

Archery Notes

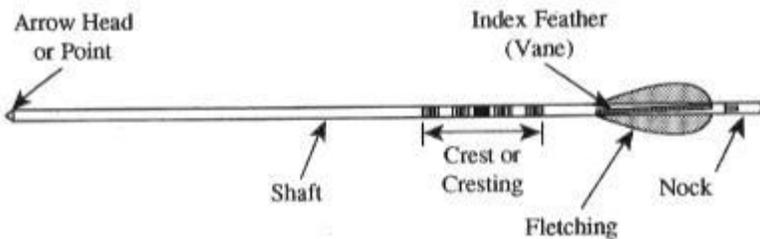
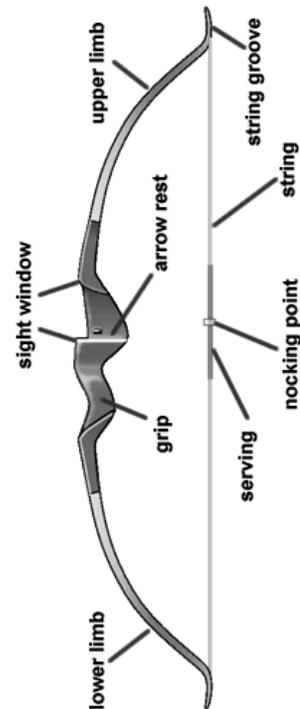
Description:

Archery is a sport that involves the use of a bow and a number of arrows. The bow is used to shoot the arrows at targets. We will be shooting at stationary targets. This is referred to as 'Target Archery'.

Equipment:

Bow: Length and weight varies with the individual (18-25 lbs. for class use: 20-30 lbs. for club use)
The style of the bows vary – straight or recurve in Fiberglass, wood, and metal.

Arrows: length according to length of arms of the archer (24-28 "). Wood, fiberglass, aluminum, carbon/alloy composite, and carbon fiber.



Target Butt or buttress: Material that can sustain the impact of the arrow. Straw, Styrofoam, compressed cardboard.



Bow strings: dacron- single or double loop according to the type of bow. The center part of the string is wovlen thicker to accommodate the nocking of the arrow. This is referred to as the serving.

Rubber finger tabs (rolls) are also attached to the serving.

A single roller on the upper section and a double on the lower section.



Target Faces: thick paper with concentric circles that vary in colour from the outside in. The target is divided into 5 different coloured sections.



Safety tackle:

Arm guard for the inside of the bow arm.



Quivers: 'Arrow Holder'.

Used to organize and hold arrows for the archer.



Stringing the bow:

Step through method (push-pull)



Instructions

1. Slide the top loop of your bow string over the nock and down the limb about halfway, or as far as the loop will allow.
2. Fit the bottom loop into the nock, being sure to align it properly in the groove.
3. Hold the string taut from the bottom nock by holding the thicker serving area at the center of the string.
4. Step through the bow with your left leg, while keeping the string stretched tightly between your hand and the bottom of the bow.
5. Brace the bottom of the bow against the front of your right ankle, or in the arch of your foot. You can help hold the bow tip in place by sliding it under the top flap of your shoe.
6. Bring the bow upwards to rest on the back of your left thigh, just below your buttocks.
7. Push the top of the bow forward with your left hand, leaning back slightly into the bow with your thigh if you need the extra help.
8. Slide the string up with your left hand, letting it slip into the upper nock firmly.
9. Position the string in the nock groove and double-check that the bottom nock is also still aligned.

<http://www.youtube.com/watch?v=E-ZNpgFDkcs>

Care of the Equipment

The bow

1. Do not lean on the bow.
2. Avoid dropping the bow on the floor.
3. Between rounds place on the floor safely way from the shooting area.
4. Always unstring from the upper limb.
5. If bows are not going to be used for a long period of time, they should be stored unstrung and hung up.
6. Do not draw a bow without an arrow (dry). The arrow is needed as a guide to prevent overdrawing.

The Arrows

1. Carry arrows by the tips, feathers spread fan wise to avoid damaging them.
2. In drawing arrows from the target, place palm, of left hand against the target in such a way that the arrows come between the first and second fingers. Grasp the arrow close to the target, rotating it as you pull it. Make sure you pull the arrow straight out and not up.
3. If the arrow penetrates the target so that the feathers have entered it, pull the arrow out through the back of the target.
4. Usage of quivers helps in class organization and saves the arrows.

Personal Safety

1. Wear simple clothing free from items that are apt to catch the bowstring and cause trouble.
2. Check equipment for defects: bow string loops should be secure in the bow notches, string should be in good condition, arrows free from splinters, arrow rest should be in good condition, etc.
3. Always wear arm guards. The string may slap the forearm on release. Finger rollers prevent blistering of the fingers.
4. The bow index finger should not be used as an arrow rest. The shaft and fletching could cause serious damage to the finger.

Classroom Shooting Safety

1. Wait for permission to load the bow, to shoot and when to retrieve the arrows.
2. **When you hear a whistle immediately stop shooting!!**
3. Only nock arrows when you are on the shooting line and facing the target. Nock arrows only after **given permission**.
4. Start shooting only when **given permission**.
5. Never shoot when the teacher is not in the gym.
6. Never turn away from the target with a loaded bow.
7. Never point the arrow at anyone.
8. Stay alert at all times. Make sure you are 100% sure of what you are doing.
9. Keep track of the position of other students.
10. Notify someone if you are going behind the target or screen.
11. If someone from your target has gone behind the screen of target butt to retrieve arrows, stay in view and notify the teacher.
12. Do not stand in-front of the target when the arrows are being withdrawn from the butt. You could be seriously injured.
13. Retrieve the arrows in groups of three, at least. One person hold the butt from falling, the second person withdraws the arrows, and the third person collects the withdrawn arrows.
14. Respect the sport. It is very unsafe if proper precaution is not taken to protect yourself and others.

How to Shoot an Arrow

<http://www.youtube.com/watch?v=rt4yhWyd0Rw&feature=related>

Eye Dominance

Before learning how to shoot a bow it is important to decide which hand will hold the bow and which will pull the bowstring.

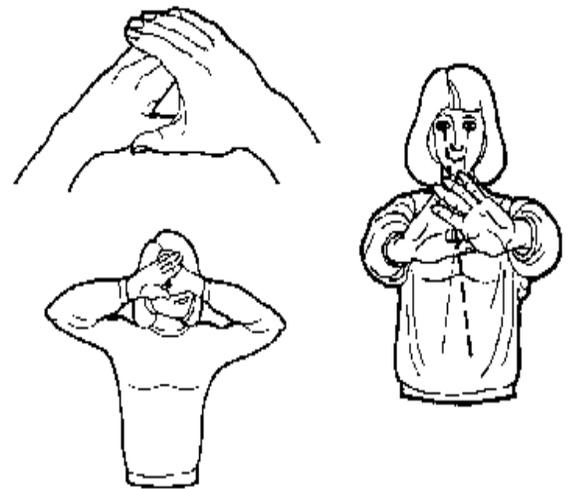
As there are right-handed and left-handed people, so there are right-handed and left-handed bows. But what decides if you are a right-handed or left-handed archer?

Well the initial answer is your eye dominance.

A person who is right eye dominant should hold the bow in their left hand and pull the bowstring with their right hand. The opposite applies for a person who is left eye dominant. The reason behind this is to align the dominant eye over the arrow for aiming. It can become difficult when a person is right-handed, but with a left eye dominance or vice versa. What hand to use then? I would have that person use a right-handed bow, based on their right hand shoulder being naturally stronger than their left.

The only problem then is to control the aiming with the right eye, rather than the left. The person will probably have to keep their left eye shut, until learning to use their right eye for aiming.

As shown in the picture, hold your hands out at **arms length** and with **both eyes** open, look through the hole formed by your hands at a distant object. Keeping that object in view, slowly **move your hands towards your face** until they touch your face. The hole formed by your hands should be over **one of your eyes**. This eye is your **dominant eye** and will control your **aiming**. Another quick way to test your eye dominance is to point your index finger at a distant object with both eyes open, then close one eye and see if your finger appears to move away from what you are pointing at. If your finger does appear to move, then the eye that you closed is your dominant eye. Try again with your other eye and your finger should not appear to move.

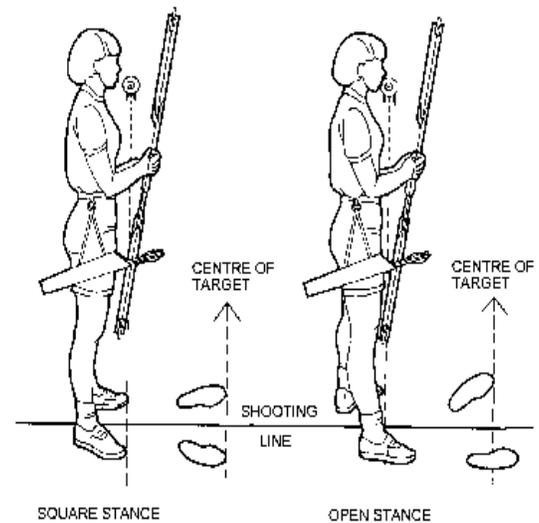


Stance

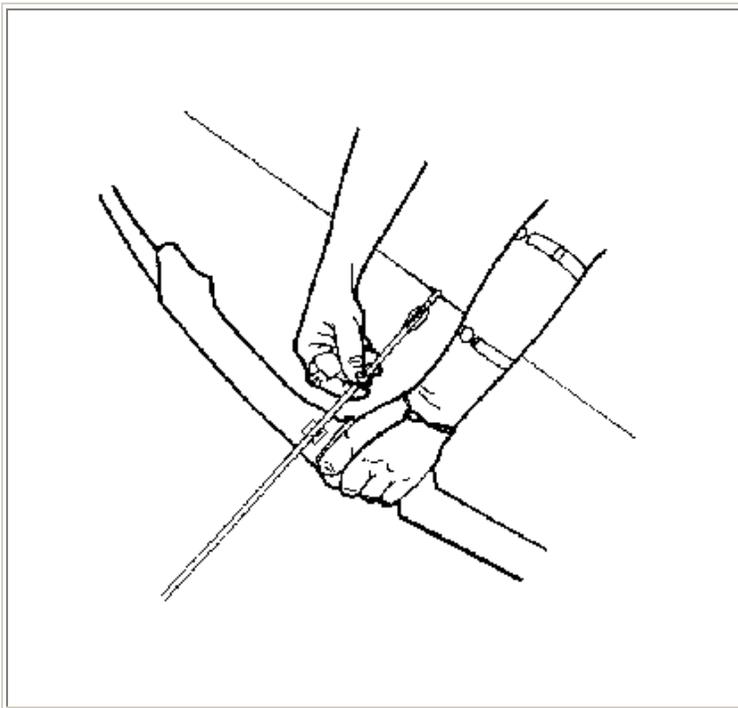
The archer stands upright in a comfortable, relaxed position with one foot each side of the shooting line. The feet should be about shoulder width apart with an even amount of weight taken on each foot and an even amount of weight between the ball and heel of each foot. This will maintain balance and help keep the body steady. During the shooting sequence, the body position must remain as steady as possible with no shifting of weight or leaning of the body.

If there is a problem with bowstring clearance to the arm, then an open stance may be required.

Once the stance position has been established, then it must be consistent from shot to shot. Using foot markers can help maintain a consistent stance.



Nocking the Arrow



Nock the arrow by placing the nock of the arrow onto the bowstring under the nocking point locator.

Make sure that the Index Fletch on the arrow is facing towards you and the nock is pushed firmly onto the bowstring.

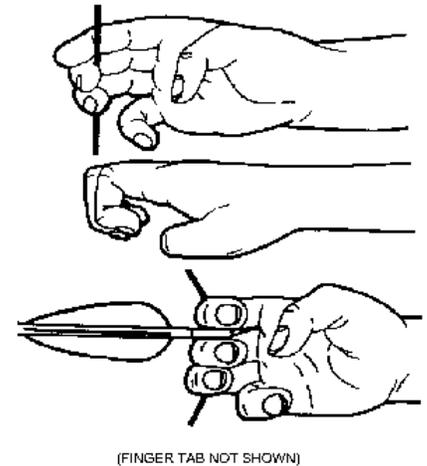
The arrow shaft is placed

Drawing Hand and Bow Hand

For Target Archery style the index, second and third fingers are used. The index finger is placed above the arrow nock and the second and third fingers are placed below the arrow nock.

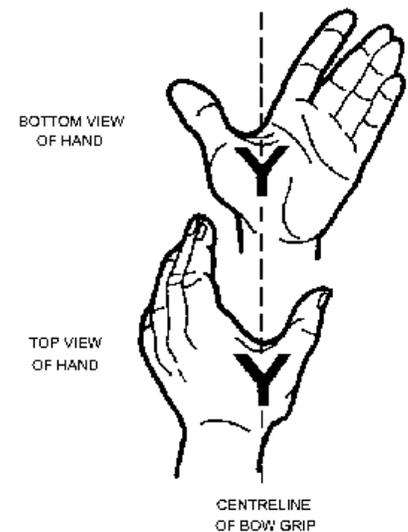
Curl the fingers around the bowstring so that the first joint of all three fingers are aligned on the bowstring. Keep a space clear between the index and second fingers and the arrow nock, so the fingers do not touch the nock. (This will prevent 'pinching' of the arrow.) Keep the back of the hand as flat as possible. (Relaxed.) The thumb is tucked into the palm so it can be placed against the neck at full draw.

Place a slight pull on the bowstring to set the fingers in position ready for the draw. During the draw and anchor maintain an even amount of pressure on all three fingers.



Place the bow hand into the grip of the bow with the centreline of the vee between thumb and index finger in line with the centre of the bow as shown in the top view. The base of the thumb muscle should rest on the centerline of the grip. During the draw, the pressure should be taken on the thumb muscle and directly into the wrist. (Low wrist position.)

The thumb and fingers should remain relaxed. If a finger sling or bow sling is not used, then the tips of the fingers are curled around until lightly touching the bow. This will stop the bow falling out of the hand on release. A consistent hand position on the bow grip is necessary.

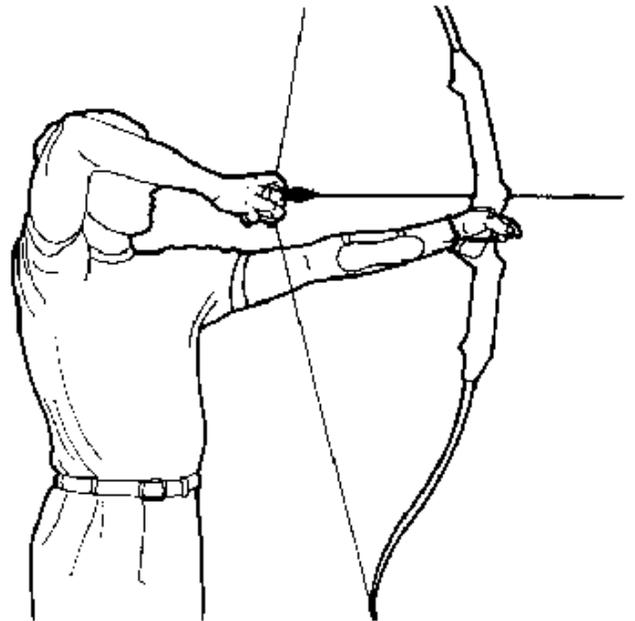


Bow Arm and PreDraw

Push out with the bow arm to set the hand position into the bow grip, then raise the bow arm and drawing arm together, up to the position shown in the picture on the left. Keep the front shoulder in its normal low position.

(The shoulder must not be allowed to rotate up or back as this shortens the draw length.)

Keep the elbow of the drawing arm high, as this will help bring into action the back muscles needed to draw the bow to full draw

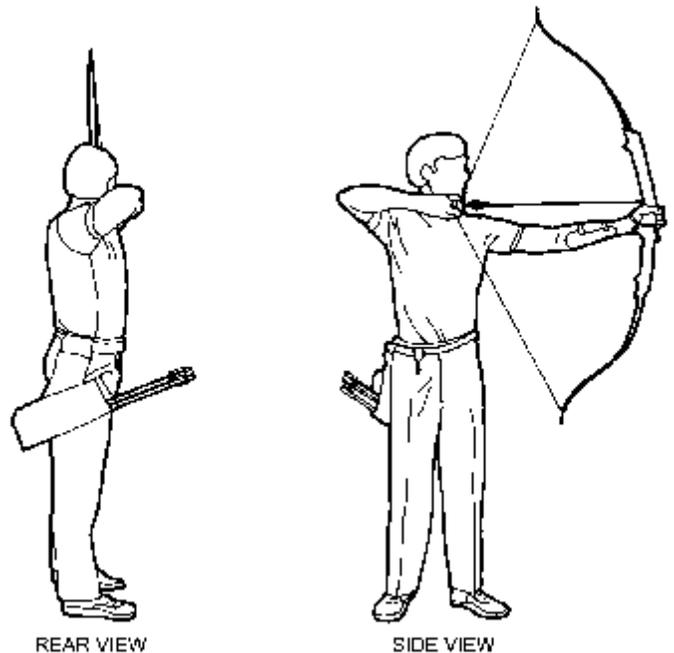


Drawing the Bow

From the Pre-Draw position, use the back muscles to pull the elbow of the drawing arm backwards in one smooth motion until the drawing hand is placed against the jaw. The position of the head and body should not move.

(Pull the bowstring to the face, not move the face to meet the bowstring.)

An equal amount of push on the bow hand and pull on the drawing hand will keep the body balanced.

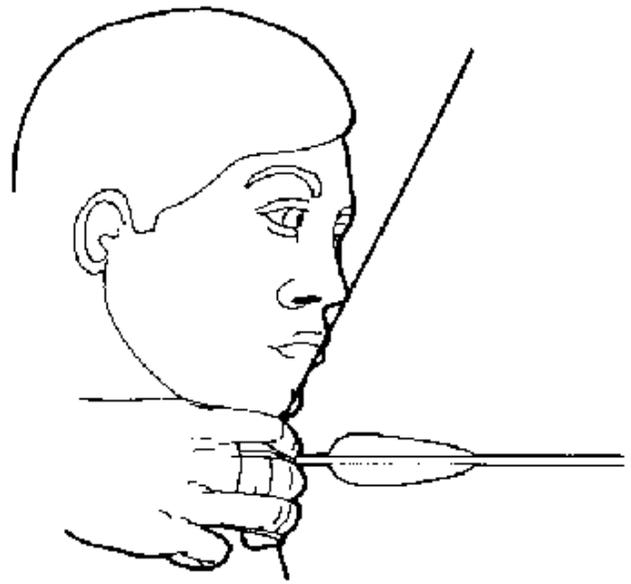


The Anchor

The Anchor is where the hand is positioned on the jaw and the bowstring touches the face. It is vitally important that the index finger is firmly placed against the jaw, the thumb is tucked into the palm of the hand so it can be placed firmly against the neck and the bowstring is firmly touching the chin (and nose, if possible.)

The relationship between all these positions is important as it acts as the rear sight, so it is vital that it be as consistent as possible.

It also acts as a consistent draw length position. Any variation in the position will effect the amount of force the bow will impart to the arrow.



Holding and Aiming

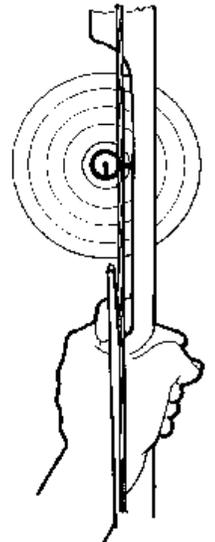
Holding is where the tension is maintained in the back muscle and then the bow arm is moved to align the sight pin into the centre of the target.

As the sight pin is moved into the centre of the target, the string alignment should be checked. String alignment, as shown in the picture on the left, is the alignment of the bowstring with the vertical alignment of the bow and the alignment with the sight pin.

(As the bowstring is just in front of the eye, it will appear blurred.) When the bow is held in the correct vertical position, then the bowstring and edge of the bow will be parallel. If it is not, then the bow is tilted away from vertical. Just before full concentration is made on aiming, all the previous steps should be checked to make sure that everything is in the correct position. If any part of body feels out of place, then it is best to stop now, let the bowstring down and re-start again, rather than make a bad shot.

When aiming into the centre of the target, it is natural for sight pin to move around, as the muscles try to hold it steady. With practise, aiming will become more steady.

Move the sight pin up if the arrow lands high, move down if the arrow lands low, move left if the arrow lands left and move right if the arrow lands right.



The Release

The Release of the bowstring is the most critical step in the sequence.

If it is not done correctly, then all the effort in the previous steps is cancelled out.

To release the arrow correctly, the fingers holding the bowstring must allow the string to slip off the fingers.

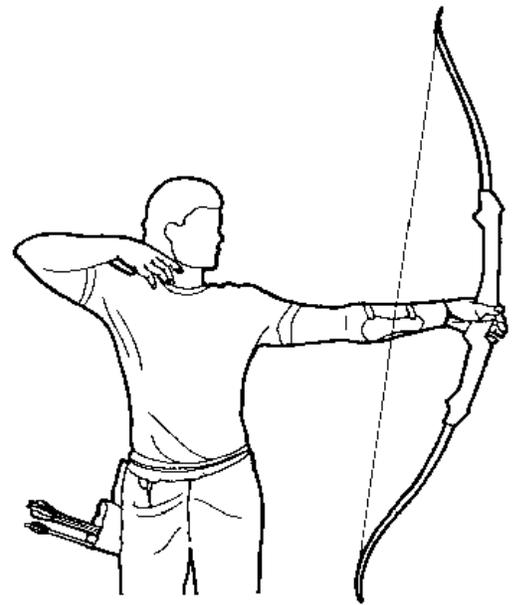
All three fingers must release at the same time.

This will let the bowstring pull away from the fingers with the least amount of deflection.

When the release is done correctly, the hand should move backwards, as the back muscles will pull the arm backwards and the fingers should come to rest beside the neck.

If the finger muscles are flexed open to release the bowstring, then the hand will usually come to rest about 5cm backwards from anchor position.

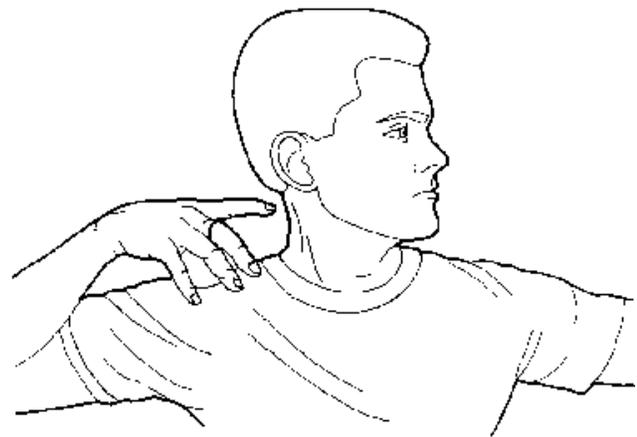
Flexing the finger muscles will deflect the bowstring sideways and the arrows will have a horizontal spread across the target.



Follow Through

The Follow Through is maintaining the position of the bow arm on release until the arrow hits the target. As the arrow slides along the arrow rest any movement of the bow will move the arrow. The position of the head and body should remain steady, while the drawing hand moves backwards after the release.

It is important to not let the bow arm fall after the release, as this can become a problem when the bow arm actually starts to fall on the release, making some arrows land low on the target. Also moving the head to see where the arrow went too soon after the release can make the bow arm move sideways.



Relaxing

The archer must relax after each shot to allow the muscles to recover from their effort.

About 20 to 30 seconds should be enough time for the muscles to recharge, ready for the next shot.

If not enough time is allowed between shots, then the muscles will tire rapidly and may even become sore. Tired muscles will not be able to perform consistently.

Shooting Sequence

1. String bow, select arrows, and put on arm guard.
2. Place arrows in quiver.
3. Bow in left hand.
4. Set up on the shooting line. Stagger the line with the left side of your body pointing at the target.
5. Select arrow to shoot. With the left arm down at the side in normal resting position, raise it in-front of the body. With the string up. Place arrow on the arrow rest with the cock feather sticking up. Nock the arrow on the serving of the string. Place the three fingers of your right hand around the nock of the arrow on the finger rollers.
6. Lift up bow arm so that the bow is perpendicular to the floor. Steady yourself, draw the arrow back leading with the elbow, anchor at jaw, aim with both eyes, hold for three seconds and release. Hold follow through position for five seconds.

Links:

<http://www.centenaryarchers.gil.com.au/Default.htm>

<http://www.centenaryarchers.gil.com.au/the10.htm>

Factors Affecting Your Shot

Factors Which Cause The Released Arrow to Ride "High"

1. Riding the bow (extension of bow arm on release)
2. Increasing slightly the pull on the string just before release.
3. Lifting the bow arm.
4. Lifting the index finger of bow hand.
5. Nocking the arrow low on the string.
6. Allowing the third finger to "slip" on the string.
7. Dropping of elbow or string hand just before release.

Factors Which Cause The Released Arrow to Ride "Low"

1. A "creeping" release.
2. Not reaching or not holding at anchor point.
3. Dropping the bow arm.
4. Reaching forward with chin to string.
5. Nocking the arrow high on the string.
6. Using an under strung bow which causes string to hit wrist.
7. Holding low on the bow handle.
8. Too high of an anchor position.
9. Holding too long so the muscled fatigue.

Factors Which Cause the Released Arrow to Veer to the "Right"

1. Throwing bow arm to the right.
2. Plucking the string in release.
3. Tilting the bow to the right.
4. Failing to align the aim with the center of the target – gold.
5. Head tilt to the right.
6. Pulling fingers off string too quickly, whether from lack of protection or soreness.
7. Weight on the toes or toward the forepart of the foot.
8. Gripping the bow string too high on the fingers.

Factors Which Cause The Released Arrow to Veer to The "Left"

1. Throwing bow arm to the left.
2. Fingers too tightly gripping the arrow.
3. Tilting the bow to the left.
4. Failure to align aim with the center of the target – gold.
5. String touching hunched left shoulder.
6. Weight on heels or swaying slightly towards heels.
7. Head dropped backwards rather than rotated to left.
8. Too tight of a grip on the bow.

Shooting Evaluation

1. Stance

- Feet parallel, shoulder with apart
- Weight evenly distributed
- Body erect, abdomen flat

2. Grip and Bow Arm

- Extend wrist grip used, relaxed fingers
- Upper edge of index finger below arrow rest
- Wrist straight
- Elbow pointing outward, not locked
- Shoulders level, not hunched or turned in
- No wrist movement before, during, or after
- Bow arm steady

3. Nocking

- Arrow nocked at 90 degree angle to string
- Cock feather pointing outwards

4. Drawing

- String gripped near fingertips of three fingers
- Fingers only form a hook, hand straight or relaxed
- Forearm, wrist and hand in continuous line
- Full draw achieved
- Bow arm extended and draw completed simultaneously
- Breath held on draw and released after arrow

5. Aiming

- Aim for three seconds
- Both eyes open

6. Releasing

- Anchor point remains solid before, during and immediately following release
- String rolls off fingers

7. Follow through

- No hand movements that adversely affect the arrow
- Shooting position is held until the arrow hits the target (5 seconds)