- 2.5	- 2.5 to 2.5	>2.5
90-94	<-6.5	- 6.5 to 0.5	>- 0.5	90-94	<- 4.5	- 4.5 to 1.0	>1.0

D. Back Scratch Test

Purpose: This test helps to assess the upper body (shoulder) flexibility, which is essential for a person to perform various jobs such as combing hair, putting on overhead garments, reaching for a seat belt, etc.

Equipment Required: A ruler.

Procedure: This test is performed in a standing position. Keep one hand behind the head and lower it down gradually over the shoulder and reach as far as possible at the middle of your back. Your palm should touch your body and the fingers should be downwards. Then carry your other arm behind your back with palm facing outward and fingers facing upward and try to reach up as far as possible in order to touch or overlap the middle finger of the other hand. Fingers should be aligned. Measure the distance between the tips of the fingers.

If the finger tips touch then the score is zero. If they do not touch measure the distance between the fingertips (negative score). If they overlap measure the distance (positive score). Let the participant practise twice and then two trials be conducted.



Back scratch test

Scoring. Record the best score out of the two trials to the nearest centimetre or 1/2 inch. The following table shows the recommended norms (in inches) for this test for different age groups.

Recommended Ranges for Back Scratch Test

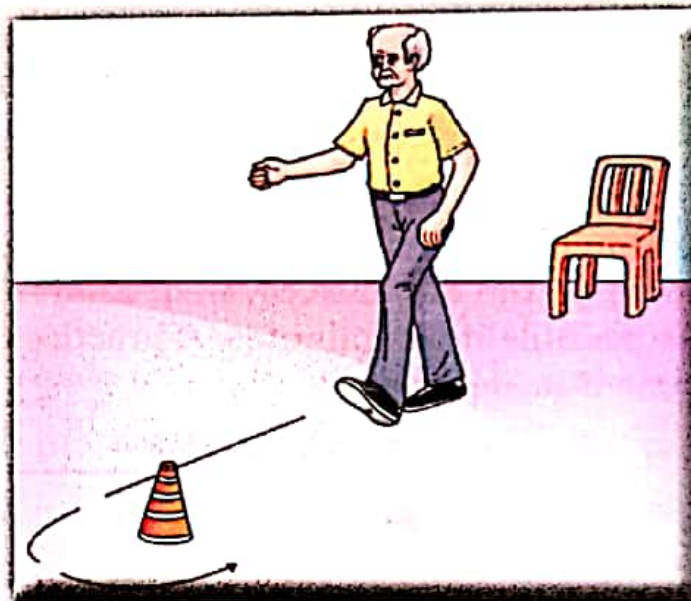
Norms for Men (in inches)				Norms for Women (in inches)			
Age	Below Average	Average	Above Average	Age	Below Average	Average	Above Average
60-64	>6.5	6.5 to 0	<0	60-64	>3.0	3.0 to 1.5	<1.5
65-69	>7.5	7.5 to -1.0	<-1.0	65-69	>3.5	3.5 to 1.5	<1.5
70-74	>8.0	8.0 to -1.0	<-1.0	70-74	>4.0	4.0 to 1.0	<1.0
75-79	>9.0	9.0 to -2.0	<-2.0	75-79	>5.0	5.0 to 0.5	<0.5
80-84	>9.5	9.5 to -2.0	<-2.0	80-84	>5.5	5.5 to 0	<0
85-89	>10.0	10.0 to -3.0	<-3.0	85-89	>7.0	7.0 to -1.0	<-1.0
90-94	>10.5	10.5 to -4.0	<-4.0	90-94	>8.0	8.0 to -1.0	<-1.0

E. Eight Foot Up and Go Test

This test is conducted to assess coordination and agility in aged people.

Purpose: This test helps to evaluate speed, agility and balance of a person while moving. These are important factors in performing jobs which require quick manoeuvring, such as getting off a bus in time, to answer the phone, etc.

Equipment Required. A chair with straight back (about 44 cm high), a stopwatch, cone marker, measuring tape and an area without any hindrances.



Eight foot up and go test

Procedure: Keep a chair next to the wall and place the cone marker 8 feet away in front of the chair. The participant is initially completely seated, hands resting on the knees and feet flat on the ground. On the command 'Go', stopwatch is switched and the participant stands and walks (no running at all) as quickly as possible towards the cone, turns around and returns to the chair to sit down. Time is noted as he sits down on the chair. Two trials are given per participant.

Scoring. The best trial is recorded to the nearest 1/10th second. The table shows the recommended norms or ranges in seconds for this test for different age groups.

Recommended Ranges for Eight Foot Up and Go Test

Norms for Male (in Seconds)			
Age	Below Average	Average	Above Average
60-64	>5.6	5.6 to 3.8	<3.8
65-69	>5.7	5.7 to 4.3	<4.3
70-74	>6.0	6.0 to 4.2	<4.2
75-79	>7.2	7.2 to 4.6	<4.6
80-84	>7.6	7.6 to 5.2	<5.2
85-89	>8.9	8.9 to 5.3	<5.3
90-94	>10.0	10.0 to 6.2	<6.2

Norms for Female (in Seconds)			
Age	Below Average	Average	Above Average
60-64	>6.0	6.0 to 4.4	<4.4
65-69	>6.4	6.4 to 4.8	<4.8
70-74	>7.1	7.1 to 4.9	<4.9
75-79	>7.4	7.4 to 5.2	<5.2
80-84	>8.7	8.7 to 5.7	<5.7
85-89	>9.6	9.6 to 6.2	<6.2
90-94	>11.5	11.5 to 7.3	<7.3

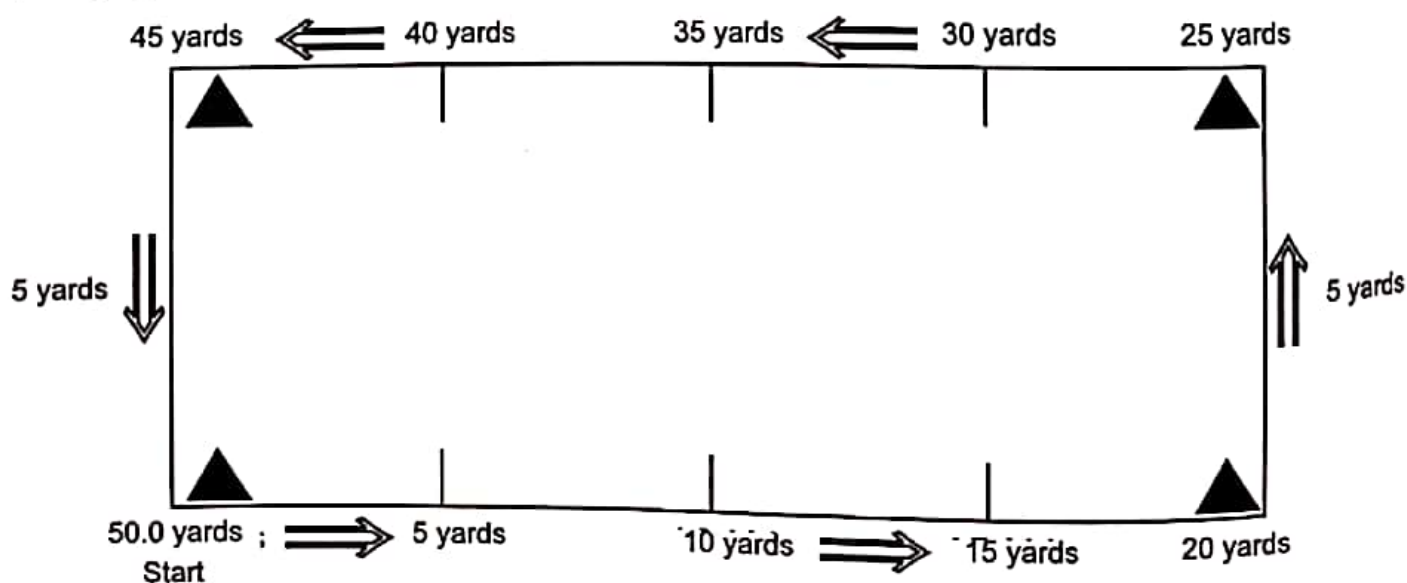
F. Six-minute Walk Test

The six-minute walk test is designed to test the functional fitness of senior citizens.

Purpose. This test helps to assess the aerobic fitness or aerobic endurance of a person which is an essential component for walking distances, stair climbing, shopping, sightseeing, etc.

Equipment Required. A measuring tape, a stopwatch.

Procedure: The walking distance or course is marked i.e., 45.72 m or 50 yards in a rectangular area (20 × 5 yards) of 5 yards with cones placed at regular intervals to indicate the distance covered. Efforts are made to walk maximum distance as quickly as possible in six minutes. A practice trial is given to the participant. He may stop any time if he desires so.



Six-minute Walk Test

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

Recommended Ranges for Six-Minute Walk Test

Norms for Male (in yards)				Norms for Female (in yards)			
Age	Below Average	Average	Above Average	Age	Below Average	Average	Above Average
60-64	<610	610 to 735	>735	60-64	<545	545 to 660	>660
65-69	<560	560 to 700	>700	65-69	<500	500 to 635	>635
70-74	<545	545 to 680	>680	70-74	<480	480 to 615	>615
75-79	<470	470 to 640	>640	75-79	<430	430 to 585	>585
80-84	<445	445 to 605	>605	80-84	<385	385 to 540	>540
85-89	<380	380 to 570	>570	85-89	<340	340 to 510	>510
90-94	<305	305 to 500	>500	90-94	<275	275 to 440	>440

YOGA

HISTORY

The word '*yoga*' comes from the Sanskrit word '*yuj*' which commonly means 'to add', 'to join', 'to unite', or 'to attach'. Yoga can be called a spiritual discipline which focuses on bringing harmony between mind and body.

Yoga is believed to have historically existed in the pre-Vedic period (2700 BCE) of ancient India. Various sages and practitioners have contributed to preserving and developing yoga into the form we know today. The period 1700 to 1900 CE is considered as Modern Period in the history of yoga. Ramana Maharshi, Ramakrishna Paramhansa, Paramhansa Yogananda, Vivekananda, among others, contributed to the development of Raja Yoga during this period.

Yoga is now practised widely for physical fitness and mental well-being. It has been popularised in many countries through the teachings of Swami Shivananda, Shri T Krishnamacharya, Swami Kuvalayananda, Shri Yogendra, Swami Rama, Sri Aurobindo, Maharishi Mahesh Yogi, Acharya Rajneesh, K Pattabhi Jois, B K S Iyengar, and Swami Satyananda Sarasvati.

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## **ASANAS FOR OBESITY**

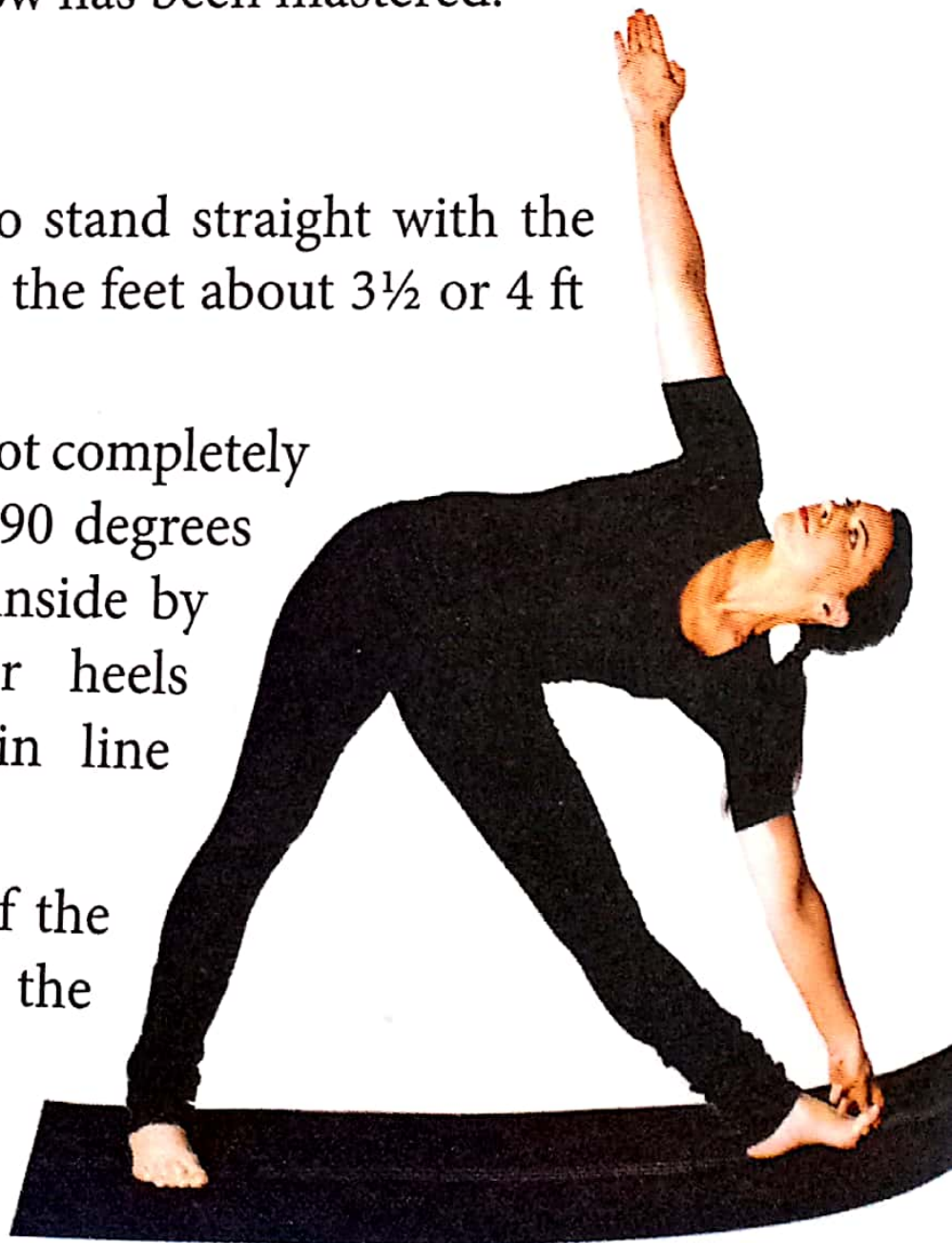
Obesity is a physical condition in which a person has accumulated so much body fat that it might have a negative effect on her/his health. Obese people are prone to several potential diseases, such as arthritis, hypertension, cancer, flat foot, respiratory disease, liver problem, diabetes, etc. Obesity can be caused by genetics, overeating, eating frequently, physical inactivity, and also psychological factors.

## Trikonasana

*Trikonasana*, or the Triangle Pose ('*trikona*' for 'triangle'), is another standing yoga pose which those wanting to control their weight will find useful. It has three advanced forms: *utthita trikonasana* (extended triangle pose), *baddha trikonasana* (bound triangle pose) and *parivrtta trikonasana* (revolved triangle pose), which should be done only after the basic procedure given below has been mastered.

### Procedure

1. The first step is to stand straight with the knees unbent and the feet about 3½ or 4 ft apart.
2. Turn your right foot completely to the outside by 90 degrees and the left foot inside by 15 degrees. Your heels should be kept in line with the hips.
3. Align the centre of the right heel with the centre of the arch of the left foot. Your feet should



- press the ground firmly and the weight of the body should be equally balanced on both the feet.
4. Spread your arms to the sides. They should be parallel to the ground with the palms facing down. Extend your trunk to the right.
  5. Drop the right arm so that the right hand reaches the front of the right foot.
  6. Now, extend the left arm vertically. Twist the spine and trunk gently in a counter-clockwise direction. This time, the spine should remain parallel to the ground.
  7. Stretch the arms away from one another. You may turn your head and look up to intensify the spinal twist.
  8. Hold this position for 5 to 10 breaths. Inhale deeply. Relax your body with each exhalation.
  9. Repeat the posture by switching the position of the legs.

### **Benefits**

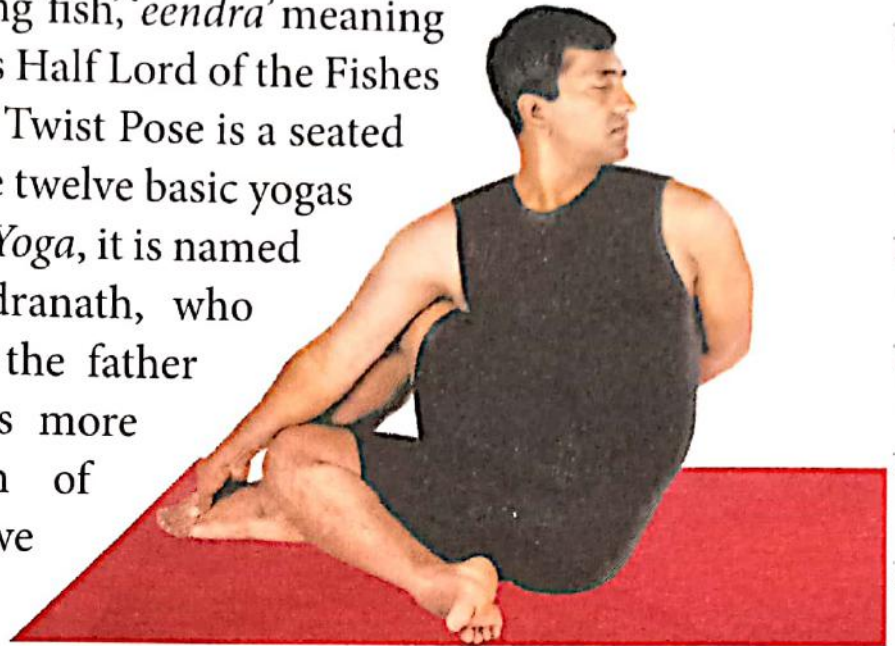
- ❖ It relieves gastritis, indigestion, flatulence, and acidity. Since it helps burn fat, it is highly recommended for those hoping to lose excess weight.
- ❖ It also improves flexibility of the spine and corrects the posture of the shoulders.
- ❖ It massages the pelvic organs and strengthens them.
- ❖ It reduces stiffness in the back, neck, shoulders and knees.
- ❖ It reduces anxiety and stress.
- ❖ It improves blood circulation and strengthens and stretches the hips, back, arms, thighs and legs.

### **Contraindications**

1. This asana should be avoided by those who have migraine, diarrhoea, blood pressure problems or injuries of the neck and back.
2. Those with high blood pressure should not raise their hand overhead if they want to try this pose, as the stance may raise the blood pressure.
3. Beginners should practise this under the guidance of an expert.
4. Those with cervical spondylosis should not look up for too long.
5. Those with a heart condition should practise against a wall and avoid raising the arm. Rather the arm should rest along the hip.

## Ardha Matsyendrasana

*Ardha Matsyendrasana* ('*Ardha*' meaning 'half', '*matsya*' meaning 'fish', '*eendra*' meaning 'king'), also known as Half Lord of the Fishes Pose and Half Spinal Twist Pose is a seated yoga pose. One of the twelve basic yogas performed in *Hatha Yoga*, it is named after Yogi Matsyendranath, who is considered to be the father of Hatha Yoga. It is more complicated version of *Vakrasana*, which we will read about later.



### Procedure

**Figure 12.4** Ardha Matsyendrasana

1. First, sit up with the legs stretched out straight in front of you. Keep the feet together and the spine erect.
2. Bend your right leg. Place the heel of the right foot beside the left hip, and bring the left leg over the right knee.
3. Place the right hand on the left leg and the left hand behind you.
4. Gently twist your waist, shoulders and neck in this sequence to the left, looking over the left shoulder. Your spine should be erect.
5. Hold the position for a few seconds, keeping your breath steady.
6. Exhale and release the left hand first, followed by the waist, chest, and then finally the neck.
7. Sit up relaxed yet straight. Repeat with the other side.

## ***Benefits***

- ❖ The twisting position massages the abdominal organs, increasing the release of digestive juices and improving the functioning of the digestive system.
- ❖ It brings relief from stiffness, stress and tension in the back.
- ❖ By opening up the chest, it greatly increases the supply of oxygen to the lungs.
- ❖ It also loosens up the hip and makes the spine more flexible.
- ❖ It improves the circulation of blood.
- ❖ It improves the flexibility of the back muscles, leg muscles, etc. and tones the muscles.

### ***Contraindications***

1. Pregnant and menstruating women should avoid this position as the twisting of the abdomen might be too strong for them.
2. People who have had heart, abdominal or brain surgeries, and those with spinal problems and slipped discs should not practise this asana.
3. People who have severe back or neck pain should practise carefully and under the supervision of an expert.

been instructed by their doctor not to

## **ASANAS FOR BACK PAIN**

Back pain is pain felt in the back and may be neck pain (cervical), middle back pain (thoracic), lower back pain (lumbar), or coccydynia (tailbone). It may differ in intensity or duration. Sometimes, it may extend to the hands and feet.

The common causes of back pain are incorrect body posture resulting from poor build of the body or slouching due to use of electronic gadgets, accidents, excessive weight, muscle strains and/or spasms, sports injuries, lack of exercise, etc.

## Vakrasana

Vakrasana ('*vakra*' meaning 'twisted') is also known as half spinal twist pose and is a simplified form of Ardha Matsyendrasana. For those who cannot perform or practise the fuller version, vakrasana can be the answer to tone their spinal nerves and abdominal muscles and organs.

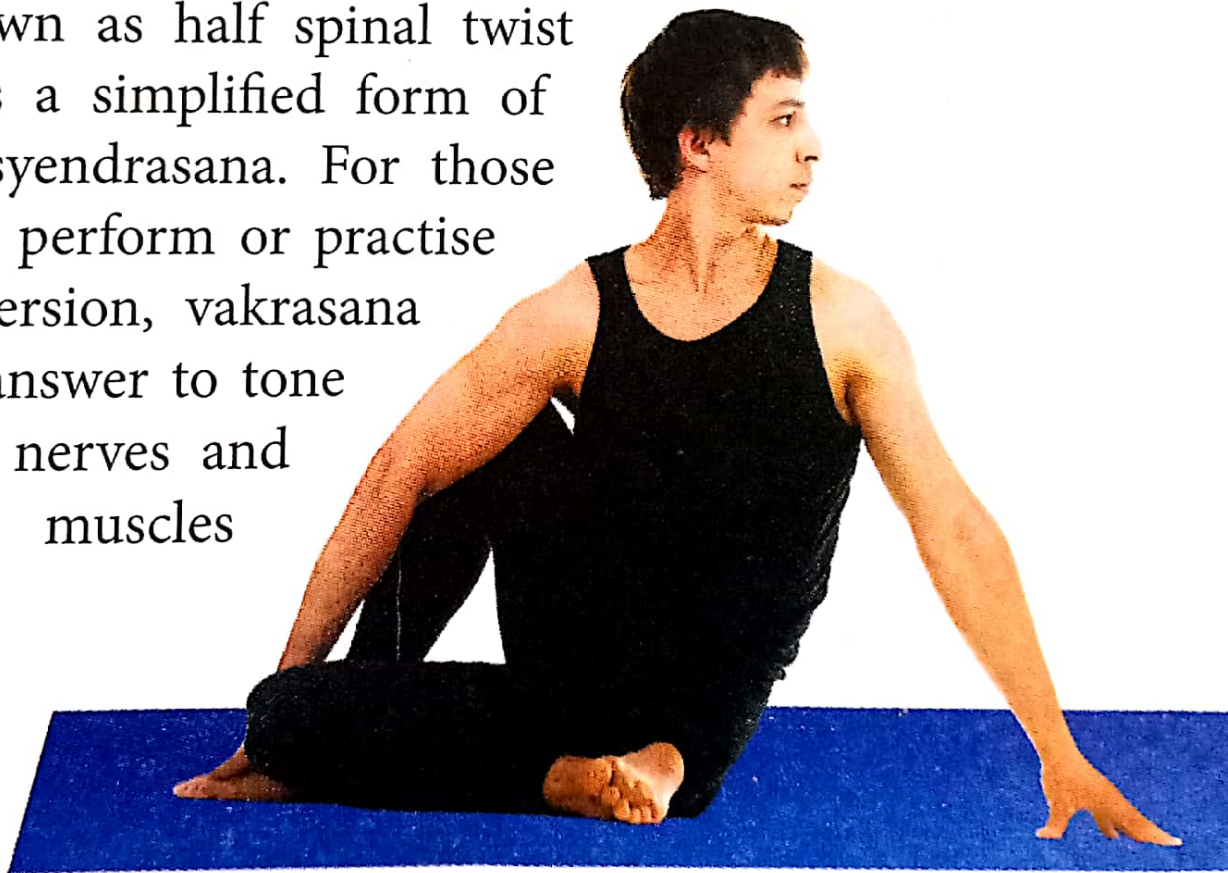


**Figure 12.15**  
Vakrasana

## ***Procedure***

1. Sit down and stretch out your legs. Rest your hands beside your thighs or buttocks.
2. Keep your right leg straight and stretched.
3. Place your left foot beside the right knee as you keep your left knee raised upward.
4. Inhale and straighten your elbows by raising the shoulder. As you exhale, twist your body to the left by placing the right arm by the outer side of the left knee and with your right hand, hold on to the left ankle. Then place the left hand behind the back by resting the palm on the floor.
5. Turn your head backward from the left side. The final position of each stage should be held while breathing naturally. Hold the position as long as it is comfortable.
6. Next, inhale and straighten the elbow of your right arm by raising your shoulder. As you exhale, release your body that is twisted towards the left by placing your right hand by the side of the right buttock and left hand by the side of the left buttock.
7. Relax as you take a deep breath. Repeat the same steps on the other side.

## ***Benefits***

- ❖ It helps to reduce abdominal fat, which can cause back pain. It also improves the function of the spine.
- ❖ It massages the abdominal organs and enhances digestion by regulating the secretion of digestive juices.
- ❖ Among other things, it strengthens the kidneys and prevents enlargement of the liver and spleen.

## ***Contraindications***

This asana should not be performed by individuals who have ulcer and liver problems.

## Shalabhasana

- ▶ *Shalabhasana* ('shalabh' meaning 'locust'), also known as locust pose because the body looks like a locust or a grasshopper, is simple to do and suitable for everybody. This asana is especially beneficial for the spine.

### Procedure

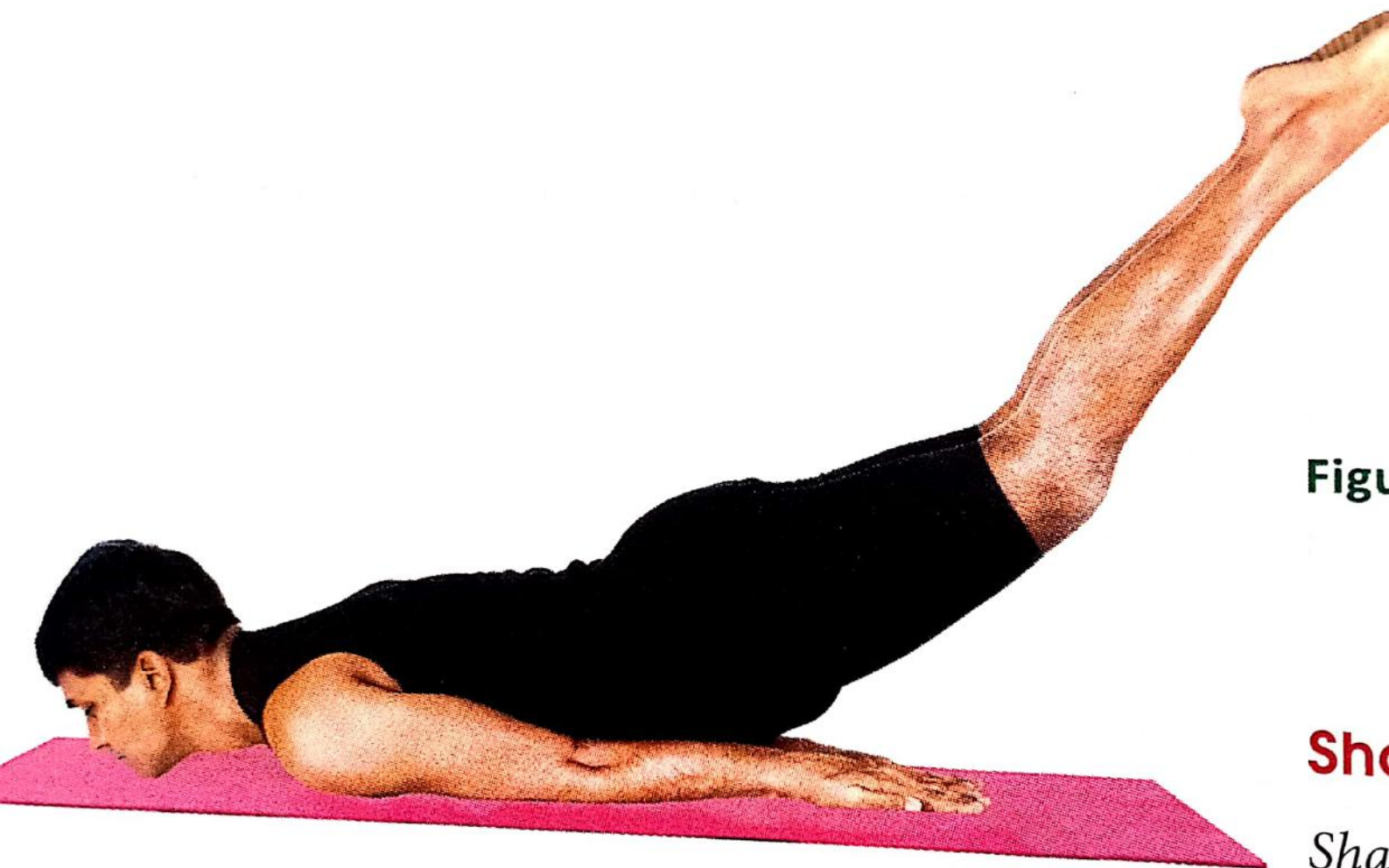
1. Lie down on your stomach and place both hands underneath the thighs.
2. Inhale and lift up your outstretched right leg. Rest your chin on the ground.
3. Maintain this position for 10 to 20 seconds. Then exhale and bring back your leg to its initial position.
4. Follow the same steps with your left leg and repeat the cycle 5 to 7 times.
5. Inhale and lift up both your legs without bending the knees. Repeat the same process for both your legs 2 to 4 times.

### Benefits

- ❖ It is beneficial for the disorders of the lower end of the spine, especially backache and sciatica.
- ❖ It helps in reducing extra fat around the abdomen, waist, hips and thighs.
- ❖ It has the ability to cure cervical spondylitis and spinal cord ailments if practised daily.
- ❖ It strengthens the muscles at the back.

### Contraindications

1. Do not practise this asana if you have injured or weak knees.
2. Also, avoid this pose if you have an injured ankle.



**Procedure**

**Figure**

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## ASANAS FOR DIABETES

Diabetes Mellitus, or diabetes, is a disease that causes sugar to build-up in our blood. Our body uses a hormone called insulin to control the level of sugar in our blood. When the body fails to produce sufficient amount of insulin or when insulin does not work properly, diabetes occurs. This disease, also known as 'blood sugar', is characterised by hyperglycaemia (high blood sugar level), glucosuria (glucose in the urine), polydipsia (excessive thirst) and polyphagia (excessive appetite). Tiredness, blurred vision, poor immunity, slow recovery from wounds, excessive weight gain or loss are other common symptoms.

There are three main types of diabetes:

1. **Type 1 (insulin dependent):** The pancreas gland does not produce insulin.
2. **Type 2 (insulin independent):** An inherited variety that normally appears after the age of 40 years in which cells fail to respond to insulin properly. The primary cause is excessive weight and lack of physical activity.
3. **Type 3 (gestational diabetes):** It occurs when pregnant women without a history in diabetes suddenly develop a high blood sugar level.

### Bhujangasana

*Bhujangasana* ('*bhujang*' meaning 'cobra'), also known as cobra pose is a back bending pose which forms the eighth pose of the twelve poses of *Surya Namaskar*. It should be practised on an empty stomach; you should have taken your meals at least four to six hours before practising this pose. The best timing for performing this asana is early morning.

### Procedure

1. First, you must lie flat on your stomach with forehead touching the floor. Place your hands on the side of your thighs.

2. Move your hands to the front, keeping them at the shoulder level, and place your palms on the floor.
3. Balancing your body's weight on the palms, breathe in and slowly raise your head and trunk. Your arms should be bent at your elbows at this stage.
4. Work towards arching your neck backward. This is done to assume the pose of a cobra with a raised hood. It is important that your shoulder blades remain firm and that your shoulders are away from your ears.
5. Press your hips, thighs and feet to the floor.
6. Hold the position for 15–30 seconds while breathing normally.
7. To undo the pose, slowly bring your hands back to the sides. Rest your head on the ground by bringing your forehead in contact with the floor. Place your hands under your head. Then, slowly rest your head on one side and breathe.

### **Benefits**

- ❖ It puts the abdominal muscles and shoulders to work, increasing the circulation of the blood and oxygen in those regions, which in turn raises the body temperature and boosts the body's metabolism to levels that are beneficial at controlling diabetes.
- ❖ It fights acidity, indigestion and constipation, and helps the practitioner lose weight.
- ❖ It enhances the function of the liver, kidney, pancreas and gall bladder.
- ❖ It strengthens the arms and shoulders.

### **Contraindications**

1. Those with severe back problems, neck problems, hernia and carpal tunnel syndrome and pregnant women should avoid this *yoga* pose.
2. Those suffering from stomach disorders like ulcers and intestinal tuberculosis should perform this under the guidance of a trained expert.



**Figure 12.5**  
Bhujangasana



**Figure 12.6** Paschimottanasana

## Paschimottanasana

*Paschimottanasana* ('*paschim*' meaning 'west', or backside of the body, and '*uttana*' meaning 'stretch'), also known as seated forward bend pose is a sitting pose used for stretching the spine. It is particularly beneficial for diabetic people.

### Procedure

1. The first step is to lie down on your back on a mat. Your legs should be straight.
2. Stretch your hands upward, keeping your fingers straight. Inhale deeply.
3. With your arms still stretched, slowly raise your body and sit. Your spine should be erect and toes flexed towards you. Breathe normally.
4. Slowly raise both the arms straight above your head and stretch your back. This should be done while inhaling.
5. With slow exhalation, bend forward from the hip joint. Move your chin towards the toes keeping the spine erect.
6. Place your hands on your legs without over-exerting them.
7. If you can hold your toes, pull on them to help you go forward. If not do not put undue pressure trying to achieve this step. The trick is to start with what you are comfortable with.
8. Stay in this position as long as possible. Then breathe in and rise, stretching your arms above your head.
9. Exhale and bring your arms down, placing the palms on the ground.

### Benefits

- ❖ While practising paschimottanasana, the intestine and gall bladder are smoothly pressed and stimulated, enhancing their functions.
- ❖ It massages and tones the abdominal and pelvic organs and improves blood circulation.

- 
- ❖ It also reduces belly fat and brings relief from constipation.

### ***Contraindications***

1. Pregnant women and those who have had stomach operation should avoid this asana.
2. In case of a damaged and enlarged liver and/or spleen, or if you have a herniated disc or acute appendicitis, it is advisable not to practise this asana.

## **ASANAS FOR ASTHMA**

Asthma is a respiratory disease in which the airways become blocked or narrowed, resulting in breathing difficulty. Symptoms include extra production of mucus, excessive coughing, wheezing and shortness of breath. Asthma tends to occur in the mornings and nights – especially during the colder hours. For some people, asthma can be a serious and debilitating condition. They have to carry a nebuliser (breathing machine) around to help them recover from the attacks. It is an incurable disease, but one that can be

controlled. The causes of asthma are as follows:

1. It can be allergic or non-allergic. In the former case, attacks are often triggered by allergens in the air, including smoke and fumes, perfumes, scented soaps, etc.
2. Genetic factors are also known to cause asthma.
3. Respiratory infections such as cold, flu, sore throat and sinus infections, exercising in cold temperature, and certain medications like aspirin and non-steroid anti-inflammatory drugs are also found to be causes of asthma.

## Chakrasana

*Chakrasana* ('chakra' meaning 'wheel') also known as *Urdhva Dhanurasana* or upward facing bow pose, is a back-bending pose commonly referred to as 'back bridge' in acrobatics and gymnastics. It is one of the final sequences in *Ashtanga Vinyasa* Yoga, the modernised version of classical yoga popularised by K Pattabhi Jois.

### Procedure

1. You may begin this asana with a performance of *bhujangasana*.
2. Lie on the back with the feet parted, bend the knees and bring your feet closer to the buttocks.
3. Fold your arms and bring the palms under the shoulders. The two elbows should have a shoulder width distance between them.

**Figure 12.9**  
Chakrasana



4. Inhale and press your palms firmly against floor.
5. Lift your shoulders using your elbows as levers. Both your palms and feet should be firmly pressed against the floor as you do this.
6. Now, raise your hips so that your spine is arched in a semicircular fashion.
7. Stretch your arms and legs as much as possible so that the hips and chest are pushed up. Hold this position for at least 15–30 seconds.
8. To release yourself from this pose, lower your head and shoulders to the floor by bending the elbows. Then bend your knees and lower your spine and hips. Breathe normally.

### ***Benefits***

- ❖ Chakrasana opens up our lungs and stretches our chest and shoulders. As this refines the act of breathing, this asana is highly advantageous for asthma patients.
- ❖ Additionally, it makes the shoulder blades, wrists, arms, legs, spine, buttocks, the heart and the muscles of the hips stronger.
- ❖ It also stimulates the thyroid and pituitary glands.

### ***Contraindications***

1. This asana is not recommended for those with carpal tunnel syndrome, back injuries, blood pressure problems, headache, diarrhoea, hernia or heart problems.
2. Pregnant women too are advised against taking up this asana.

## Gomukhasana

*Gomukhasana* ('go' means 'cow' and '*mukha*' means 'mouth' or 'face') is also known as cow face pose. It is so named because the overall position of the thighs, calves and feet of the person has the appearance of the face of a cow when viewed from above. This position must be practised on an empty stomach and after bowel movements. It is best to do it in the morning.

### ***Procedure***

1. Sit on the floor with your legs stretched out in front of you. Your spine should be erect.
2. Gently bend your left leg and bring it under your right leg so that the calf rests beneath the right hip. Fold your right leg and position the calf above the left thigh.



**Figure 12.10** Gomukhasana

3. Stack your right knee on top of the left one.
4. Now fold your left arm and place it behind your back. The elbow should point downwards. Fold your right arm and bring it behind the shoulder with the elbow pointing upwards.
5. Stretch your arms till the two hands are touching each other. Do not worry if you cannot achieve this the first time.
6. Still keeping the spine straight, open up your chest, then lean back slightly.
7. Hold this pose for as long as you can, taking deep and slow breaths.

### ***Benefits***

- ❖ This asana strengthens the chest and eases breathing. It also gets rid of stiffness in the shoulders and the back.
- ❖ It also trains an individual to breathe correctly by making her/him focus on her/his own breathing.
- ❖ Additional benefits include relaxation, stretching of muscles, and bringing relief from frequent urination.

### ***Contraindications***

1. This asana should be avoided by those who have ailments of the knee, back and neck.
2. Overweight individuals should start slowly and not exert themselves beyond comfortable limits.

# ASANAS FOR HYPERTENSION

An increase in blood pressure beyond normal level is called hypertension. The main function of the heart is to supply purified blood to various parts of the body through the arteries. When the heart contracts, it pushes the blood through the blood vessels and consequently the blood pressure increases in the arteries. This pressure is called systolic blood pressure. When the heart muscle is relaxed between beats, it is said to be in diastolic mode. The systolic and diastolic pressure represent the maximum and minimum pressure respectively. Normal blood pressure at rest should be within the range of 100–140 mm/Hg systolic (which is the top reading), and 60–90 mm/Hg diastolic (bottom reading).

Hypertension may lead to strokes, aneurysms, arterial diseases and even chronic kidney diseases. It is a major cause of death throughout the world.

## ***Causes of Hypertension***

- ❖ Genetic causes
- ❖ Unhealthy lifestyle
- ❖ Obesity
- ❖ Lack of exercise

## Tadasana

The prefix '*tada*' means 'palm', so this asana is also referred to as palm tree pose. Alternatively, it is also called the mountain pose. It is a simple preparatory asana which can be used to warm-up before taking on complicated poses. Though it can be performed at any time of the day, it is recommended that you do it 4–6 hours after taking your meals.

### Procedure

1. Stand erect with your feet together and your arms at the sides. Breathe steadily.
2. Distribute your body weight evenly on the feet. Then lift and spread your toes and the balls of your feet. Lay them gently on the ground.
3. Make your thigh muscles firm and lift your knee caps. This should be done with the relaxation of the abdominal muscles.
4. Lift your inner ankles to strengthen the inner arches.
5. Turn your upper thighs slightly inward.
6. Elongate your tailbone towards the floor and lift your pubis towards your navel.
7. Now breathe in and stretch your shoulders, arms and chest upwards. Raise your heels. Your weight should be balanced on the toes.
8. Feel the stretch in your body right from your feet to your head.
9. Hold the pose for a few seconds and exhale.
10. Make sure that while doing this pose, you don't tuck your tailbone and flatten your lumbar spinal curve. Doing this pushes your hips forward and prevents you from forming a long line from your feet to the top of the head.

### Benefits

- ❖ It strengthens the chest and improves respiration, and opens up the heart and spine. The flow of blood in the arteries thus becomes more fluid and smooth.



Figure 12.13 Tadasana

- ❖ It enhances the nervous system, strengthening your ability to focus.
- ❖ It improves posture, and makes the buttocks and abdomen firmer.
- ❖ It strengthens the thighs, knees, and ankles, in addition to increase their flexibility.

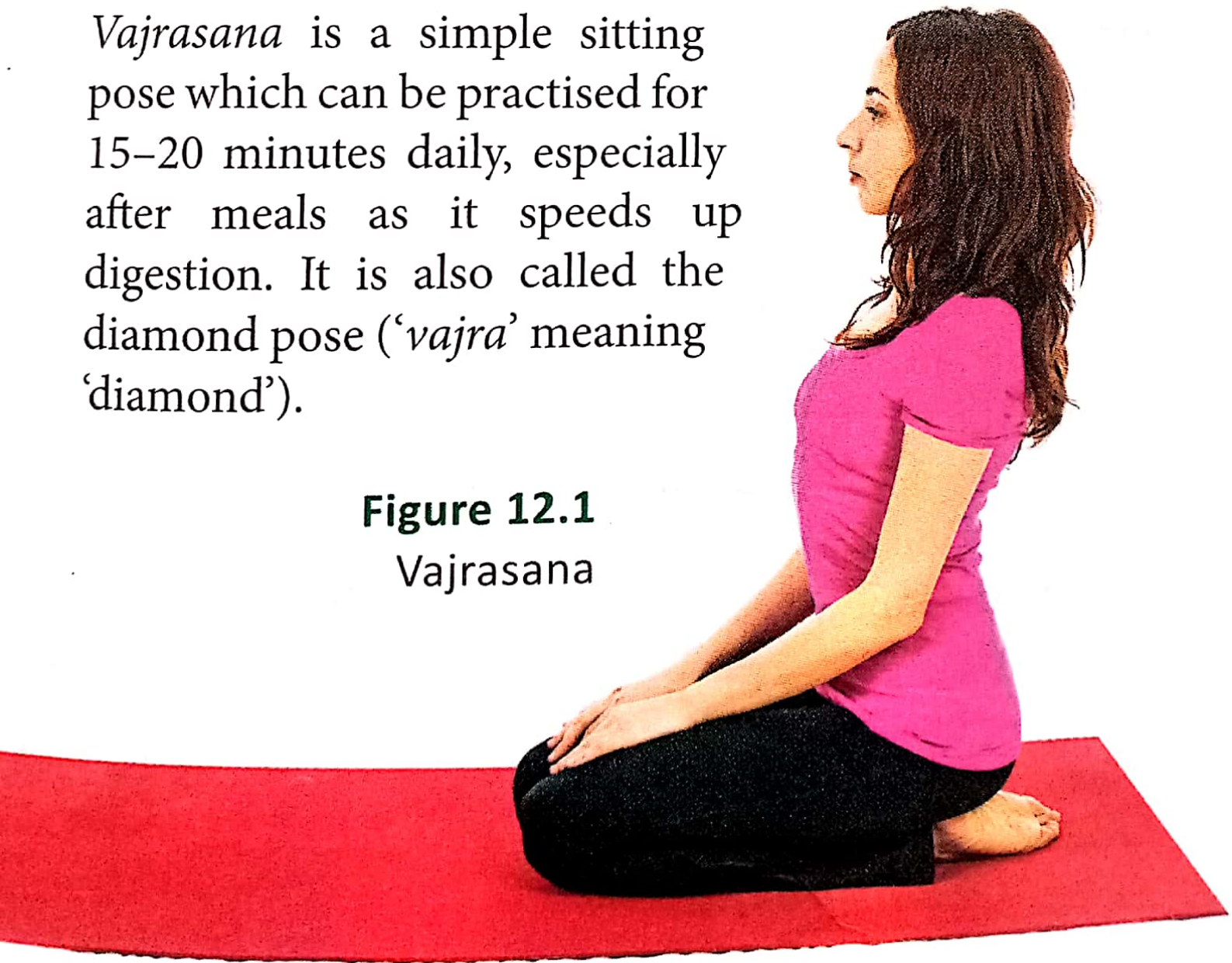
### ***Contraindications***

1. Tadasana should be carried out with caution by those suffering from headaches, insomnia or low blood pressure.
2. Hyper extension of the knee can cause knee problems.
3. This asana should be avoided during pregnancy.

## Vajrasana

*Vajrasana* is a simple sitting pose which can be practised for 15–20 minutes daily, especially after meals as it speeds up digestion. It is also called the diamond pose (*'vajra'* meaning 'diamond').

**Figure 12.1**  
Vajrasana



## ***Procedure***

1. First kneel down on a flat surface. You may use a mat. Your lower legs should stretch straight backwards with the toes crossing each other.
2. Sit with your buttocks resting on the heels and the thighs on the calf muscles.
3. Your spine should be straight and your head should face forward.
4. Rest your hands on the knees.
5. Although not compulsory, you may close your eyes while you focus on your inhalation and exhalation. The breaths you take should be deep.
6. Beginners may hold this position for 5–10 minutes daily and increase the duration gradually up to 20–30 minutes.

## ***Benefits***

- ❖ The most significant benefit of vajrasana for obese individuals – or for those who want to avoid becoming obese – is the improvement of digestion. This position lowers the circulation of blood in the lower legs, diverting it to the abdominal area, where the digestive organs are located.
- ❖ Vajrasana helps in case of gaseousness in the stomach and stops the formation of ulcers. It also brings relief from constipation.
- ❖ Apart from aiding proper digestion of food, this asana is also known to alleviate lower back problems, calm the nerves, strengthen the legs and thighs, make joints of the knees and ankles more flexible, and correct posture.

## ***Contraindications***

1. Patients of knee and back injuries should be extra careful while practising this position and should

take it up only under the guidance of a trained expert.

2. The same caution applies to patients of hernia, intestinal ulcers and other diseases of the small and large intestines.
3. It might cause severe stiffness in the feet, ankles and knees.
4. Beginners should take care not to overexert themselves to avoid straining the joints and breath.