The Chinese University of Hong Kong P.E. Unit
Elective Course - Archery

ARCHERY HISTORY

Experts believe the bow and arrow is one of the three most important inventions in human history, along with the discovery of fire and the development of speech. Once, sticks and stones were man's only weapons against bigger, stronger and faster predators. But armed with the bow and arrow, man suddenly became the most efficient hunter on earth, able to shoot his prey accurately from a safe distance. The bow and arrow gave humans greater protection, a diet richer in protein, and also a more abundant supply of the raw materials like bone, sinew and hide on which early man depended.

ARCHERY TODAY

Archery has evolved as a sport because it is a unique and rewarding challenge. There are now at least five million archers in the English-speaking world. The reasons for this popularity are simple. It is a sport that can be practiced at any time of the year, indoors or out, in any part of the world, with friends, or alone. It is relatively inexpensive. Unlike athletes in many other sports, an archer can improve with age, since endurance and skill are far more important than brute strength. Archery can be shot by men and women, children and older adults, and by the handicapped. Archers in their 80's have won competitions! Archery has evolved to the point that it is a diversified and significant recreational activity for millions of people all over the world. Target archery has been a part of the modem Olympic Games as an official gold medal sport since 1972, and that has not only focused attention on target archery but increased interest in the other archery sports.





Archers are shooting with re-curve bow (top) and compound bow (low) in target shooting competition.

Target archery has been popular since the days of King Henry VIII of England. The challenge of hitting your mark is timeless. Today, many archers enjoy target archery using the equipment rules established for the modern Olympic Games. The bow is limited to the re-curve style. Bow-sights are permitted and the bowstring must be drawn and held with the fingers.

EQUIPMENT

THE BOW

There are two types of bows commonly in use. One uses the bow limbs themselves to store the energy that will propel an arrow. The other stores energy in an off-center pulley or cam and is known as a compound bow. Of the first type, you will probably encounter two variations in an instructional setting. One is a straight-limbed bow made of solid fiberglass and the other is a recurved-limb bow made of laminations of wood and fiberglass.

Straight-Limb Bows

Advantages: 1. Inexpensive. 2. Can be fitted for both right-handers or left-handers
Disadvantages: 1. Little cast 2. Not center-shot

The straight-limb fiberglass bow is inexpensive, and the same bow can be used by both right-handed and left-handed shooters. However, the straight-limb design does not provide very much leverage when the limbs are bent by your pulling back the bowstring. The arrow sits to the right or left of center of a straight-limb bow, and you must compensate for this when aiming.

Re-curve Bows

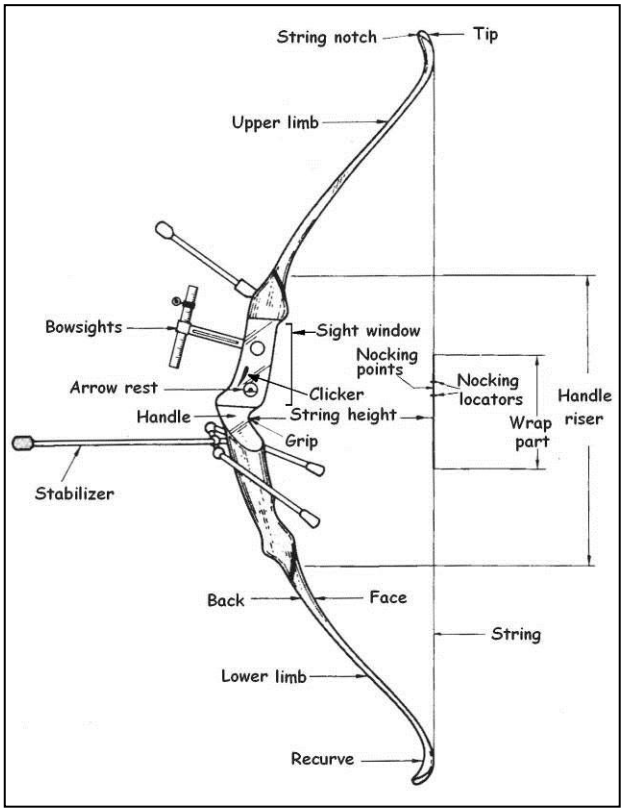
Advantages: 1. Greater cast 2. Greater arrow speed 3. Interchangeable limbs if take-down style
Disadvantages: 1. Shooting for distance requires high draw weight

The recurved-limb design is the most efficient one. A recurve bow has limb tips that are bent back away from you in its relaxed position. The bowstring lies across 2-3 inches of the limb. Yet, when the string is drawn back, the curves straighten to provide leverage when the string is released and the curves return to their C-shape. This imparts more arrow speed than a straight limb. The length of the limbs is fitted for an archer's size to maximize the leverage provided by the limbs. This quality is called cast.

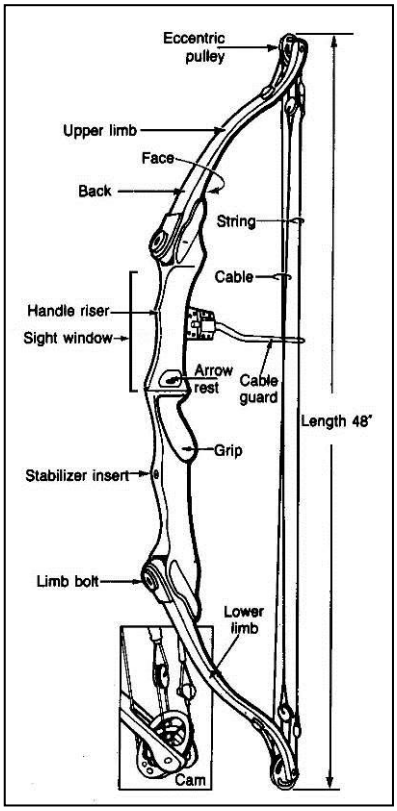
Compound Bows

Advantages: 1. Holding weight is less than draw weight 2. Potentially faster arrow speed
Disadvantages: 1. Must be fitted for archer's draw length

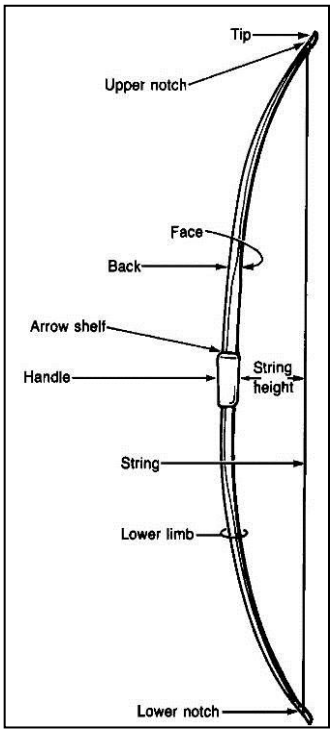
Compound bows are characterized by an eccentric, or off-center, pulley or cam mounted on each limb tip. The energy required to rotate the part of the pulley with the long radius is greater than the energy required to rotate the part with the short radius. The pulleys are mounted so that the energy required to pull back the bowstring is the greatest at mid-draw and the smallest at full draw, when the archer is holding to aim. When the string is released, this situation is reversed and the energy applied to the arrow is actually increased. For example, an archer with a 40-pound compound bow of 50% let-off, or reduction, holds less than 20 pounds of resistance at full draw; 40 pounds of thrust, however, are imparted to the arrow.



Re-curve Bow



Compound Bow



Straight-Limb Bows

THE ARROW

There are five types of arrows commonly found on the market today: wood, fiberglass, carbon, aluminum, and aluminum carbon. The basic terminology used to describe the parts of an arrow is the same for each type and is given Figure 5. Using arrows of proper length is absolutely critical from a safety perspective.

Wood Arrows

Advantages: 1. Inexpensive
Disadvantages: 1. Cannot be precisely matched to bow 2.Break easily
3. Not readily matched to archer's draw length
4. Not readily matched to archer's draw weight

Fiberglass Arrows

Advantages: 1. Can be sized to draw length and weight 2. Can be better matched than wood
Disadvantage: 1. Break easily 2. Heavy material

Aluminum Arrows

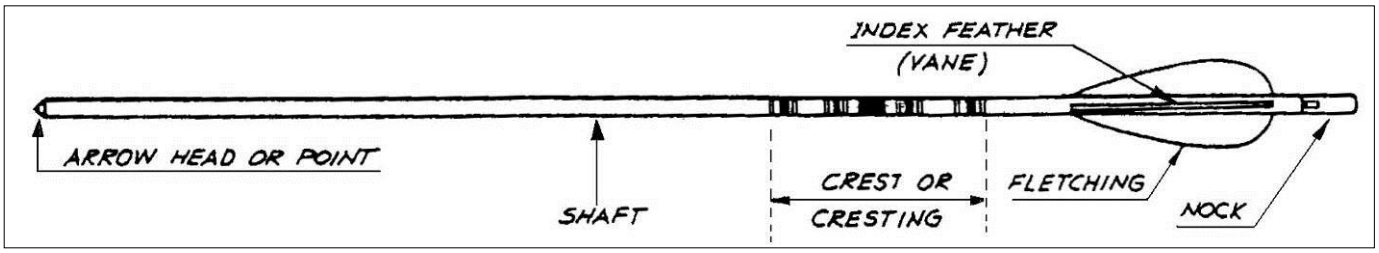
Advantages: 1. Can be precisely manufactured 2. Wide range of sizes available
3. Durable 4. Arrow tips can be interchanged
Disadvantages: 1. Expensive

Carbon **Arrows**

Advantages: 1. Speed
Disadvantage: 1. Expensive 2. Carbon layer breaks down if struck

Aluminum Carbon Arrows

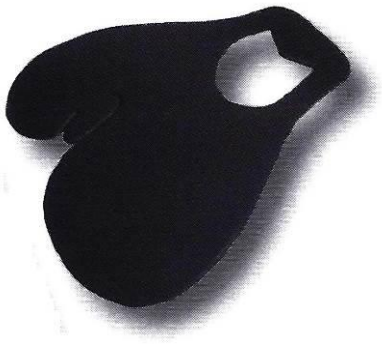
Advantages: 1. Speed 2. Durable
Disadvantage: 1. More Expensive 2. Carbon layer breaks down if struck



An arrow



Arm guards





Finger tabs

ARM GUARD

The arm guard is a strip of leather or plastic which lies along the inside forearm of the bow arm and is secured to the arm with elastic or straps, perhaps with Velcro fastening. Its purpose is to prevent bruising by the bowstring slap. It is sometimes referred to as a bracer; although this is a misnomer, it is one commonly used by archers.

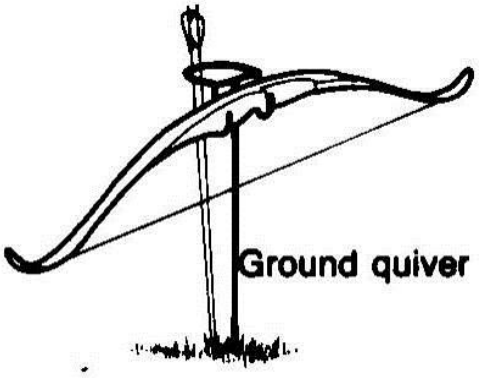
FINGER TAB

The finger tab has two functions. Fingers are inserted through the holes, so that the tab is between the fingers and the bowstring while the bow is being drawn. This prevents chafing of the fingers by the bowstring, and allows the bowstring to slide freely off the fingers during the loose.

QUIVER

The quiver is a convenient storage place for arrows, so that they come freely to hand during shooting. It is slung on a belt that is usually worn around the waist. Sometimes, in field archery, the quiver is slung across the shoulders to prevent it from catching on undergrowth. A ground quiver is a metal frame that stands on three legs on the ground. This is designed to support a bow and to hold arrows not in use on the shooting range.







Various Quivers

ARROW REST

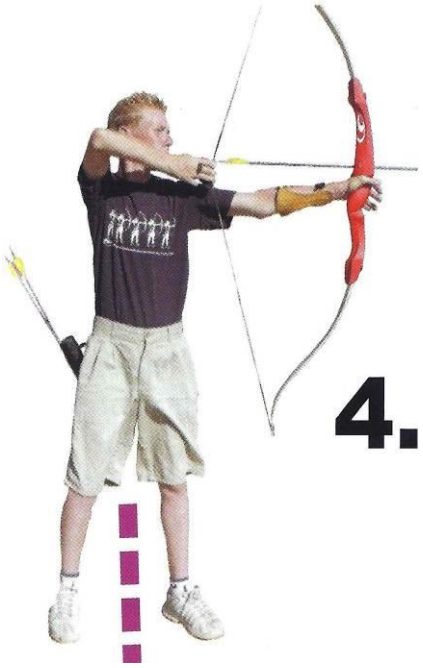
It is mounted on the bow above the bow shelf. The arrow is placed on the arrow rest and remains there until it is shot. The advantage of an arrow rest over shooting an arrow off the bow shelf is that the rest allows the fletching of the arrow to clear the bow more smoothly on its flight toward the target. This allows for smoother arrow flight and consequently, more accurate shooting.

STEP OF SHOOTING



Stance and Posture

Place one foot on each side of the shooting line. Find a comfortable balanced stance with your feet shoulder width apart. Beginners should start with a square stance – feet and shoulders are perpendicular with the shooting line. Stand straight, keeping your ribs and chest down, and your hips tucked under your body. Keep your shoulders down and relaxed.



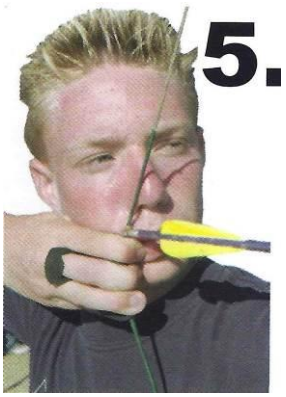
Set-up

Raise your bow arm towards the target, while keeping your shoulder down and aligning your chest perpendicular to the target. Your drawing arm should be near the level of your nose. Your bow are elbow should be rotated so it is straight up and down.



Nocking the Arrow

Place the arrow on the arrow rest, holding the arrow close to the nock. Keep the index fletch pointing away from the bow. Snap the nock of the arrow onto the bowstring under the nock locator.



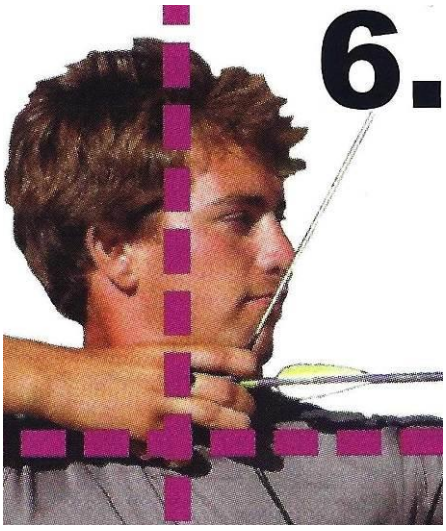
Draw and Load

Draw the string back in a straight line from the set-up to the side of the face anchor point. As you approach your anchor, set the drawing arm shoulder back and down as far as possible, until your elbow is directly behind or a little higher than the arrow. Anchor has not yet been set.



Set

Set your bow hand on the grip using only the web and the meaty part of your thumb, with your knuckles at more than a 45 degree angle and your thumb pointed towards the target. Keep your bow hand in place throughout the entire shot. Set the first groove of your first 3 fingers around the bowstring creating a hook. Slide hand snug up against nock of the arrow. Keep the back of your drawing hand flat and relaxed.



Anchor

Draw the string to the side of your chin, placing the tip of your first finger on the corner of your jaw bone. Keep your hand snug against your face folding your thumb down and your little finger towards your palm.



7. Transfer and Hold

At full draw, transfer the weight of the bow from your arms and shoulders to your back. Bring your elbow directly behind the arrow. Hold this position with your back muscles.



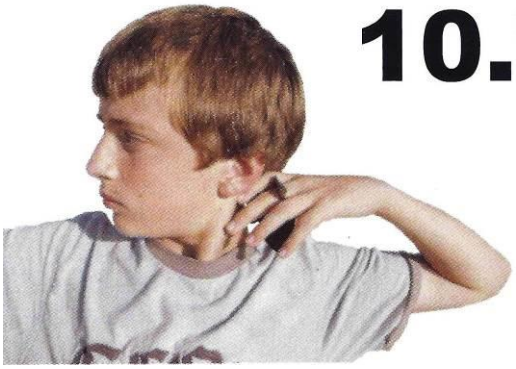
9. Release

Begin a slight expansion from the center of your chest as you allow the string to leave your fingers, pushing them out of the way. It should feel as if the string has gone through your fingers. Continue the expansion and follow through.



8. Aim and Expand

Look at the target, or through the sight, while keeping your focus on your form. Make sure line the string up down the center of the bow.



10. Follow Through

The drawing hand continues back beside neck with fingers relaxed, ending up behind your ear. Maintain your follow through until the arrow hits the target.

INTRODUCTION OF COMPETITION

The Olympic Games - the Olympic Round is just one type of Target Archery. Re-curved bow in target archery is shot at a 5-color, 10-ring target face in the size of 122cm at fixed 70m distances.

Olympic competition system

The Olympic competition system is divided into three parts, namely Qualifying (Ranking), Elimination and Finals.



1. Qualifying/ Ranking
   - Shooting distance at 70 meters with 122 cm target face
   - 72 shoots in total. Archers are ranked by the results of 72 arrows
   - Only top 64 archers can enter the Elimination

2. Elimination
   - 64 archers play in knock-out tournament. Only the winner goes into next round
   - Shooting distance at 70 meters with 122 cm target face
   - 18 shoots in total
   - There are three rounds for the playoffs. The 8 archers shortlisted will be qualified to finals

• If archers have the same score, an extra arrow will be shot to determine the winner. The shoot which is closer to the target center determines the winner if archers have the same score again

3. Finals

• The 8 archers shortlisted will play in knock-out tournament again

• Shooting distance at 70 meters with 122 cm target face

• Only a pair of archers to compete on the field for the last 2 medal finals

• Archers need to take turns shooting an arrow until each archer has completed 12 arrows.

• If archers have the same score, an extra arrow will be shot to determine the winner. The shoot which is closer to the target center determines the winner if archers have the same score again.

World Archery Federation (FITA) system

FITA Round, there are many different rounds, shot both indoors and outdoors at different distances and different size target faces. Re-curved bow and Compound bow are the different categories in the competition.

1. Outdoor FITA Round

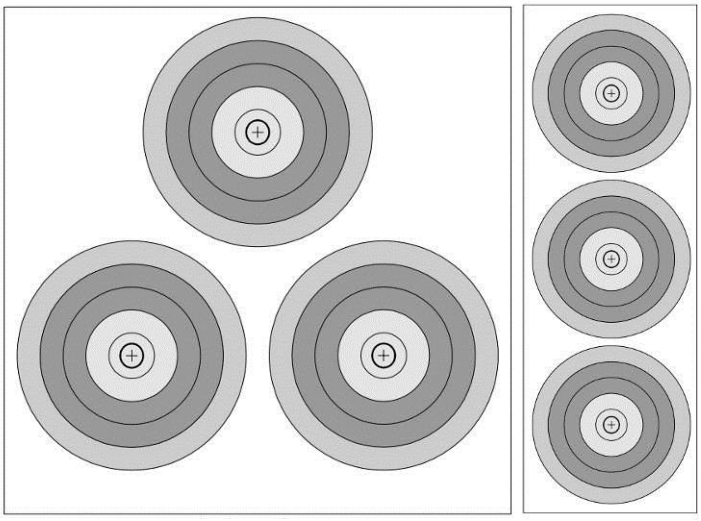
Men – 36 arrows each at 90 and 70 meters, 122cm target face; and 36 arrows each at 50 and 30 meters, 80cm target face. Shooting at a 5-color, 10-ring target face. Maximum points – 1440
Women – 36 arrows each at 70 and 60 meters, 122cm target face; and 36 arrows each at 50 and 30 meters, 80cm target face. Shooting at a 5-color, 10-ring target face. Maximum points – 1440

2. Indoor FITA Round

25 meters shot at a 60cm target face
18 meters shot at a 40cm target face
Sometimes a 3-shot target face is used with only the 5 inner rings (3-color, 5-ring target face). Shot in ends of 3 arrows, 1 arrow each on 1 target, 60 arrow rounds. It can be doubled for major championship events.

General Rule

Clothing - Archers may wear short sleeves or shoulder-length sleeved shirt and pants or trousers. But clothing with camouflage pattern and vest are prohibited. If wear in shorts, it should be longer than the hands in vertical position. Members participating in the team event must wear the identical sport shirt.



Indoor, 3-color, 5-ring target face

Rhythm - Archers have to obey the rhythm that is set up by the organizer. Such as shooting a set of arrows and launching a shoot at fixed time. The rhythm of 60 meters and further range is to shoot 6 arrows within 4 minutes, while 50 meters and below range is to shoot 3 arrows within 2 minutes.

Scoring - The outdoor competition generally adopts the target face with 5 color and 10 rings which is

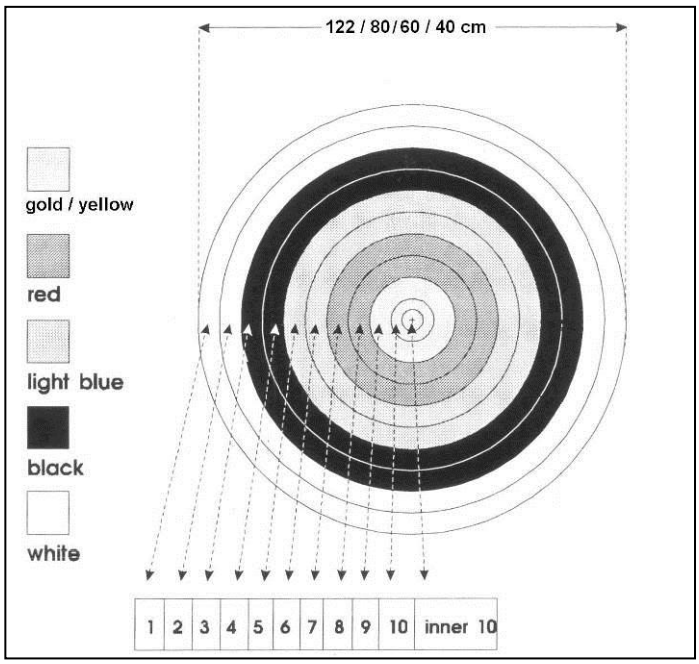
appointed by World Archery Federation (FITA) while the indoor competition adopts the 3 colors and 5 rings targets. For instance, arrow hits on any dividing lines between two scoring zones, that arrow shall score the higher value of the zones affected. Archer may request target judge to determine the value if he/she objects the value that are called out.

Archery Field

The competition area must be the meadow fields, the direction of shooting at the target should be from south to north, in order to prevent the sun from shining eyes directly. One after the target position put, there must be between 10 meters and buffer area of 20 meters; and both sides but also must amount to 5 meters of safe ranges at least.

Archer Level in Hong Kong

According to the Hong Kong Archery Association, the archers and his competition are divided into four groups. They are Beginner Group (only for re-curve bow), Elementary Group, Intermediate Group and Advanced group.



Outdoor, 5-color, 10-ring target face

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Website: **HONG KONG ARCHERY ASSOCIATION: -** *http://www.archery.org.hk*
FITA - INTERNATIONAL ARCHERY FEDERATION : - *http://www.archery.org*

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