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ARCHERY

HISTORY

Archery is one of the oldest practices in human history; the bow and arrow, now primarily used in sports, were once used for hunting and as weapons of combat. In ancient India, the science of archery was called ‘*dhanurveda*’ and considered a noble skill. The heroes of the famous epics – Rama, Arjuna, Karna, Eklavya – were spectacular archers. In modern day Ladakh, it is still practised with enthusiasm as a traditional sport.

An archer, also called a Bowman, uses a bow to shoot the arrow towards a target as accurately as possible from a stipulated distance, or distances. Modern competitive archery is of many types such as target archery, field archery, clout archery and crossbow archery.

❖ **Target Archery:** The most common form of the game in which the shooters aim at a circular target from varying distances.

❖ **Field Archery:** It takes place outdoors on rough terrains since the shooter has to aim at a moving target from various marked (or unmarked) distances.

❖ **Clout Archery:** A long range archery in which the target is a flag and the arrow has to land as close to it as possible.

❖ **Crossbow Archery:** It uses a crossbow in place of the traditional bow and arrow.

Target archery is the most popular form of competitive archery and can be conducted indoors or outdoors. It is practised in clubs in over 150 countries. The World Archery Federation, based in Lausanne (Switzerland) and founded in 1931, is the governing body of the sport. After being dropped several times due to lack of internationally standardised rules, target archery became a permanent official feature of the

Figure 2.1 A good archer is not known by her/his bows, but by her/his aim.



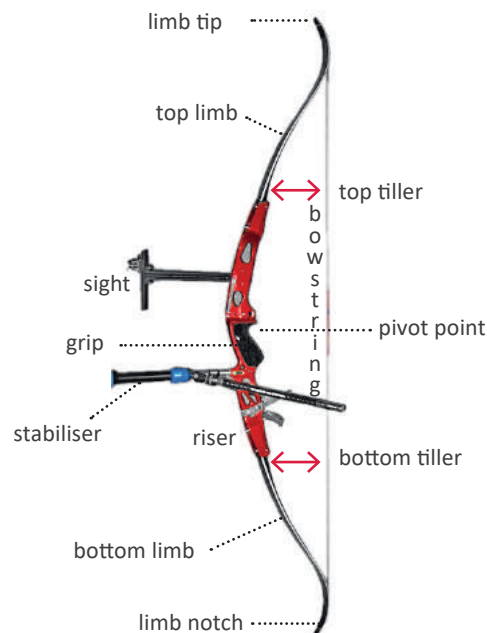


Figure 2.2 A recurve bow

Munich Olympics in 1972 as an individual event and in 1988, Seoul Olympics as a team event, in which India's Limba Ram, Shyam Lal and Sanjeeva Singh participated.

The Archery Association of India was established on 8 August 1973. It is based in New Delhi and it acts as the governing body of archery in India.

EQUIPMENT

Bow, arrow, target and different kind of guards are the main equipment for archery.

Bows

There are two types of bows. Recurve bow (Fig. 2.2) and compound bow (Fig. 2.3). Recurve bow is used in the Olympics while compound bow is used at World Games. Both are used in the Paralympics.

- ❖ **Recurve Bow:** It has two limbs, a handle and a bowstring, sighting accessories and stabiliser rods. Its tips are curved away from the archer when the bow is unstrung; this structure enhances the speed of the bow and makes the release of the arrow smoother. It is sold as a solid piece and as a 'takedown' piece, which consists of parts that can be reassembled for use. Compared to a straight limbed bow, the recurve bow stores a lot more energy. Modern recurve bows typically have limbs made from multiple layers of fibreglass, carbon and/or wood on a core of carbon foam or wood. The centre section of the bow, also called the riser, is made of wood, carbon, aluminium alloy or magnesium alloy.
- ❖ **Compound Bow:** It has a levering system which consists of pulleys and cables for bending its limbs.

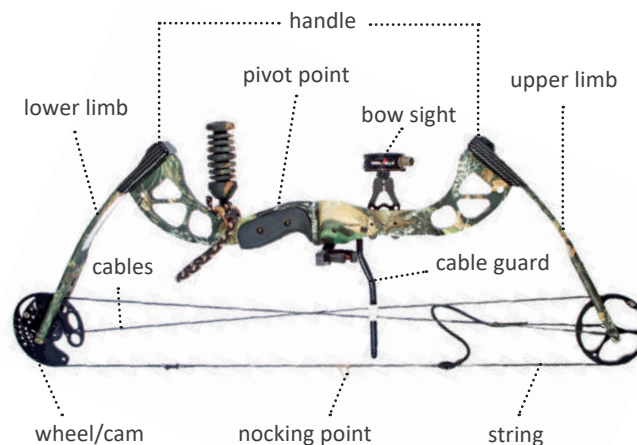


Figure 2.3 A compound bow

This structure allows conservation of energy since the rigid limbs do not consume much energy in their movements. The compound bow was first developed in 1966 by the American, Holless Wilbur Allen. Its central rise is made of aluminium, magnesium alloy, or carbon fibre, and limbs of fibreglass-based composite materials. A cam/wheel can be found at the end of each limb. Compound bow strings and cables are made of high-modulus polyethylene. They have great tensile strength and are not very stretchable. This means that the energy is easily transferred to the arrow.

Arrow

Modern day arrows are usually made of aluminium or carbon fibre. They are colour-coded and labelled to identify the archers. The maximum diameter of an arrow can be only 9.33 mm according to rules set by the World Archery Federation.

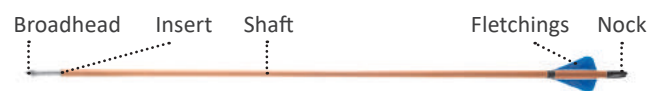


Figure 2.4 An arrow

Target

The target has a diameter of 122 cm (or sometimes 80 cm). It has 10 concentric circles of 12.2 cm each, with the outermost two rings being white in colour, the third and fourth black, the fifth and sixth blue, the seventh and eighth red and the ninth and tenth (the

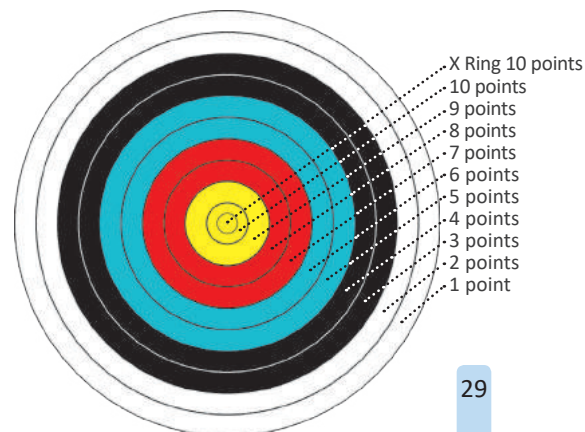


Figure 2.5 The target



Figure 2.6 Various types of guards used in archery

innermost) gold. The tenth ring again contains an inner ring called the 'inner ten' which may be used to break ties.

Guards

Arm Guard: It is a guard worn on the inside of the bow arm to protect it from the bowstring as it moves forward after the release of the bowstring.

Finger Tab: It provides protection to the fingers as it releases the bowstring and shoots the arrow.

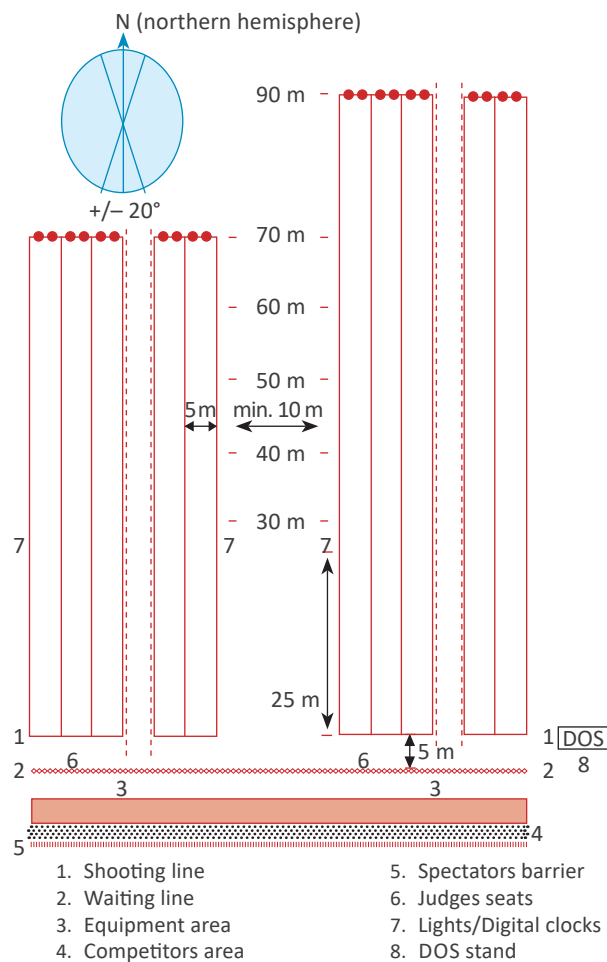


Figure 2.7 Archery playground

Quiver: Quiver is used for storing the arrows.

Chest Guard: Chest guard is normally worn by female archers to prevent injuries to the chest. It may also be used to prevent loose clothing from coming into contact with the bowstring.

Bow Sling: The bow sling lets the archer relax the fingers of the bow hand.

RULES OF THE GAME

1. Target archery is conducted using the five colour 10 ring set.
2. In outdoor target archery, the distance of the target for recurve archers is 70 metres while that for compound archers is 50 metres. In indoor target archery, the distance for both styles of bows is 18 metres.
3. In outdoor target archery, six arrows are shot in long distances; three or six at short distances; and three arrows for individual matches. For indoor target archery, all distances and individual matches are shot with three arrows.
4. An archer has to shoot an 'end' of three arrows within two minutes. In case of six arrows, a maximum time limit of four minutes is allowed.
5. Archers can raise their bow arm only when the signal to start is given.
6. All able-bodied athletes can shoot their arrows with their bodies standing in an upright position without any support.
7. An arrow cannot be re-shot. Arrows that fall from the bow and cannot be reached with the bow from the shooting line are considered to be shot.
8. An archer shoots in a sequence according to a decreasing order in distance from the target.
9. Distances set for men in outdoor archery are 90 m, 70 m, 50 m, 30 m; those for women are 70 m, 60 m, 50 m, 30 m. The archery ground for Indian round competitions has a minimum distance of 30 m and a maximum distance of 70 m.
10. An archer is allowed three shooting arrows per round of count as scores. There will be three shooting rounds from different distances.
11. Any archer who sustains an injury is entitled to five minutes of suspension from play. Only one suspension per injury is permitted.
12. No archer is allowed to touch the equipment of another competitor without the latter's permission.

13. No archer is allowed to draw his bow, with or without an arrow, except when standing on the shooting line.
14. Twenty seconds are allowed to an archer for shooting one arrow when shooting alternately in the Olympics, compound archery and indoor round matches.
15. Forty seconds are allowed to make up one arrow, and to shoot one arrow in order to break a tie.
16. One minute is allowed to a team to shoot three arrows, one per archer, in the team round for breaking ties.
17. For scoring, the different points based on where the arrows hit the targets are added up. For a single arrow, the least score for hitting the outer white ring is 1 and the highest score for hitting the inner golden ring is 10. No score is counted if the arrows miss the target. In case of a tie, the archer with the highest number of 10s (including inner 10s) is declared as the winner. If that number is also equal between the competitors, then the archer with the greater number of inner 10s is declared as the winner. In case of a tie in spite of these conditions, a shoot-off is arranged to break it.

FUNDAMENTAL SKILLS OF ARCHERY

Stance: The archer's stance is an important part of the process. One foot should be placed on each side of the shooting line. If the archer is right-handed, the left foot should be in front of the shooting line. The opposite works for the left-handed archer. The feet should be apart at shoulder-width. The archers should stand straight, rotate their chin over the shoulder of the bow-arm, flatten their back, lower the chest and ribs toward the stomach, and then push the shoulders downward. Since the archer's stance influences their balance and centre of gravity, a correct stance will provide them a stable platform for shooting their arrows.

Elbow Rotation: It is vital to rotate the elbow correctly in order to avoid injury to the inner elbow and also to prevent the arrow from veering to one side of the target. The archers should rotate their elbow straight before drawing or raising their bow.

Anchor Point: The archers must find their anchor point and train at keeping the point constant. The anchor point is simply a part of the face from which the archer pulls the bowstring. Usually, archers choose the corner of their mouth or the point just below the chin as their anchor point.

Arrow Nocking: A nock is the groove or notch at the end of the arrow, into which the bowstring fits. The nock of the arrow is placed on the bowstring under nocking point locator. The index fletch on the arrow should point towards the archer and the nock should be pushed firmly against the bowstring. The arrow shaft should be placed on the arrow rest.

Drawing Hand and Bow Hand: No finger should touch the nock. The index finger is placed above it and the forefinger and middle finger below. The back of the hand should be kept flat. While drawing the bow, the anchor applies pressure evenly on the three fingers.

Drawing the Bow: The string of the arrow is drawn along the bow arm in a line straight to the anchor point. The draw is made using the back muscles, moving the shoulder blades towards each other. The archer should stand straight and relax, making sure that the shoulder muscles are not on top of the shoulder. The shoulder blade should be rotated from the front of the body to the back and lowered in the process. The elbow arm should be moved directly behind and parallel to the arrow shaft.

Anchoring: The bowstring is drawn back towards the side of the face until the tip of the index finger is placed on the anchor point. The thumb and little finger are tucked into the palm in a relaxed manner. The archers then press their hands snugly against the side of their face and hold the full draw weight of the bow.

Transfer and Hold: The draw weight of the bow is transferred from the arms and shoulders of the archer to her/his back by aligning the bow arm and shoulder through the chest. This alignment can be achieved with a slight rotation of the chest and ribs. The drawing arm elbow is then moved directly behind the arrow and the position is held with the back muscles. During this period, the forearm and the back of the drawing hand should be relaxed.

Aiming: In order to get the best aim, the archer looks down the shaft of the arrow and places the point on the target. At this point, the weight of the archer's body should be evenly distributed on both feet, the hips should be over the knees and feet, and the lower back should be flat and the chest kept down. The grip should be relaxed. The archers also ensure that their bow elbow is rotated. The bowstring is lined up with the centre of the bow limbs.

Releasing the Bowstring: As the archers release the bowstring, they keep the bow arm shoulder stationary,

expand their chest, and then allow the bowstring to leave their fingers. After this is done, they continue to expand their chest.

TERMINOLOGY

Arrow Rest: A device installed on the riser just above the handle grip used for holding the arrow against the handle until it is released.

Bare Bow: It is a type of shooting in which bow sights are not used.

Bow Sight: A piece of equipment that uses a pin, a circle, a lens or any other marker to help archers hit the target.

Brace: The process of attaching a bowstring to the bow.

Bullseye: The centre of the target.

Cock Feather: A fletch of different colour used to indicate proper arrow alignment.

Drift: A drift is a shift in the direction of the flight caused by the wind.

Fletch: The vanes or fins of an arrow that stabilise it.

Hanging Arrow: An arrow that dangles from the target rather than penetrating it.

Nock: The notch at the back end of an arrow.

Point/Pile: The front tip of the arrow meant for piercing a target.

IMPORTANT AWARDS

Arjuna Award Winners

- 1981 — Krishna Das
- 1989 — Shyam Lal
- 1991 — Limba Ram
- 1992 — Sanjeev Kumar Singh
- 2005 — Tarundeep Rai
- 2005 — Dola Banerjee
- 2006 — Jayanta Talukdar
- 2009 — Mangal Singh Champia
- 2011 — Rahul Banerjee
- 2012 — Deepika Kumari
- 2012 — Laishram Bombayla Devi
- 2013 — Chekrovolu Swuro
- 2014 — Abhishek Verma
- 2015 — Sandeep Kumar
- 2016 — Rajat Chauhan
- 2017 — V J Surekha

Dronacharya Award Winners

- 2007 — Sanjeev Kumar Singh
- 2013 — Purnima Mahato

Dhyan Chand Award Winner

- 2018 — Satyadev Prasad



SUMMARY

1. Archery is a form of sport in which an individual uses a bow and an arrow to shoot a target as accurately as possible. There are many forms of archery practised all over the world but the most common featured in major sporting events is target archery.
2. Target archery can be conducted indoors or outdoors, with a recurve bow or with a compound bow.
3. Apart from the bow and the arrow, the archer also uses other gears such as arm guard, finger tab and chest guard for protection, quiver for carrying the arrows, and bow slings for relaxing the fingers of the bow hand.
4. Fundamental skills of archery include using the correct stance, rotating the elbow, maintaining an anchor point consistently, nocking the arrow correctly, etc.



QUESTIONS AND ANSWERS FOR VIVA

1. What was archery called in ancient India?

Ans. Archery was called '*dhanurveda*' in ancient India.

2. Name some types of modern archery.

Ans. Target archery, field archery, clout archery and crossbow archery.

3. **When did archery become a permanent official part of the Olympics?**
Ans. Archery became a permanent official part of the Olympics in the 1972 Munich Games.
4. **What is the name of the governing body of archery in India and when was it founded?**
Ans. The governing body of archery in India is the Archery Association of India and it was founded on August 8, 1973.
5. **Outdoor target archery is conducted over a distance of 70 metres while indoor target archery uses a distance of 50 metres. Is this statement true or false ?**
Ans. This statement is partly true. While outdoor target archery is conducted over a distance of 70 metres, indoor target archery uses a distance of 18 metres only. 50 metres is the distance used by outdoors target compound archers.
6. **Which type of bow is used in the Paralympics for target archery?**
Ans. The Paralympics allows the usage of both recurve and compound bows.
7. **How many arrows are used in outdoor target archery and how many in indoor target archery?**
Ans. In outdoor target archery, six arrows are shot in long distances; three or six at short distances; and three arrows for individual matches. For indoor target archery, all distances and individual matches are shot with three arrows.
8. **An archer is allowed 3 minutes for shooting an end of three arrows and 6 minutes for six arrows. Is this statement true or false?**
Ans. This statement is false. An archer can shoot an end of three arrows in 2 minutes only and six arrows in 4 minutes only.
9. **When can an archer draw her/his bow?**
Ans. An archer can only draw her/his bow when she/he is standing on the shooting line, with or without an arrow.
10. **How does a recurve bow differ from a compound bow in basic structure?**
Ans. In a recurve bow, the tips of the bow are curved away from the archer when the bow is unstrung; the archer has to string the bow in order to bend the limbs towards her/him. The compound bow on the other hand contains a levering system for bending its limbs.
11. **What is the modern arrow normally made of? What is its maximum diameter?**
Ans. The modern arrow is normally made of aluminium or carbon fibre. Its maximum diameter is 9.33 mm.
12. **What does the modern archery target look like?**
Ans. The modern archery target has a diameter of 122 cm. It has 10 concentric circles of 12.2 cm each, with the outermost two rings being white in colour, the third and fourth black, the fifth and sixth blue, the seventh and eighth red and the ninth and tenth (the innermost) gold. The tenth ring again contains an inner ring called the 'inner ten' which may be used to break ties.
13. **What is the function of an archery arm guard?**
Ans. The archery arm guard protects the bow arm from the bow string as the bow arm moves forward after the release of the bowstring.
14. **What is the difference in the function between a finger tab and a bow sling?**
Ans. The finger tab protects the fingers as they release the bowstring and shoot the arrow, while the bow sling enables the archer to relax the fingers of the bow hand.
15. **Why is it important to maintain a correct stance in archery?**
Ans. It is important to maintain a correct stance in archery because a correct stance allows the archers to maintain their balance and centre of gravity, thereby providing them a stable platform for shooting their arrows.
16. **How does rotating the elbow correctly help an archer?**
Ans. Rotating the elbow correctly prevents injury to the inner elbow and also prevents the arrow from veering to one side of the target.
17. **Which parts of the face are commonly used as anchor points in archery?**
Ans. The corner of the mouth and the point just below the chin are commonly used as anchor points in archery.
18. **What do you mean by bullseye?**
Ans. In archery, the bullseye is the centre of the target.
19. **Why is a bare bow called so?**
Ans. A bare bow is called so because it does not use a bow sight – the equipment that allows the archer to focus on the target and hit it accurately.