

## 6.11. AIMING

### 6.11.1 Complementary Knowledge

#### A matter of balance between two modes of attention

A novice thinks that aiming accurately is the main task to do in order to get the arrow into the centre of the target. As an experienced archer, the apprentice-coach already knows that this is not correct, since the feeling of a proper shooting sequence, form, mental predispositions, etc. are fundamental performance factors. Hence the main difficulty that archery coaches face is the over-aiming attempted by novice archers, many intermediate, and even some advanced ones. Most archery coaches organise training sessions without using a target face to force the novice to be focused on the control of his/her body and state of mind, i.e. to be internally focused. Aiming requires some external focus in order to align some visual references. In other words, an efficient shot requires proper balance between the internal and external focus.

#### Source of stability

A novice often states that his/her bow arm is not stable because they see their sight or arrow point moving. While it is possibly a bow arm issue, that is usually not the actual reason. First of all, a sight cannot be totally motionless. A "stable" sight is generated by good specific strength, body balance, technical control and so on. When seeing the sight moving, the novice often re-centres the sight by consciously modifying the channel of forces in the upper body/top pyramid (mainly the bow shoulder and arm), which generates a change in the launch-pad and results in a different shot.



Without clicker: While aiming, the shape of the top pyramid must be maintained.

With Clicker: the top pyramid should be slightly stretched out in its longitudinal axis.

#### The importance of keeping the shoulders and hips directly above the feet

It is common to sway a little forward or backward but the important thing is to keep the entire body within the shooting plane and avoid any left or right twist.

The image below depicts an archer shooting at a 122 cm face at approximately 30 metres, as seen from 5 metres behind.



Clearly, the archer is aiming straight at the centre of the target.

The following picture shows the same archer being moved a few centimetres forward (in the direction of his toes) due to a body swing or a wind from left to right.



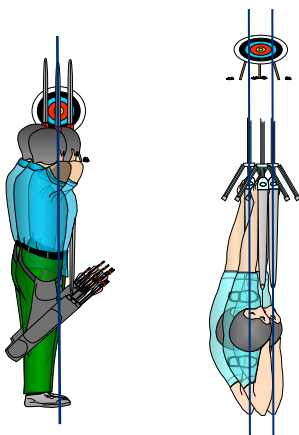
Let us suppose that the feet are still in the same position and the archer has kept his form with the shoulders directly above the hips and feet, but the sight is now aiming at the red/blue on the right.

Next we see the same archer being moved backward (in the direction of his heels) due to a body swing or a right to left wind.



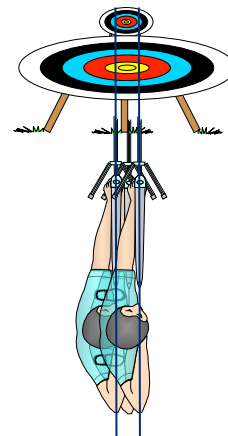
Once more we suppose that the feet are in the same position and the archer has kept his form with the shoulders directly above the hips and feet, but the sight is now aiming at the red/blue on the left.

The next diagram shows the three previous pictures collated into one picture looking from behind, also looking down from above.

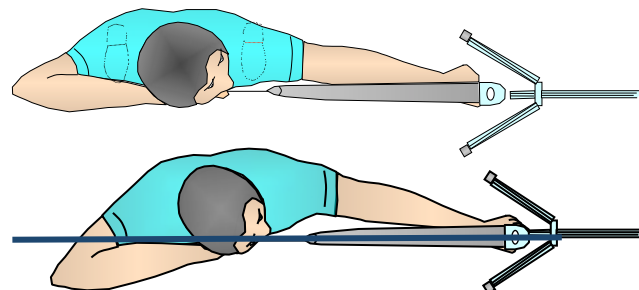


This shows that the sight could be moving across the target face from red-to-red, or even blue-to-blue in extreme conditions.

In the last image, we superimpose a 122 cm face up close to the archer. It is clear that, even though the archer has moved left or right these few centimetres, as long as the archer has held the form, when they release the arrow it will still hit the gold.



Due to the shooting distance, the target appears smaller than it really is. So a small left or right movement of the body will look as if it is a massive movement with reference to the target, and the sight will move from the gold out to the red or even to the blue depending on what distance the target is set at. This is only an optical illusion and is a serious trap for the novice. When he/she sees the sight away from the gold, the novice usually brings it back into the centre of the target by moving the bow arm instead of bringing back the entire body into the shooting plane and keeping the shoulders directly above the hips and feet. By moving the bow arm, the novice creates a shooting angle and breaks the alignment of the forces, as illustrated below.



Hence one of the most important things for an archer to do during adverse weather conditions is to keep their form with the shoulders directly above the hips and feet. A strong core is therefore of paramount importance.

When it is windy, therefore, it is best to consider the conditions, pick an aiming spot, come to full draw, and shoot from solid and strong foundation.

## 6.11.2 Exercises

### Awareness of Head Canting (String Alignment) – Exercise

#### Objective:

To keep the triangle or quadrilateral aiming geometry in the shooting plane during the draw extension period. This exercise is not necessary while using the shaft aiming system.

Situation: Shooting situation.

#### Equipment:

Regular target face, or a vertical strip, or even three vertical strips attached to the target. Strips are 10 cm in width, 10 cm apart.

#### Instructions:

**1.** Ask the novice to come to full draw and align the string along the edge of the sight window.



Common head canting to get the string aligned on the edge of the sight window.

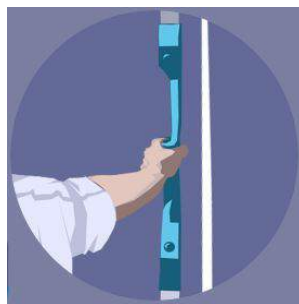


**2.** Without letting go of the string, have the novice look at the string and bow while moving the top of the head from right to left.

Head canting to get the string aligned on the left hand side of the bow window.



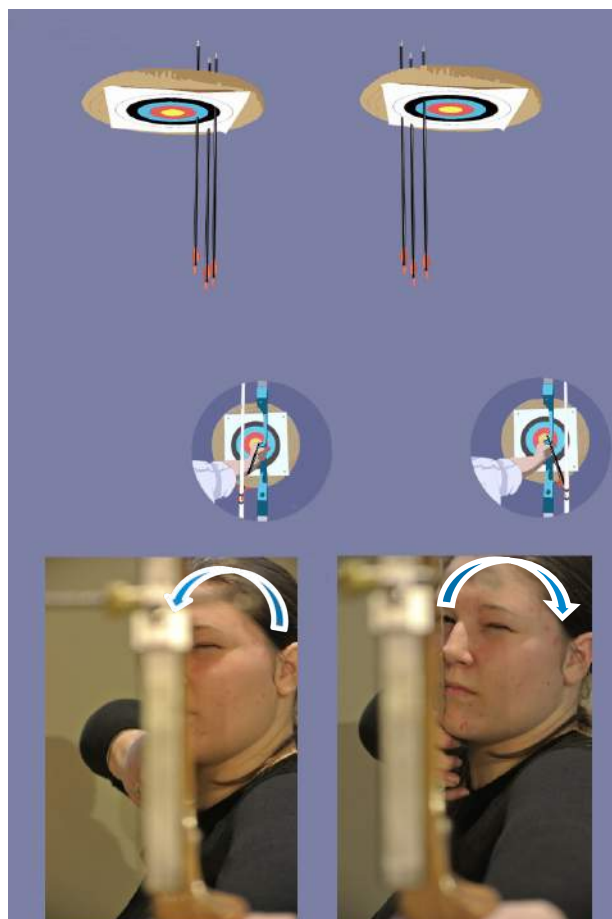
The novice should notice that the string image seems to be moving from right to left of the riser.



Head canting to get the string aligned on the right hand side of the bow window.



**3.** Shoot at the usual distance at a butt with a full size face pinned to it. Keeping the sight pin aiming at the centre of the target, have the beginner line up the string on the left side of the bow riser. Notice the arrows impact on the right side of the target.

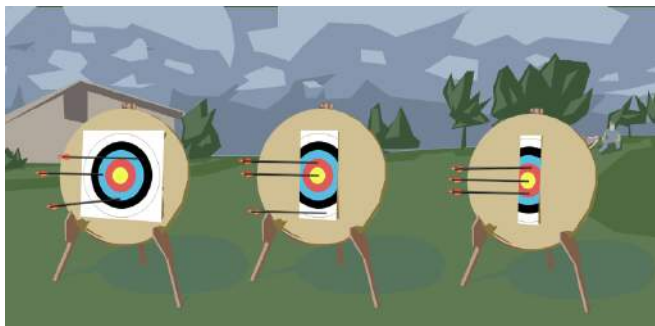


**a)** If the head is canted to the right, the string is seen on the left side of the riser, and impact point is towards the right side of the target.

**b)** If the head is canted to the left, the string is seen on the right side, and impact point is towards the left side of the target.

Then have them shoot while lining up the string with the right side of the bow riser. Notice the arrows impact on the left of the target.

Continue by organizing a game requiring good lateral precision (e.g. shooting at a folded target face, or divided into columns.)



The width of the target face is reduced after each end.

## Use of the Waist in the Aiming Process – Exercise

**1.** Mark a horizontal line across the butt, for example with 1" masking tape.

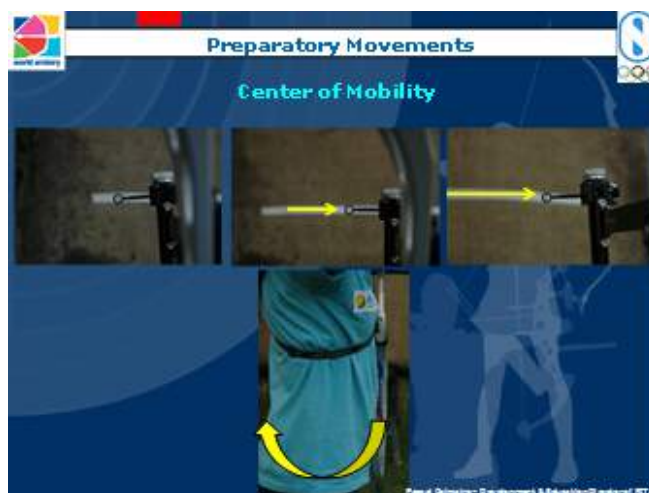
a) Have the students draw their bows and aim at the left end on the line. While at full draw ask them to move their sight slowly along the horizontal line toward the right while extending their body and activating their clicker/trigger (if any) and releasing.

Ask the novices to identify which part of the body allows the sight to follow the line. The novices should have realized that it is not their bow arm, or even the upper body that allows this displacement.

b) Same as #1a, but follow the line from right to left.

While they are shooting, ask the novices to identify which part of the body allows the sight to follow the line.

The novices should have already felt that this movement comes from the lower body.



**2.** Repeat the above but with a vertical strip.

a) Follow the line from top to bottom.

b) Follow the line from bottom to top.

In each case, ask the novices while they are shooting to notice which part of the body allows the sight to follow the line.





The novices should have identified that the majority of the movement comes from the waist and a little from the hips.

This discovery is very important for field archers in particular, but it also teaches all novices how to re-centre the sight after being disturbed by a gust of wind.

The entire upper body should be maintained as a single unit; it must not be deformed as a result of the re-adjustment process.

- 3.** Repeat the above but with 2 diagonal lines.  
a) From high left to low right.



- b) Then reverse the action going from low right to high left.  
c) Then go from high right to low left.  
d) Finally, reverse the action going from low left to high right.

While they are shooting, advise the novices to follow the line "with their belly", rather than their arm.



- 4.** Now do the same using a circle, or use a target face and follow a line between 2 colours;  
a) First go clockwise.  
b) Then reverse and go anti-clockwise.



While they are shooting, ask the novices to follow the line "with their belly", rather than their arm.

- 5.** Same exercise using a sinusoidal or doodled line; the length of each segment of the sinuous line should make the archer change direction at least three times while at full draw.

- a) Follow the line one way.  
b) Then go the reverse way.

While they are shooting, advise the novice to follow the line "with their belly", rather than their arm.

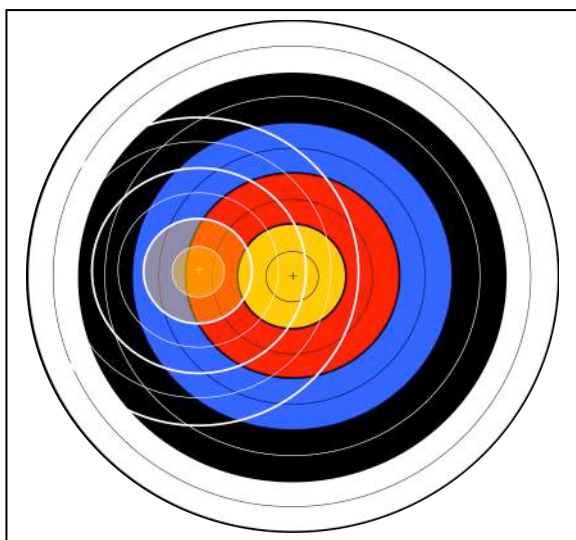
## Aiming Off from Centre - Exercise

### ***With a sight:***

When shooting with a sight, aiming off from centre exercises must be introduced because novices sometimes have difficulty understanding that it is possible to aim at one point and achieve results in another location. To overcome this way of thinking, have the novice move their sight pin a few turns to one side and then aim-off accordingly to get groups in the centre of the target.

### ***Without a sight:***

Draw the rings of a target face with thin lines on a target face but with the "gold" off centre; let us say with the centre in the 7 zone scoring area at 9 o'clock. These thin lines should not be visible from where the novice is shooting.



Suggested offset rings on a target face.

Have differently drawn target faces and/or turn them a few degrees once in a while between ends, but let the students know where the "off centre" centre is located. It will then be possible to evaluate the success of the exercise.

Shoot and score a round using the off centre scoring rings, perhaps even at different distances.

## Shooting in the Wind - Exercise

### Objectives:

Introduce the novice to shooting in windy conditions.

### Situation:

Windy conditions if possible.

### Equipment:

Shooting equipment and a weight attached to a string or an elastic stretch band which is to be attached to the bow. The weight should be free and hanging below the bow.



### Instructions:

An assistant moves the suspended weight.



The novice should resist as much as possible with the body not just using his or her arms.

## Sight Adjustment Learning by Observation of Bow Deviation - Exercise

### Objectives:

Learn the function of the sight and how to adjust it.

### Situation:

Shooting simulation in pairs.

### Equipment:

Bow strung with an additional elastic string.

### Instructions:

#### Height adjustment:

Position the sight at its maximum height. The novice draws the bow without an arrow and chooses something to aim at.



Starting position: the novice aims through the arrow point.  
Because the "sight" is high, the bow arm is low.

#### a) The effect of moving the sight down.

The assistant lowers the novice's sight, whilst the novice is at full draw. Ask the novice to bring the sight back to the same aiming point as above and have them notice that the bow arm moves up.



When the "sight" moves downward, the bow arm moves upward to bring the "sight" back to the centre.

Conclusion 1: "When I lower my sight, my arm and arrow go higher, thus my arrow hits higher on the target".

#### b) The effect of moving the sight up.

Do the reverse process, i.e. the assistant moves the sight up to a very high position from a low setting. Ask the novice to bring the sight back to the same aiming point as before and have them notice that the bow arm moves down.



When the "sight" moves upward, the bow arm moves downward to bring the "sight" back to the centre.

Conclusion 2: "When I raise my sight, my arm and arrow drop, thus my arrow hits lower on the target".

Combined conclusions 1 & 2: "I have to move my sight in the same direction my arrows are away from centre, because my arm and my bow move the opposite direction"



### Lateral (windage) adjustments:

The assistant holds an arrow horizontally at the level of the sight block with the arrow point extending about 2 centimetres into the sight window. The novice aims at the target using the arrow point as the sight; essentially the arrow replaces the sight pin.



Starting position: the novice aims through the arrow point.

**c)** The effect of moving the sight pin out. The novice maintains full draw while the assistant slides the arrow 10 cm further into the sight window.

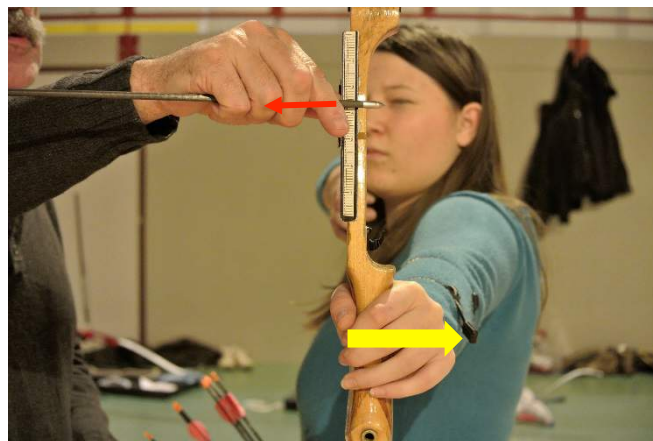


View from the archer: when the "sight" is moved to the left, the bow arm moves to the right to bring the sight back to the centre.

Have the novice adjust to bring the arrow point back to the aiming point and notice the movement of the bow arm to the right (viewed from the position of a right-handed novice).

**Conclusion 3:** "When I move my sight to the left, I move my arm and my bow to the right, therefore my arrow hits right on the target".

**d)** The effect of moving the sight pin in. Reverse the process, i.e. the assistant slides the arrow 10 cm towards the bow window. Have the novice readjust the aim to bring the arrow point back to the aiming point, noticing the movement of the bow arm in the process.



View from the archer: when the "sight" is moved to the right, the bow arm moves to the left to bring the sight back to the centre.

**Conclusion 4:** "When I move my sight to the right, I move my arm and my bow to the left, therefore my arrows hits left on the target".

Combined conclusions 3 & 4: "I have to move my sight in the same direction my arrows are away from centre, because my arm and my bow move the opposite direction"

Note that the conclusions are the same in both the vertical and lateral scenarios; the sight must always be moved in the direction that the arrows are away from centre in order to bring them back to the middle.



## Sight Adjustment Learning by Observation of the Impacts Deviation - Exercise

### Objective:

Learn how sights work and how to adjust them.

### Situation:

Shooting situation.

The basic equipment set up with a butt and a target face with a grid drawn on it.

### Instructions:

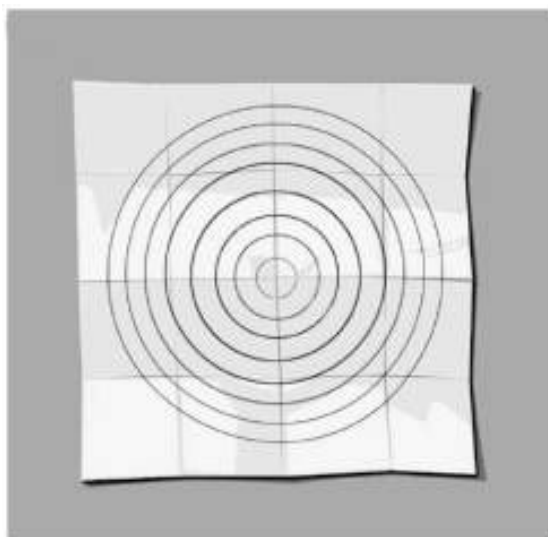
**1.** Help the novice to set the sight in order to get shots centred on the target.

**2.** Afterwards adjust the sight in one direction then ask the novice to observe where the shots group.

Re-centre the sight and then move it in another direction and have the student notice where the arrows group.

Since the shots group in the opposite direction of the sight displacement - for instance when the sight is moved to the right, the impacts deviate to the left - help the novice develop a simple rule.

Start with the conclusion "When the sight pin is moved right, the arrows went to the left" In other words, if the arrows are grouping to the right, the sight pin should be moved to the right. Hence the simple formula is to move the sight in the same direction of where the arrow impacts on the target.



Checkerboard target face.

## Aiming Adjustment in Bare-bow Shooting (the Triangle Method) - Exercise

### Objectives:

Teach the novices who do not use a bow sight how they can aim, i.e. which elements they should change to hit the centre of the target, particularly when shooting from different distances.

Here are some exercises for the two most popular aiming techniques without a sight: String walking and Face walking. For more details on bare-bow, please refer to the specific chapter on bare-bow in the WA level 2 coaching manual.

### STRING WALKING:

It is recommended that novices in the bare-bow discipline start with string walking, which is the most accepted style. String walking refers to the process of varying the novice's fingers position vertically on the string when changing the shooting distance and using a consistent anchor point (reference point). A popular facial reference point is having the tip of the forefinger touching the corner of the mouth while having the rest of the finger located firmly underneath the cheekbone, as shown in the pictures below.

The closer to the target, the lower the novice's fingers are located on the string and the closer arrow nock is to the eye.

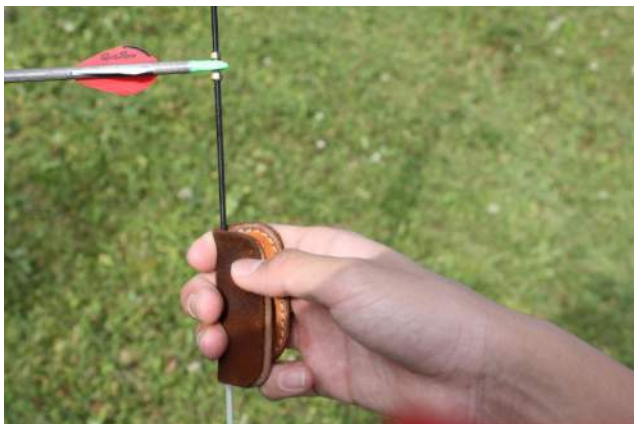
The further away from the target, the closer the fingers are to the nocking point on the string, and the arrow nock is lower with respect to the eye.

### Equipment:

A mirror and a braced bow fitted with an elastic string.

### Instructions:

**1.** With the string fingers far down from the nock (10cm), come to the full draw position and aim at a target with the point. Look at the eye-arrow distance and the slope of the arrow in the mirror - it is probably almost parallel to the ground.



For a short shooting distance.



Repeat the exercise but with the string fingers close to the nock. The arrow should now show an upward slope. Imagine the arrow trajectory in relation to the previous position.



For a long shooting distance



### Conclusion:

The string fingers at a distance from the arrow nock orients the arrow parallel to the ground or sloping slightly down. The string fingers close to the arrow nock orients the arrow upward.

**2.** Follow up using these various exercises while shooting at approximately three meters. Have the novice notice the inverse correlation between the location of the fingers on the string and the height of impact.

Then organize a game requiring good horizontal precision from various distances, or even from the same shooting distance, and therefore requiring proper positioning of the fingers on the string. One example of such a game is shooting at a folded target or a line drawn on a target face.

### **FACE WALKING:**

Anchor points/facial marks are usually described as being high or low on the face. An anchor point/facial mark low down the face is identified as low.



A low facial mark orients the arrow upward.

An anchor point/facial mark on or underneath the cheekbone is called high.



A high facial mark orients the arrow downward.

Both types of anchor points/facial marks can be used effectively for any kind of bare-bow shooting.

Situation: Various simulations.

Equipment: A mirror and an arrow.

Instructions:

In front of a mirror, hold an arrow by the nock, between the string fingers. Place the front part of the arrow in the depression between the thumb and forefinger on the bow hand. Simulate a full draw position with a high facial mark and aim at a particular spot with the point. Look at the eye-arrow distance and the slope of the arrow in the mirror.

Do the same thing but with the string hand positioned at a lower location on the face. Imagine the arrow trajectory in relation to the first position and to a situation where the position would be very close to the eye.

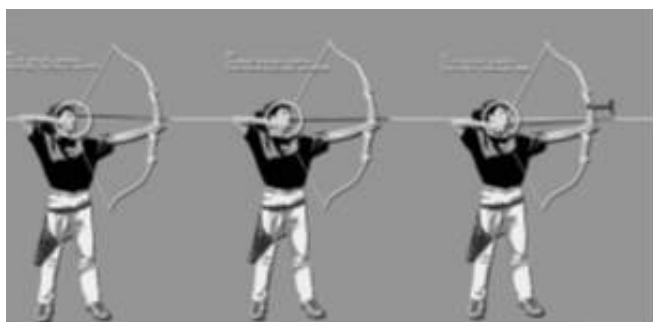
Conclusion:

- A high facial mark orients the arrow downward;
- A low facial mark orients the arrow upward.

Variation:

This exercise can be accomplished with an arrow drawn on a:

- bow fitted with an elastic string;
- regular bow.



A high facial reference orients the arrow point downward, and low facial reference orients the arrow point upward.

Follow up using these various exercises while shooting at approximately three meters. Have the student observe the inverse correlation between the height of the facial reference point and the height of impacts.

Then organize a game requiring good horizontal precision from various distances or even from the same shooting distance, and therefore requiring proper positioning of the fingers on the string. One example of such a game is shooting at a folded or lined target.