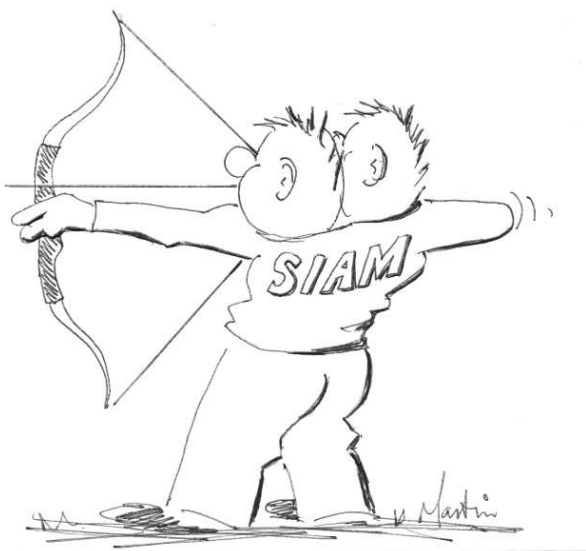
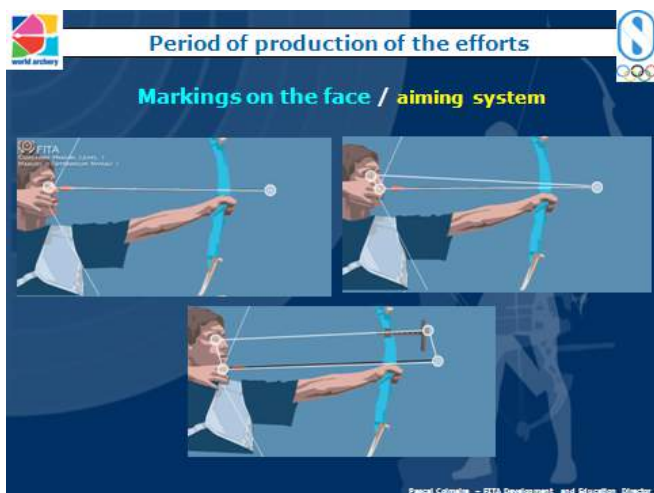


6.9. FACIAL MARKS (or REFERENCES) and AIMING SYSTEMS

6.9.1. Complementary Knowledge

The term "Facial Marks" is used instead of "Anchor" as the latter implies that the draw motion stops, whilst shooting a bow is actually a continuous movement. Furthermore in the straight line aiming method, there is no specific anchor. Some other wordings are used, among them: "Rear sight position" and "Reference points". They all refer to the spatial positioning of the arrow's nock with respect to the aiming eye.



**Look, we gotta stop bickering
about the anchor point!**

Type: Preliminary action

Objective:

To let the novice repeat, with accuracy and simplicity, the orientation of the arrow in reference to the aiming eye.

Forms:

There are three geometrical forms generated by the various facial marks: straight line, triangle, and quadrilateral.

a) Straight line (The simplest form)

This is recommended for "Come and Try" events and the first few sessions, particularly in a recreational environment or short entry-level program.

This method involves aiming along the shaft of the arrow. At full draw, the shaft is on the aiming axis (line from the eye to the target), with the nock at about 2.5 cm in front of the aiming eye. To allow comfortable aiming, the space between the nock and the forefinger of the string hand is about two fingers' width or roughly 4 to 5 cm.

Rationale:

This method makes learning the following actions simple:

- 1** Consistent positioning of the arrow at full draw without the need to develop sensitive facial reference marks.
- 2** Control of the position of the aiming eye with no string alignment required.
- 3** Aiming. This very simple way of aiming and visual alignment allows the novice to:
 - be consistent and precise with ease, thus obtaining encouraging results;
 - better understand the movement that begins with the draw and concludes after the release, reducing the temptation to stop between drawing and aiming.
- 4** Alignment of the string forearm with the arrow (line of forces).

This form, also called "Apache" or Shaft aiming", achieves satisfactory results for novices when the target is at the distance below:

AGE	Shooting Distances
7 & less	4 - 6 M
8 - 10	6 - 10 M
11 - 12	8 - 12 M
13 & +	10 - 15 M

These shooting distances should be adapted to the physical size of the person; age as the only reference is not enough.

Depending on body size and draw weight of the bow, this method can be used at distances up to 15 m or in rare cases up to 20 m.

This method is only intended to be used as a starting method. Even so it is not a mandatory starting method but it does provide good results quickly and easily.

With the shaft aiming method, any difference in the draw or any slight creeping has a less of an effect than in the triangle method (see below).



In the straight line aiming method the arrow is visually positioned while the aiming eye position is ensured.

b) Triangle (The intermediate and least accurate form)

This is probably the most ancient archery aiming technique after the instinctive shooting. The "triangle" is a simpler geometrical design than the "quadrilateral". However, a simpler geometrical design does not mean easier to repeat and learn. This form is the most difficult and least accurate aiming style to master in archery. The arrow is positioned using two reference points;

- Arrow point, by visual placement on the target;
- Arrow nock, through contact of the string hand on the face.

To ensure a consistent repetition of the triangle the novice has to:

- maintain a constant draw;
- position the aiming eye using a string alignment technique.

While shooting a given distance, the novice's string fingers are at a constant distance from the nock, usually just below it. At full draw, the string hand is always placed at the same spot on the novice's face, for example the tip of the forefinger touching the corner of the lips and the top of the hand laying just under the cheek bone.

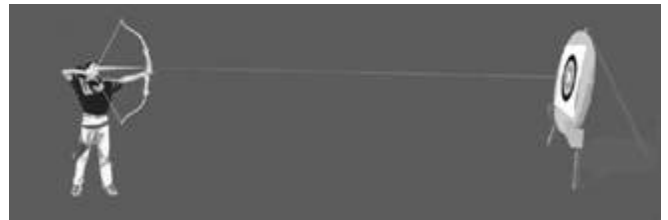
Rationale:

This method highlights all the difficulties and pleasures of archery. The difficulty with this method is that aiming occurs using the arrow point which is:

- Quite large, making an inaccurate aiming mark;
- Not as stable or consistent as a fixed sight pin - especially for a beginning archer.

It is also difficult to get a consistent string-finger mark on the jaw.

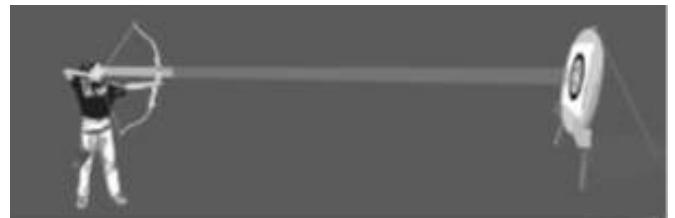
However it is of interest, both academically and practically, since it is similar to the original archery form. It is important to teach it to novices because it may be the style of archery he/she likes best. This form is usually taught after the straight-line, but before the use of the quadrilateral. The novice discovers the ballistic effects of an arrow's trajectory and the importance of consistently reproducing the nock position and aligning the bow string.



Facial marks for the use of the triangle method.

Once these technical elements have been learned, the quadrilateral form can be considered.

c) Quadrilateral (The most common and accurate form)



The arrow is positioned by two reference points:

- A sight (pin or ring) is visually positioned in the aiming line in accordance with the target centre rather than using the arrow point as a sighting aid as in the triangular method.. Hence, the proper use of a sight needs to be introduced before practicing this method;
- The drawing fingers around the arrow nock through tactile placement of the string hand on the face.

Furthermore, to ensure the consistent repetition of the quadrilateral, the novice must maintain:

- The bow in the vertical plane, or consistently canted the same amount;
- A consistent draw length;
- A consistent aiming eye position to allow string alignment.


world archery

Period of production of the efforts

Markings on the face / search of stability

Almost motionless but feel:

- String pressure increase on face
- String hand pressure backwards



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the side of the chin or front-centre, and touching the tip of the nose.

We have just covered the 3 main types of facial marks existing in target archery. Since the most accurate one (quadrilateral) is not the simplest one to learn or teach, we can think as follows.

Question #1: What is a more simple form than a quadrilateral form (with 4 sides and 4 angles)?

Answer #1: A triangle (with 3 sides and 3 angles).

Question #2: What is a more simple form than a triangle (with 3 sides and 3 angles)?

Answer #2: A simple straight line (no angles, just a line).



String alignment is required with the triangle and quadrilateral method.

By imagining how difficult it is for a novice to repeat all these tasks with consistency, a coach will understand why it is recommended to run a lot of mimics and simulations (sometimes with an elastic resistance), before allowing the first shots. The "Mediterranean" string grip type, sometimes called the "cigarette" string grip, is the most common one used with the quadrilateral method. The forefinger is just above the nock, while the middle and ring fingers are below. The forefinger usually touches the top of the nock without applying pressure. The middle finger of the novice is usually kept away from the nock in order to keep it from lifting the arrow shaft off the rest at full draw. Usually the string hand is below the lower jaw, with the string in contact with the chin, either to

Markings on the face / aiming system

	Linear: Aim along the shaft	Triangle : Aiming with the arrow point	Quadrilateral: Aiming using a sight
Line of Forces	Too High	High	Low
Alignment of Forces	Perfect	Excellent	Poor
Arrow Position = Exact	Very easy to do visually	Very Difficult: both extremities	Very Difficult: Nock by touch Exact in the end
Alignment of the String	Not required	Required	Required
Finger position on the string	Comfortable but inconsistent location on the string	Comfortable. Not always consistent location on the string	Uncomfortable. Pressure on the arrow & slips on the string
Markings on face	Not required	Required - Inexact Nose hit on release	Required Difficult to achieve
Based on other styles	Not complete Permits progressive learning	Difficult in the beginning but permits shooting well in any style	Difficult at the beginning and then to change to another style
Equipment Cost	Economical	Economical	More expensive
Participants	Group & Individual & Come-and-try	Group & Individual	Group & Individual

Pascale Colquhoun – World Archery Development & Education Director

These questions lead us to consider teaching archery from the simplest form (straight line) to the most complex one (quadrilateral), which is a logical educational progression with obvious benefits. The above chart shows the advantages of each aiming system in Green and their disadvantages in Blue. The elements in White are neutral.

Teaching the forms from simplest to most sophisticated allows the novice to experiment with at least two types of archery - with and without a sight - allowing them to choose which type of archery they prefer.

Tips for linking the 3 methods:

Linking the various facial marks and aiming systems in an entry level program can be done as follows:

- Teach the novice the straight line method at a short distance, as indicated above in "a) Straight line (The simplest form)."

AGE	Shooting Distances
7 & less	4 – 6 M
8 – 10	6 – 10 M
11 – 12	8 – 12 M
13 & +	10 – 15 M

These shooting distances should be adapted to the physical size of the person; the age as the only reference is not enough.

The straight line method reduces the number of unusual reference points, such as string against the chin, string-hand below the lower jaw, cheek bone, or against the jaw, and allows the novice to focus on learning the real fundamentals.

- When the novice's score improves (for example, 115 points for 15 arrows shot at an 80 cm target face), increase the distance being shot by 5 m; less for the youngest, and so on until they are shooting 30 m. Along with the progression of the shooting distance, allow the novice to experiment with the 3 aiming systems.

- Use the straight line method only for distances at which the novice can still aim somewhere in the top half of the target face. If the shooting distance requires the novice to aim above the face, switch to the triangle method.
- In the case where a novice cannot reach 115 points at a distance with the triangle aiming system, or when the novice can score an average of 24 points out of 3 arrows at 20 or 25 metres, depending on the novice's skill, teach the quadrilateral method.
- It is usually while learning the quadrilateral method that the novice chooses their preferred shooting method, which is usually either returning to the triangle method (without sight) or going on with the quadrilateral method and using a sight.

For the facial marks used in instinctive/intuitive aiming, see chapter 8, "Starting With a Traditional Bow".

Complementary Knowledge:

String alignment is a key element for aiming since all the components of the complete archer/bow unit must be aligned and kept aligned as the archer proceeds through the next steps in the shooting sequence

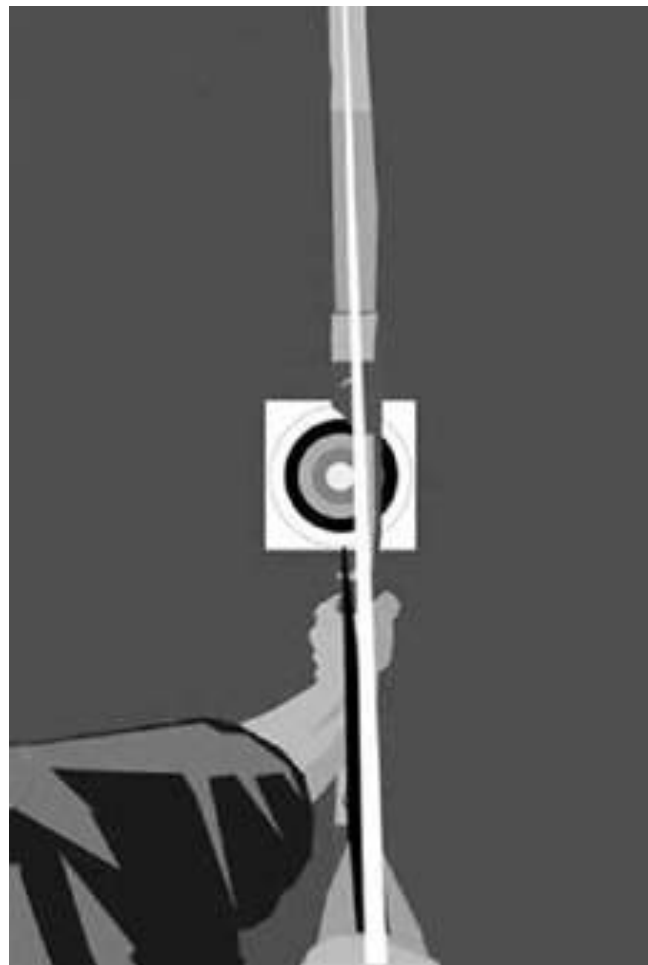
Clarification on a possible confusion:

String alignment is a title which is open to misinterpretation because many beginners think that the string should be moved to the "proper" spot. In reality, the string does not move; on a Recurve bow, it is always in the centre of the bow. The string appears to be at different locations when the aiming eye moves with respect to the string and the bow.

Even if "string alignment" is a poor title, we will use it because it is the common name of this technical element in archery.

Purpose of the "string alignment":

The novice adjusts the position of the aiming eye with reference to the string and the bow in the shooting plane to ensure the arrow is properly and consistently directed towards the target.



A common string alignment, especially with no sight.

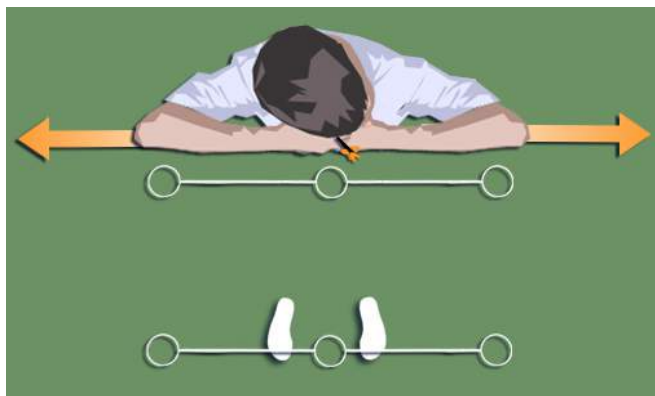
6.9.2. Exercises

Facial Marks and String Forearm Alignment - Exercise

Objective:

To determine when, during the draw, to reach the facial mark in order to achieve a good alignment of the drawing and push forces.

Situation: Simulations.



In this situation the two forearms are aligned.

Equipment: Mirror.

Instructions:

The string fingers grasp the bow forefinger that is vertical and pointed toward the ground. Alternatively, as shown in the picture above and in the next exercise, the novice can grip a vertical arrow with his fingers. Draw using both hands bringing:

- the tip of the string forefinger to touch the centre of the mouth between the lips, for straight line and triangle methods;
- the enlaced fingers under the chin and in front of the neck for the quadrilateral method.

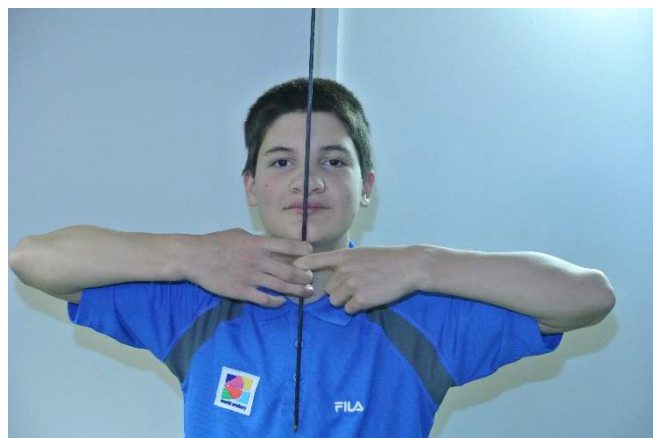
The forearms form a horizontal line. The head is turned towards the target. Imagine an arrow in the place of the bow forearm; the string forearm and arrow are in perfect alignment. Leave the string hand where it is and disengage the bow hand. Note this location as the facial reference for when the novice shoots. Using a mirror for visual feedback helps the novice locate the facial reference mark during practice when a coach is not available.

Repeat this exercise having the novice stand in front of a mirror and drawing a bow that is strung with an elastic string. Ensure that the archer draws to the facial marks determined in the first step. When they consistently draw to the same facial marks, continue with a normally strung bow.

Facial Marks and String Forearm Alignment for Sight Users - Exercise

The following set of exercises helps the novice identify the facial references that allow good alignment of the arrow and the string forearm.

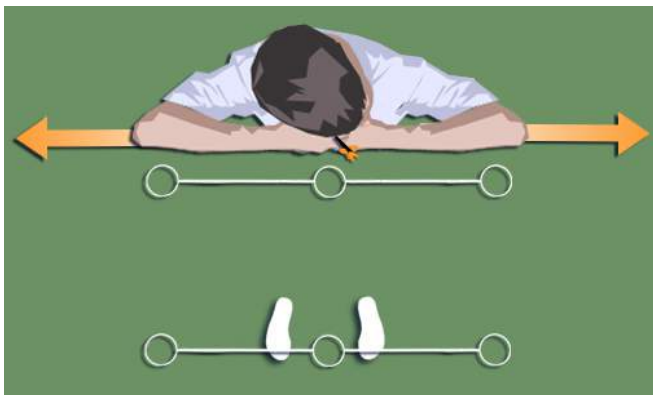
1. Let the novice assume the shooting position whilst on the shooting line. Have an assistant on the line with the novice, holding a mirror at face level, one meter away from the archer.
2. Have the novice grip a stiff stick, thin arrow, or pencil with his fingers, using a grip as closely resembling the position normally used on the string as possible, in the first joint, or a little deeper.
3. Let them use the forefinger of their bow hand to represent the normal position of the arrow, for instance between the forefinger and middle finger for the quadrilateral aiming system, as shown in the illustration below.



As in the previous exercise, let the novice bring the fingers that are gripping the stick to a good facial mark whilst watching along the shooting line (or in the mirror). The stick should be vertical and right in the middle of the novice's face, touching his nose.

At this stage:

- Make sure the shoulders are kept low;
- The arms, forearms, and wrists are relaxed;
- The forearms are be on the same horizontal line at about mouth or chin level;
- Observe that the forearms are aligned in all planes using the ideal force alignment as illustrated below.



Natural perfect alignment of both forearms through this simulation.

Let the novice reproduce this ideal form whilst simulating full draw with the bow.

4. Let the novice turn his head gently towards the target.



Novices without a sight should now feel the tip of their forefinger somewhere near the corner of the mouth, as shown in the next illustration.



For those using a sight, they should feel the contact of their forefinger under their jaw, as well as the string contact with their chin as shown below.



The assistant will move the stick to bring the top part to the middle of the nose, as in the picture below, so that the arrow/stick imitates the position of novice's string at full draw.



Ask the assistant to place a mark on the novice's chin where the string should be. Due to the bow weight and the collapsing or stretching of some parts of the body while at full draw, the string location will be about half a centimetre (for entry level bow weight) to the target side of the stick. A good way to mark this location is to affix a piece of tape on the novice's chin with the rear edge at about 5-6 mm ahead of the stick, as illustrated below.



5. Let the novice, using a bow fitted with an elastic string, come to full draw. Have the elastic string and fingers touch the face according to these marks. Use a mirror to let the archer see that the elastic string goes just a little further back than the piece of tape.



Position the mirror so that the archer does not need to move their head to see.



To make the observation easier, let an assistant hold the mirror. Since feeling the touch is more important than seeing it, have the novice close their eyes. Repeat several times until the string and the string hand are located correctly and regularly by feel alone.

6. Optionally, an arrow may be loaded on the elastic string so the assistant can check the draw length, watching where the arrow point finishes.

7. Have the novice use a bow and come to full draw.

Important: make sure that novice's head is not tilted toward the target or string at any time. Maintain the preliminary positions of low shoulders and upright head throughout the process.

Try to have the string and fingers touching the face and chin according to the identified marks. Once more use the mirror to check that the string goes just a little further back than the piece of tape. Have the novice close their eyes to get a feel for the proper string hand position. When the novice can repeat the facial marks reliably, move to the next step with or without the tape on his chin.



Facial References Versus the Arrow / String Forearm Alignment - Exercise

8. Continue as follows repeating each step several times as agreed with the coach:

- Have the novice come to full draw with eyes closed and then open their eyes to look in the mirror. If the string is located correctly, have the novice shoot the arrow. If not, have the novice let down and start again.
- Come to full draw while looking at the base of the top bow limb. Then look in the mirror. If the string is at the proper facial mark, shoot the arrow. If not, then let down and start again.
- Come to full draw while looking at a blank butt. Check in the mirror to see if the string is located correctly. If it is, shoot the arrow. If not, then let down and start again.
- Rotate through each of the above exercises in sequence. Whilst at full draw in each case take a quick look in the mirror to ensure the string is correctly located. If it is, shoot the arrow. If it is not, let down and start again.
- Same exercise but introduce a fourth step: drawing the bow towards a regular target face. At full draw look quickly in the mirror to ensure that the string is correctly located and, if so, shoot the arrow. If not, let down and start again.
- Finish by shooting at a regular target face and alternating the arrows as follows:
 - One arrow - checking in the mirror that the string is correctly located and, if it is, shoot the arrow. If it is not, let down and start again; and:
 - One arrow - shoot the arrow without looking in the mirror. However, if the location of the string feels wrong, let down and start again. The coach should be watching the facial marks in order to reinforce the archer's sense of feel.

This exercise builds on the previous one by adding a check for proper alignment of the string forearm in the shooting plane. This additional check starts at step #6.

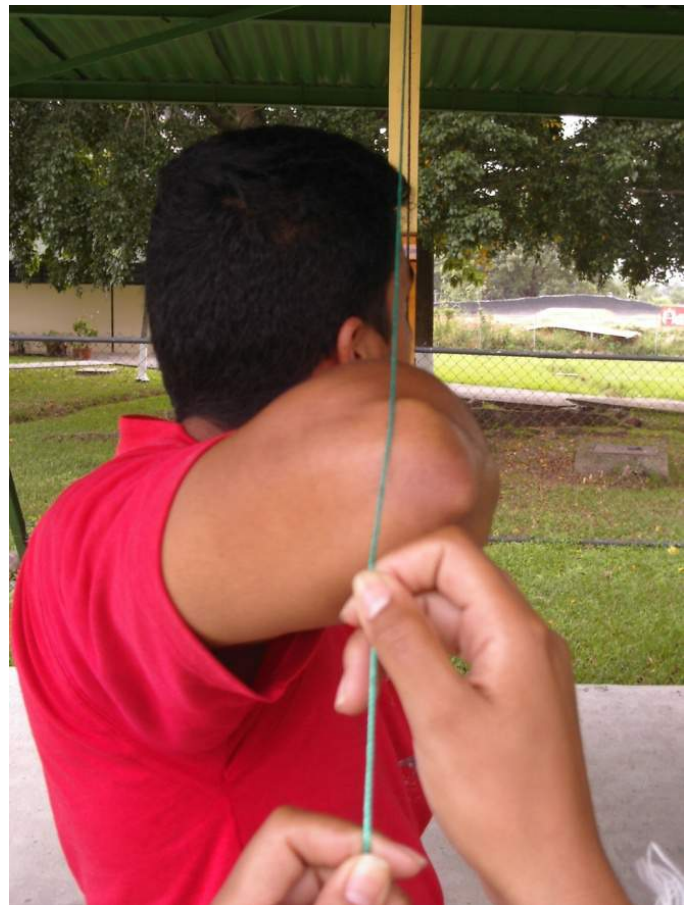
Equipment:

As for the previous exercise, plus a thin cord, 1.5 m in length, with a loop at one end (similar in size to a bow string loop) or a spare bow string.

Step #1 to 5: See previous exercise

- 6.** Same as for the previous exercise but with;
- An assistant standing behind the novice;
 - The loop of the cord over the bow's upper limb tip.

The assistant aligns the rope with the elastic string in the middle of the bow. Keeping this alignment, the assistant moves the cord until it touches the novice's string elbow.



If necessary, move the location of the tape on the novice's face until the cord is as close as possible to the tip of the elbow. Depending on the shape of the body and face, it may not be possible for everyone to get a well-aligned string elbow and a "reasonable" location of the

tape; for these exceptions some compromises must be made.

Note: If over the next steps, the novice feels some friction of the string on the face upon release (particularly on the chin), it is because the tape is too far back. If so, move the tape a forwards (towards the centre of the face) in small increments until the release is painless, then move the tape 2 additional mm forwards.

7. Optionally, an arrow can be loaded on the elastic string and the assistant can check the draw length, watching where the arrow point comes to.

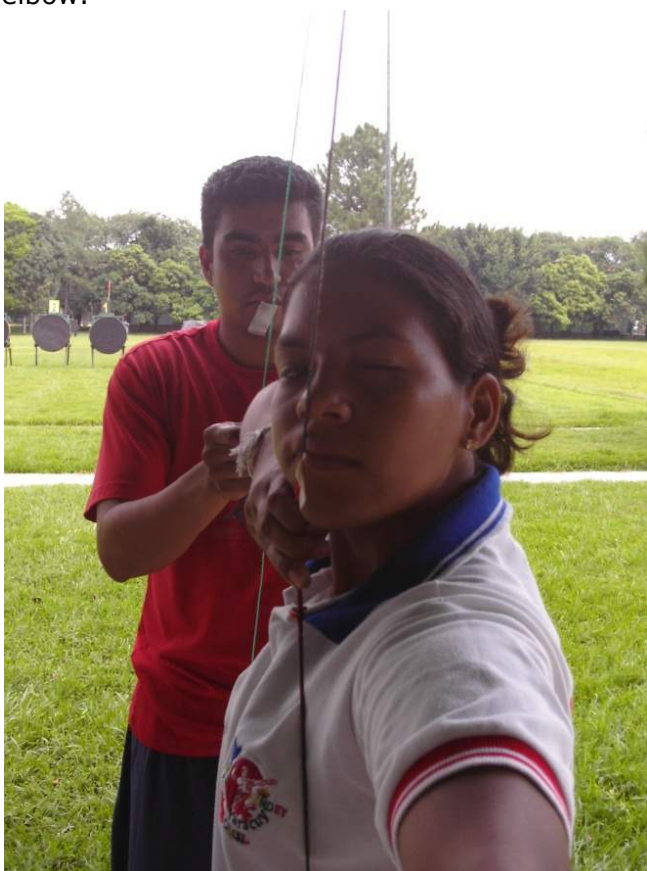
8. Have the novice take the bow and come to full draw. It is important that the novice not lean his head toward the target or string at any time and maintain the preliminary positions of low shoulders and straight head throughout the process.

Let the novice have the string and fingers touch the face according to the previously determined facial marks. The assistant continues to check the position of the cord on the archer's string elbow.

When the novice can repeat the facial marks reliably, move to next step with or without the tape on the archer's chin.



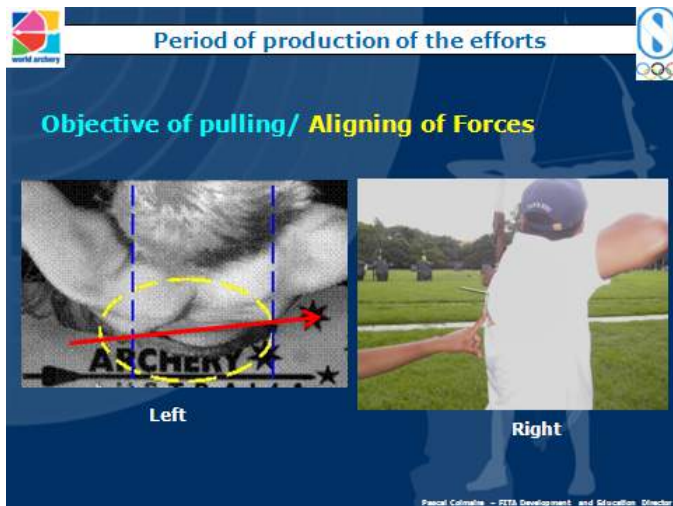
End the exercise as the previous one by alternating shots: first checking in the mirror, then going by feel alone. Even though they are not necessarily related to the facial marks, now is a good opportunity to check the other criteria that determine the correct body alignment at full draw.



Have the novice use a mirror to check that the bow string goes just a little further back than the piece of tape, then close their eyes to concentrate on feeling the touch.

Alignment of the Shoulder Blades - Exercise

With the novice at full draw with a light draw weight bow or an elastic band, the assistant places a stick horizontally across the two shoulder blades. In proper alignment, this stick should angle slightly towards the archer's bow rather than being parallel to the arrow on the bow. If the stick points away from or too far in towards the bow, have the novice adjust their alignment until the correct position is obtained. Repeat this process until the novice regularly achieves proper shoulder alignment by feel alone.



Horizontal String Forearm Alignment - Exercise

1. The assistant attaches a rope to the pressure point on the bow grip.
2. The assistant then extends the rope in the direction of the archer's string elbow, lining it up near the middle finger on the string, without changing the previous alignment.



- If the novice grips the string with three fingers together, like most bare-bow archers, the rope should pass right in the centre of the middle finger.
 - If the nock is between the forefinger and the middle finger, like most archers who use a sight, have the rope pass at the level of the top quarter of the middle finger.
 - If the novice does not use the ring finger, or only uses it a little, move the rope up by $\frac{1}{4}$ of a finger width.
3. The rope should pass close to the elbow tip, proving that the archer's forearm is on the line of force created by the novice (from bow to string). Very often the rope is just below the "ball" located at the tip of the string elbow.

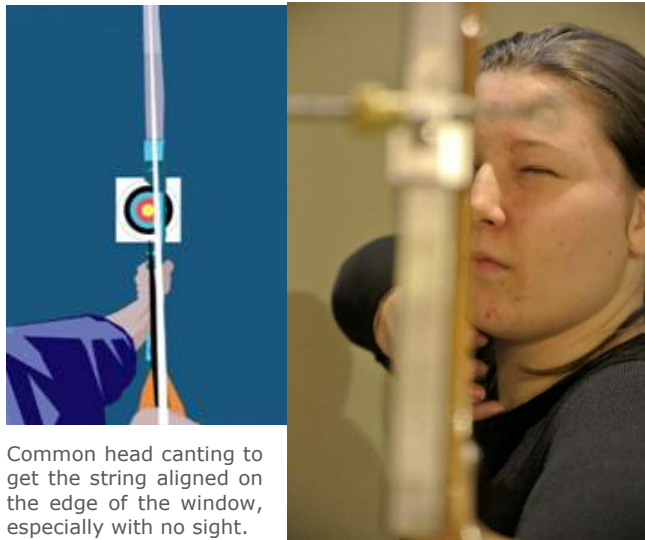
To correct a too high or low string elbow, first try having the novice remove some tension around the string shoulder blade area. It is usually the string shoulder height that influences the height of the string elbow.

Note that moving the string elbow height could change the alignment of the archer's string forearm with the arrow.

String Alignment Discovery - Exercise

Objective:

To settle in the shooting plane using the triangle or quadrilateral aiming geometry during the draw extension period. This system is not used for the shaft aiming system.

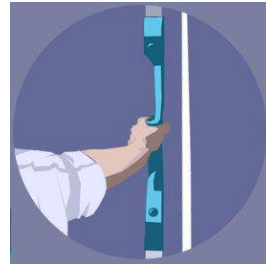


Common head canting to get the string aligned on the edge of the window, especially with no sight.

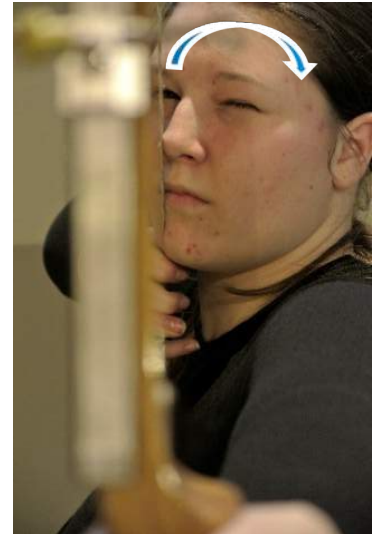
Instructions:

At full draw, have the novice tilt the top of the head from right to left while watching where the string lines up with respect to the bow.

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



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



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

This exercise can be done with an elastic string, in which case the novice will see the elastic string moving to the left then to the right of the bowstring.

In the chapter on Draw extension, a similar exercise entitled "AWARENESS of HEAD CANTING - Exercise" will show the visual changes with respect to the target with different head canting.

Neck and Shoulders Relaxation - Exercise

Objective:

To control the level of tension or relaxation in the neck and shoulders.

Situation:

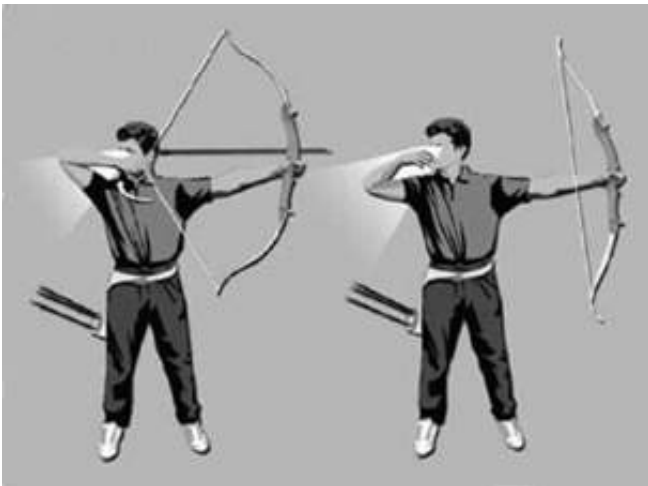
The usual shooting situation.

Equipment:

Bow. No arrow is to be used in this exercise

Instructions:

At full draw ask the novice to turn their head until they are looking in the direction of their string elbow.



Rotating the head improves neck relaxation.

The first time attempting this exercise, some novices are so stiff in their upper body that they cannot turn their head. This exercise will help them learn to relax the upper part of the body.

Note: If the novice uses an arrow, they should not release with the head turned away from the target, unless they are less than 4 meters from the target. Even so, the novice should only release under the supervision of a coach.