EQUIPMENT MODULE -BARE BOW - FITA LEVEL 2 MANUAL

1.BARE BOW INTRODUCTION

The bare bow is defined, for competition, by FITA rules but can de seen as a bow that is shot without any extra equipment fitted e.g. sights or sight marks on the bow, draw check indicators etc.

Archers who are planning/intending to shoot a bare bow have to consider the following aspects):

- Bare bow is mostly shot in the FITA Field discipline / 3D / 3DI
- Bare bow discipline is not Olympic

A lot of countries have a FITA indoor competition for bare bow
During the winter period there is a possibility of mail match for bare bow

Shooting a bare bow is a good start for beginning archers. Those who never had a bow in their hands, so far, will most probably draw the bow and aim over the arrow which is more accepted than using a sight.

When shooting bare bow after a while the archer will encounter problems concerning shooting the arrow and will notice there is more then just drawing, aiming and shooting the bow, especially at different distances, they cannot just adjust their sight. Bare bow archers develop a good feeling for their bows and can switch to recurve or compound bows later if they want to.

The method of shooting a bare bow is slowly getting accepted as a learning process for beginners.
It is a fact that bare bow archers have a very good “feeling” with their bow- and also, through experience, it is a fact that a bare bow archer can easily handle any other type of bow like the recurve or compound. A recurve or compound archer has far more difficulties changing to another discipline and type of bow.
It is not without reason that in some countries, like for example in Sweden, where beginners in archery shoot for the first few months with bare bows so that they learn every aspect of shooting with a feeling for the bow. After that introductory period they may make up their choice for any discipline they want to shoot.)
It is recommended to start shooting with a bare bow so that the beginning archer gets to know all aspects of shooting especially the “feeling” aspects of shooting.

2. THE BARE BOW AND ITS ACCESSORIES

If an archer has decided to go on with a bare bow and wants to buy his/her own equipment they should keep in mind that according to FITA rules the unbraced bow has to fit through a hole of 12.2 cm diameter, and that a riser of the shoot-through type is not allowed.)

Several aspects should be considered in buying own equipment:

The draw weight of the bow should match the archer's strength. A reasonable test for this is the following: the archer draws his/her bow to anchor/aiming point and hold for 7 seconds, relax the bow rest it on his/her foot for 2 seconds repeat this at least 8 times with that short break in between.

If an archer starts trembling or does change body posture particularly of the shoulder girdle (for example gets a high bow shoulder or creeps forward with the drawing hand) before they reach the 8th time then a lighter draw weight is recommended. If all that does not happen during this test the draw weight is appropriate for that archer.

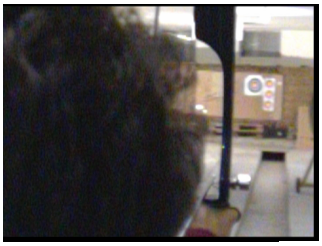
If an archer could easily go on with further attempts a higher draw weight could be considered.

Bow riser/handle:

All recurve bows are suitable, those of aluminium, magnesium or carbon are allowed
(no shoot through types are allowed) as long as the unbraced bow fits through a ring of 12.2cm.

The riser can be of every colour even camouflage,

It is recommended that the sight window should be squared and high enough to help with “Gap shooting”.



It is not allowed to have any markings of any kind in the sight window.

The lower part of the riser is recommended to be closed or if possible to apply the right amount of weight to tune the bow. There are some manufacturers, that make risers for or adjustable to bare bow shooting who supply weights that bolt into the holes in the lower part of the riser The effect is to cause the riser to naturally sit more vertical in the hand and to stop it “dancing” around when shot. Attaching extra weight on the bow is allowed. (provided they fit through the above mentioned ring together with the unbraced bow).

Stabilizers are not allowed, TFC's without stabilizers may be mounted directly to the lower part of the riser. It is permitted to attach additional weights to the riser to provide for more stability on release; some bows have already built-in windings to fix such weights, others make it possible to wrap around metal bars.

Grip:
As on all bows the grip is made standard and delivered by the manufacturer, which is not always the right form for the archers individually shaped hand. It is recommended that the archer resize the grip to their personal setting using either plaster or rasping/filing parts away or even make a new grip from wood according to their personal feelings. Size and shape of the archers hand, and the size and shape of the grip on the riser, will tell the archer to some extent where their personal hand position should be. It is permitted to change the shape of the handle to fit it better to the archer's hand and personal way of gripping the handle.

Limbs
It is not allowed to have any markings of any kind on the front side (inside) of the limbs Limb savers are allowed. See FITA rule Book 4 Constitution and Rules art 9.3.3.1. for limb savers experts material art.9.3.3.7,.The bare bow limbs should be „stiff", showing side stability, so that while shooting the arrow the bow will be more stable, stop it „dancing" around on release. The following figure gives you an idea of the differences in limbs.

Material	Limbs going back	Draw feeling
Wood	Very slow	Very weak
Wood / Fiberglas	Slow	Weak
Wood / Carbon	Fast	Weak to hard
Wood / Ceramic	Fast	Weak to hard
Wood / Carbon / Ceramic	Very fast	Hard

Be aware that bare bow archers have at least to shoot 50mtr- also uphill and downhill.

String
All kinds of string material and colours are allowed. The centre serving should not be provided with markings. The archer could consider making it with a thicker thread so as string walking can be done thread by thread instead of using the tab; it depends what kind of nocking point they want to use.
Bear in mind
that the lighter the serving the faster the string, and the heavier the serving the slower the string will travel, especially when using the double serving. The top end of the central serving should not exceed eye height (measuring aid).Thickness and number of strands also depends on what kind of nock the archer chose to use. For example: some nocks have an inside diameter ranging from ø 2.0 mm (0, 0787 inch) up to ø 2,5mm (0, 0984 inch)
Recommended are 14 to 18 strands (depending on the draw weight used).

Arrow rest:
There are various arrow rests, we mainly distinguish between stiff and moveable arrow rests:
when an arrow is released using fingers/tab the nock end of the arrow initially bends away from the bow. The nock end subsequently bends back towards the bow and then away again. Archer's paradox is the term used to describe this bending behavior. The aim is to have the nock (fletching) end of the arrow bending away from the bow *as it passes the body of the bow* the purpose being to avoid any collision between the rear of the arrow and the bow.
We know from super slow motion pictures (Beiter) that the arrow actually is bent with the vertex away from the bow (nock and point towards the bow) as fletching and nock pass the arrow rest. And when the arrow has travelled forward just +/- 20cm it has a contact only to the string, the rest of it is completely free in the space. This way of moving is due to the fact that the energy transfer from the releasing hand to the string is coming slightly from the side and not directly from behind the arrow (as our fingers open "so slowly"); thus the string is describing a sinus-wave which the back end of the arrow is forced to follow. The front end with its rather "heavy" point gives resistance to the immediate flight forward, thus the bending of the arrow occurs.
It is to the archer (coach) to find that point either with a stiff or moveable rest.

With some of the arrow rests there could be a problem, it is recommended that the metal pin of the magnetic arrow rest where the arrow rests on should not be thicker then 1.5mm and +/- 3cm long. *If it is not accordingly archer could have advantage on the 50 meter due to the fact that at long distances the finger are placed close to the arrow and the flight of the arrow leaving the string is a more "straight" line, and have more "clearance" while passing the Arrow rest (Archers paradox)and there is more time to compensate for a clearance problem. Whereas on the 5 and 10 meters the archer have a disadvantage due to the fact that archer's fingers are placed very low on their string that scoring could not be possible because of the fact that the arrow "jumps" from their arrow rest, the thicker the pin less tolerance of arrow "jumping" and longer the pin more chance that their nock(fletching) make contact with the Arrow rest due to Archers paradox*
Also when looking from the top the end of the finger of the arrow rest should not be seen, as with a longer arrow rest clearance problems are very probable. With clearance problems archers grouping will be worse on shorter distances (like 30m) than on the longer ones (like 50m) it's simply a problem for the arrow to find its proper trajectory within a shorter distance thus archer get poor grouping. On a longer distance there is more time to compensate for a clearance problem. The trick is that you have the arrow resting on the wire right in front of the plunger button and to cut off the unnecessary rest of the wire so that you can't see it when looking from the top.
The above mentioned measurements for the pin is the recommendation gained through experience with elite Bare Bow archers.)




Points to bear in mind are that the force exerted by the string on the arrow varies as the arrow moves forward and also that the direction of the string force is always towards the string bracing height position.

Use a strong arrow – rest. The arrow-rest the archer should use has to be reliably strong for string walking. Shooting with a gap of two inches and more between fingers causes a lot of down force on the rest. For example the Win & Win magnetic rest is a magnificent rest but flies to bits with extreme string walking.

The standard flip rests are robust enough.

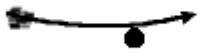
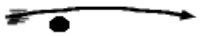
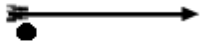
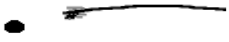
Button/Plunger:
Every kind of adjustable button is allowed.
However the pushing point of the button is not allowed to be placed further back than 20mm behind the grip – pivot point.
The pressure button is set up for a recurve bow so that the arrow at brace height is pointing left away from the bow (the off-centre position of the arrow) and the recommendation is that (for right-handed archers) the right edge of the arrow tip is just touching the left edge of the string when looking from behind with the string seen right in front of the (left-right) centre of the bow.

What initializes the Archer's Paradox effect is the action of the fingers/tab on the bow string. At full draw the string force is balanced by an equal and opposite force on the tab. At the release the string force causes the tab to rotate as the fingers are 'uncurled' . At this point there are three forces acting, with the string force towards the bracing height position, the tab reaction force at a right angle to the tab surface and a tab frictional force parallel to the tab surface. These three forces add together to produce a net force on the string forwards and to the left away from the bow. The sideways acceleration of the string causes the arrow shaft to bend away from the bow at the nock and as a consequence the string force ends up running across the arrow

shaft. At the same time the forwards acceleration of the string transfers the load from the tab onto the nock end of the arrow shaft.

As mentioned before in arrow rests we know from super slow motion pictures (Beiter) that the arrow actually is bent with the vertex away from the bow (nock and point towards the bow) as fletching and nock pass the arrow rest. And when the arrow has travelled forward just +/- 20cm it has a contact only to the string, the rest of it is completely free in the space. This way of moving is due to the fact that the energy transfer from the releasing hand to the string is coming slightly from the side and not directly from behind the arrow (as our fingers open "so slowly"); thus the string is describing a sinus-wave which the back end of the arrow is forced to follow. The front end with its rather "heavy" point gives resistance to the immediate flight forward, thus the bending of the arrow occurs

Archers Paradox.

At full draw the arrow shaft is pointing at the target. The string, left side of the bow and the target are lined up.	
When the drawn bowstring is released, a compressive force is applied through the nock down the length of the arrow. In addition, for a three-finger release, there is a force away from the fingers, pushing the string and narrow nock to the left. The string then snaps back to the right, pulling toward the center of the bow. This action jerks the point to the left as it deflects off the bow. As the arrow passes about 1/3 of its way down the bow, it buckles even more, due to the pressure of the string and its flexibility, causing the arrow shaft to push the arrow rest slightly right.	
Then the arrow bounces back away from the arrow rest a fraction of an inch and should never touch it again.	
The inertia of the arrow point resists the leftward movement but the center of the arrow doesn't. Thus, the point moves around toward the front of the bow , causing the arrow to curve back around the arrow rest.	
When the arrow leaves the string (which has been dragging the nock to the right (toward the bow), the nock reacts by snapping back to the left. The point, in reaction to the nock snap, moves back to the left again. As the feathers pass the bow, the point is back in line with the target.	
As the nock end leaves the bow, it comes back in line, while the center of the arrow bends to the right.	
The arrow straightens out and the center keeps bending to the left, but not as much as before.	

The point and nock ends stay almost in line while the center of the arrow continues to vibrate back and forth, though less and less each time.	

An arrow must be spined correctly to oscillate at just the right frequency to "bend around" the bow. If it's spine is too weak it will strike to the right of the target center. If it is too stiff it will strike to the left of the target center.

Nocking point:
Nocking points need consideration, especially if the archer makes use of the brass clamp type.
When the arrow is shot from between the index and second finger (Mediterranean), the string stays more or less at right angles (assuming there is a half-way finger position, approximately 50% for each finger) to the shaft. When shooting three fingers under the arrow, at full draw, the string passes through the arrow nock at an angle. This means the string nocks have to be further apart to avoid pinching the arrow nock.

Nocking points of every kind are allowed- Beiter, Ambo or even a self made.

Beiter nock point has the advantage of a consistent thickness and a disadvantage while it tends to break and doesn't fit to thicker strings of that kind of nock point.

AMBO Nocking Point have the advantage because the angle of the string to the arrow doesn't play a role, disadvantage however is that the nock wings are rather wide apart and therefore can be damaged more easily through other arrows; also the double centre serving could be of disadvantage concerning the speed of travel of the string.
AMBO Nocking Points and nocks are not easily to come by so when the archer buys Nocking Points and Nocks they should ensure themselves that they have enough for the future.
AMBO Nocking Points centre hole varies from ø 2.0 mm (0,0787 inch) in up to ø 2,5mm (0,0984 inch) which will allow strings varying from 14 to 18 threads depending on the type and thickness of the string threads.

Instructions on how to serve a Beiter or AMBO are included when you buy such a nock set.

It is recommended to have the same serving length as on the old string every time the archer makes a new string because of the trusted view. Without saying, all strings (one in use, two others for replacement) for an individual archer should have the same kind of serving, especially concerning length and thickness.

Remember the serving protects the string from contact with the tab and the arm guard. It also has an influence on the readings when tuning the bow, the lighter the serving the faster the string will travel, the weaker the arrow reacts (dynamic spine) and vice versa.

A self-made nock point is a good and reliable alternative.

Arrows:
Archer can shoot any kind of arrow with the bare bow but they have to be aware that they should be able to reach 50mtr butts under comfortable sighting conditions. With this in mind a male archer should at least have a 45 pound bow draw weight at 28 inch draw length. With ACC arrows the draw weight should be +/- 42 lbs, with ACE arrows +/- 35 lbs should be in order.

See the selection chart from EASTON or the “Shaft Selector Plus” or even the old Easton Arrow Flight Simulator for further references.

Also recommendable are the Red line and the ICS from Beman with a bow draw weight of +/-35 lbs.
The Easton Navigator is a very good substitute for the ACE.

It is recommended for beginners to start off with arrows which are longer than the measured draw length, because the beginner has to learn to “feel” his draw length normally, after a few months of intense practising the draw length increases up to one inch or even more due to the strengthened muscles of the shoulder girdle and better use of their chest cavity through a good breathing. Accordingly, the arrows chosen should be one or even two spine values stiffer.

Tab;
To anchor correctly on archers face he/she needs a flat tab. (which is one without an anchor shelf)
To know where to place their fingers on the string according to the distance to be shot, it could be handy if the archers have stitches on their tab of about 3mm which compare a distance of approximately about 5 mtr. (3mm is reliable but mostly depends on the draw weight of the bow, the archer's draw length, the weight of the arrow and the archer's anatomy. The archers have to sort out this relationship for themselves under controlled conditions.)

There are also tabs with a height which the archer can fill up with anything they want and which allows them to have a lower anchor point and also have the anchor point on their cheekbone.

An anchor shelf tab is only suitable if the archer locates under his/her jaw bone

The purpose of a tab is to protect the fingers and to ensure a smooth uniform surface to effect a clean release
A little talcum powder ensures a smooth surface, and extends the life of the tab.

The purpose in having a smooth tab is that less friction of the tab makes the shot smoother.

There is also an effect on the dynamic arrow spine; the smoother the tab the weaker the arrow reacts.

Finger tabs are preferable to shooting gloves as they present fewer fitting problems especially with string walking for exact positioning on the string. The tab should be big enough to cover the drawing fingers when bent to engage the string. Any surplus may be cut off.
In contrary to the tab used in target archery the tab for bare bow archery consists of a smooth surface without a “cut in” for forefinger and second finger (Mediterranean) and without an anchor shelf. Compare: 9.3.8. of book 4 of FITA rules; a finger separator and a shelf are permitted.


This type of tab comes in small, medium and large sizes for either right or left handed shooters

This Tab is definitely a NO in field as it has extra markings on pad

3. TUNING THE (BARE) BOW:

Principles of tuning:

All archers are from time to time forced to tune up their bow setup.
Bow and arrows are bought independently from each other, the bow just according to a recommended draw weight and the arrows according to a more or less rough estimate in the selection chart. They shall fit to any archer and are not at all tuned up, not even to a certain degree. Tuning is not especially concerning the bare bow but also to every other bow in order to achieve high scores.

Provided the archer has a perfect form; what determines where the arrow hits the target are the initial arrow flight properties (direction of travel, speed, archers paradox, release.) and the physical properties of the arrow (mass, length stiffness = spine) If we replace the archer with a shooting machine which handles the bow/arrow system exactly the same way on each shot and the bow/arrow system responds exactly the same way on each shot then the initial arrow flight properties would be exactly the same on each shot. If all the arrows had exactly the same physical properties then every arrow would hit in exactly the same spot. In this case there would be no benefit to be gained from bow tuning. You adjust the shooting machine so the bow is pointing in the right direction to hit the target centre and then you get a perfect score.

Archers are not shooting machines (though some seem to get pretty close to it and isn't that what we're striving for). The way the archer operates the bow each time will in some way be slightly different. As a consequence the operation of the bow/arrow system will be slightly different. The resulting initial arrow flight characteristics will be slightly different and as a result where the arrow hits will be slightly different. The minimum arrow spread (group size) is obtained when the arrows leave the bow with zero offset angle (the angle caused through the off centre position) and no rotation.

The purpose of basic bow tuning is to get such a setup so that the archer's shot meet these criteria

The fact that tuning relates to the archer's average in form and varies from shot to shot means that a statistical approach has to be applied to any tuning system. If the archer shoots one arrow through sheet of paper and it happens to be a perfect hole then this is, by far, not enough for getting high scores..
A tuning approach either has to be based on looking at the same time at a lot of shot arrows or if the approach practically can only use a few arrows at a time, e.g. bare shaft tuning, it needs to be repeated lots of times and a composite picture built up.
Proper tuning means that a lot of arrows have to be shot under the same conditions what weather but also the archer is concerned.

When an arrow is shot we have to deal with archers paradox, for the archers typical arrow it takes about **15-20 meters** for the arrow to stabilize.(they talk about 5meters when an X10 or an ACE is shot)
At longer distances this doesn't matter but if you are shooting the short distances it will be of great influence.

The optimum tuning set up for short distances may be found to be different from the optimum tuning set up at longer distances.

Tuning the bare bow
Tune the bare bow like the recurve bow (with aluminium or carbon arrow)with the exception of the following:

Tuning for string walkers is a compromise, as moving archers fingers up and down the string alters the ratio of the length of the top and bottom parts of the string from finger to limb nocks. In this the tillering is compromised but mostly they are reasonably forgiven in this respect. Keep the tillering as small as possible . (See limb adjustments and Nocking point)

How to get this compromise tuning of the Nocking point height.?
By averaging the tuning at average halfway of the shortest (15mtr) and over halfway of the longest distance (30mtr)

Nocking Point
Nocking point is about +/- 4mm more than the tiller height depending on the kind of
bow some bows need up to about 15 to 19mm above tiller height to the right angle of the arrow rest.
(normally we talk about top and bottom tiller which is the distance between the string and the top or bottom limb pocket; the tiller difference recommended from the manufacturer, let's say about 6mm in favour of the top tiller; the tiller height is 6mm + approximately 4mm = 10mm)

This would be a nocking point height for a recurve bow with sight at 6 mm tiller height.

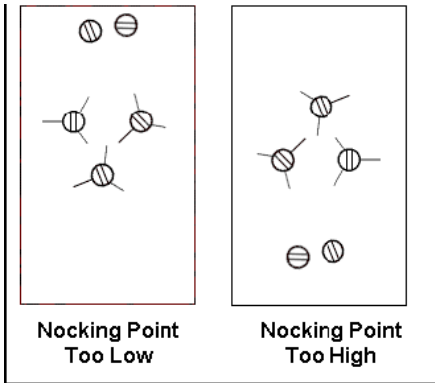
This would be a nocking point as the above set example for bare bow 6mm + 4 mm= 10mm

And, believe it or not, there is a bare bow of a particular manufacturer where the nocking point extends up to 6mm + 4 to 13mm till 19mm.

Nocking points need consideration, especially if archers use the brass clamp on type. When the arrow is shot from between the index and second finger (Mediterranean), the string stays more or less at right angles (assuming there is a half-way 50% finger position) to the shaft.
When shooting three or two fingers under, at full draw, the string passes through the arrow nock at an angle. This means the nock sets have to be further apart to avoid pinching the arrow nock. The easiest way to see if the nock sets is in the right place look at the archer at full draw; if the string nock sets are to close together it causes to "pinch" the arrow, too far apart causes the arrow sliding up and down.

The Ambo nocks compensate for that as a brass/plastic ball is threaded into the string, (archer needs to be sure of the right place) provided the arrow nocks are shaped to fit the ball. The seat of the nock on this nocking point will not change by altering the brace height only if the archer alters the tillering.
Set the correct Nocking point height. If the Nocking point is incorrect then the arrow will "porpoise", i.e. the point and tail of the arrow will oscillate in a vertical plane, there will be up- and- down oscillation of the arrow. (See Nocking point Bare bow)

The best way the nocking point can be checked for bare bow is with the Bare-shaft test.
The theory behind bare-shaft tuning is that a bare shaft will continue on in the direction it was shot since there are no fletchings to stabilise it.
Shoot at least three fletched shafts and **two identically aimed** unfletched shafts at a target at a distance of 15 and 30 meters. (the 15 meters will cover the short distances whereas the 30 meters being the half of the longest distance for Bare bow in the field) Of importance is that you as coach see to it that the archers shoots **identical shots** especially with the same finger position on string and face.
If the unfletched shafts impact above the fletched shafts, the nocking point is too low., if the unfletched shafts impact below the fletched shafts, the nocking point is too high (it is sometimes desirable to have the bare shaft impact just slightly below the fletched shafts to ensure that the nocking point is not too low as this could cause clearance problems. It also recommended to have the bare shaft slightly to the left (to compensate for the string reflex)?



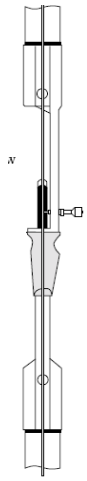
Brace height
The manufacturers give a certain range for the brace height.
An experienced archer may adjust his/her brace height to compensate for individual shooting style, in the end it depends on the arrow flight (depending on the smoothness of the archers' release skills) where the brace height ends up.
Get the bracing height right for the bare bow -Listen to the shot – does it sound nice? Does it sound harsh? Set the archers bow at minimum bracing height and increase it steadily to maximum and listen to the bow as it is shot. Do this with different finger positions on the string (String walking) until you think it sounds good.

Another way of sorting out the individual brace height is described in Rick McKinney's book "The simple art of winning" is a another option.

Limb alignment

Limb alignment is a mechanism used to compensate for slight twists in the riser.
Traditionally, take-down recurve bow limbs sit in a limb pocket and lock into place. Limb alignment adjustment provides the facility to adjust the pocket/limb relationship. This can cause problems when the limb adjustment is of poor design, resulting in an unreliable bow. If possible, avoid limb alignment pockets and simply insist on a riser which is perfectly straight.
In order to determine if the limbs are correctly aligned, fit a long-rod to the bow, rest the bow over the back of a chair or similar, ensuring that there is no weight or pressure on the limbs, and stand back from the bow, looking with one eye.
(the long rod is fitted to the bow as a recurve bow so that when archer is alone he can align his bow from a distance, sometimes you see things better at a distance, when assistance is present the long rod is not needed)

The string should align as shown:



Limb weight adjustment

In order to provide some flexibility, most modern risers provide the facility to adjust the draw weight by tilting the point at which the limbs sit in the limb pockets. On some bows, this means adding packers to the bottom of the limb pockets to reduce the weight, on others the limbs are adjusted by means of an adjustment screw at the back of the limb pocket. In most cases this will only provide up to 4lbs (up to 10%) of adjustment.

Use a strong arrow rest. The arrow rest the archer wants to use has to be reliable firm when the archer string walks. Shooting with a gap of two inches and more between fingers and arrow creates a lot of down force on the rest. (See arrow rest, bare bow and its accessories)

To determine the right balance on the archers bare bow, so that after the shot the bow is stabile or the upper Limb might even move towards archer (instead away from archer towards the target) it is advised that firstly the archer apply with tape some lead (as used in fishing) on the lower part on the backside of the bow handle and note the amount of lead attached. (Grains). Now shoot some arrows at different distances and watch the performance of the bow..

The archers grip and its influence on the stability is described thoroughly in the Entry level Manual and should be considered.

By adding or decreasing the weight of lead the archer can now determine the amount of weight needed to stabilise the bow.

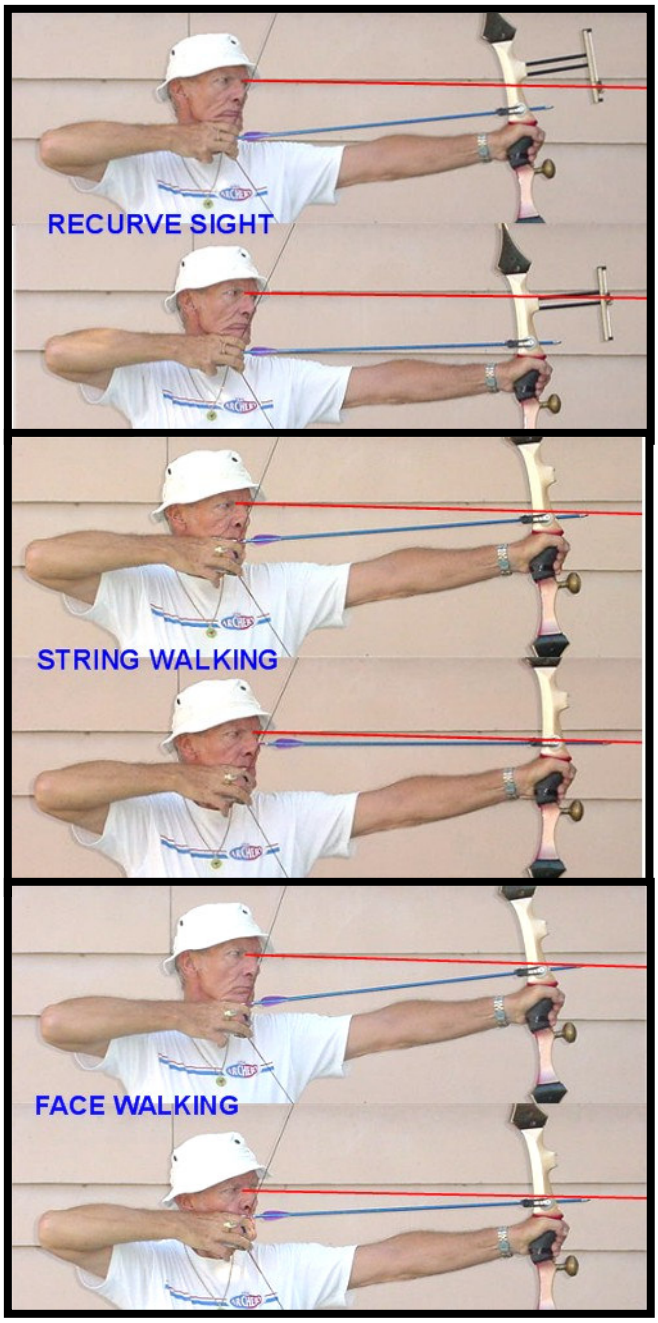
4. AIMING METHODS

Archers who adopt a particular aiming system must recognize that their time for development will be longer than if he/she decided with the use of a bow sight. (This is an opinion through experience but not necessarily a fact)

BARE BOW versus RECURVE BOW

As stated in the Introduction Bare Bow and Recurve Bow are more alike than they are different. The most significant difference between the two is the method used to vary the arrow's launch angle (trajectory) in order to accommodate for different target distances.

The red line in the photos at the right indicate the archer's Line-of-Sight or (LOS). Each pair of photos shows an example of a LONG (top) and SHORT (bottom) distance configuration.



- The Recurve Archer adjusts the arrow's **point** relative to a fixed anchor point by adjusting the sight aperture or pin along the sight's Elevation bar. The adjustment is made in the Vertical Plane.

- The Bare Bow Archer typically adjusts the arrow's **nock** relative to a fixed arrow point location, usually at the target's center, using one of or a combination of Elevation Adjusting Methods. The adjustment is made in the Vertical Plane.

Elevation adjusting is not the same as Aiming; they should not be, but usually are, used interchangeably.

When the distance to a target changes the archer:

1. Changes the arrow's launch angle by making an elevation adjustment and
2. Aims at the target.

During the aiming process the archer:

1. Establishes a Horizontal Reference Line, the archer's LOS and
2. Aligns at least two reference points (rear and front) perpendicular to the horizontal plane of the LOS and along the LOS.

The LOS begins at the archer's eye, extends through the front reference point and normally ends at the target's center. The exception is when the weather conditions require that the archer "aim off" of the target's center.

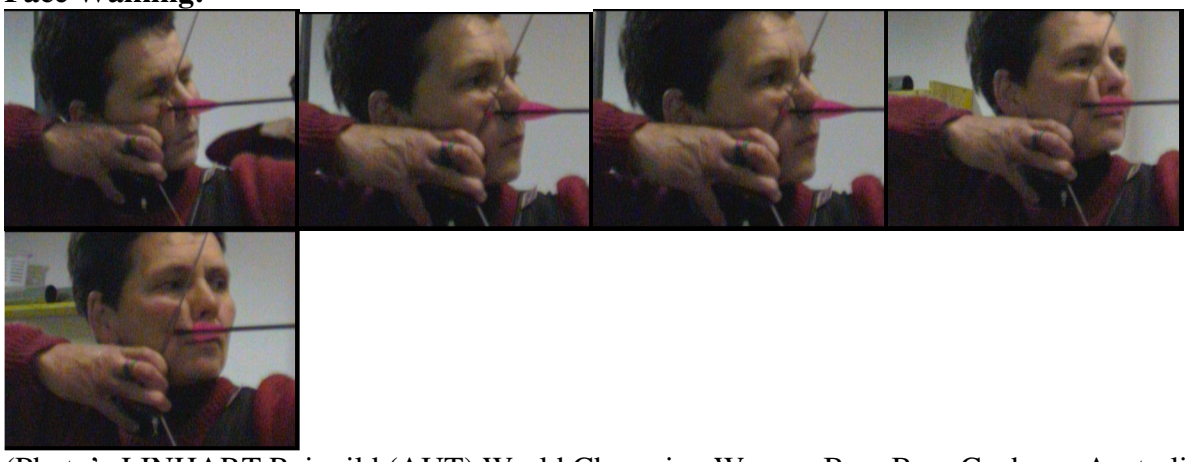
The horizontal plane that contains the LOS is the Horizontal Reference Plane for the arrow's trajectory and quite frequently NOT coincident with the archer's physical horizontal.

There are mainly three methods of aiming in bare bow shooting. Although you can combine two or all three may be combined. All are based on using the tip (point) of the arrow to sight with.
a. Gap shooting
b. Face walking
c. String walking
Combinations of above:
d. Combination of face and string walking
e. String walking with so called Gap- shooting

INSTINCTIVE SHOOTING is achieved by focusing on the target and releasing the arrow without any conscious attempt to calculate the distance to the target. This form of archery can be quite accurate but takes time to practice and become competent at varying distances. The concentration required for this form of archery is not conducive to the shooting of the number of arrows shot in major tournaments.
Bare bow archers rarely use Instinctive Shooting in competition.

Gap shooting:
This simply means aiming above or below the target, as appropriate, to hit the centre,using the sight (bow) window to determine where to aim.

Face Walking:



(Photo's LINHART Reingild (AUT) World Champion Women Bare Bow Canberra Australia 2002)
Here the location point on the face is varied with the distance. It may put the draw hand close to the eye for short distances or under the chin for the long distance. It has the advantage of keeping the draw fingers in the same place on the string for all distances, and thus not altering the tune of the bow with distances.

The disadvantage is that left and right variations occur due to the hand position following cheekbone or face. That is, the hand location at the cheekbone is further out with respect to the eye then when located at say the corner of the mouth … the eye, sight arrow relationship changes.
(According to the anatomical shape of the head anchoring at the cheekbone is further out than anchoring for example at the corner of the mouth thus producing sideway changes in the relationship between the aiming eye and the arrow point.)

Face walking is mostly used with the long bow.
With face walking the archer has to rely on his/her feeling, because of the fact they have to combine the relationship where to place their draw hand and the distance to the target.
It takes a lot of understanding and feeling; this is difficult and is not so reliable.
A disadvantage of face walking is due to the fact that the hands following the facial contour left and right variations occur.

String Walking:
This way of aiming is mostly favoured.
String walking means that the location of the archers fingers is on different positions on the string whereas their anchor point stays at one place. Archer aim over the point of their arrow. The closer to the target, the lower the archers fingers are located on the string "the arrow is closer to the eye". The further away from the target, the closer to the nock point the archers fingers are located on the string ,"and the arrow is lower to the eye".

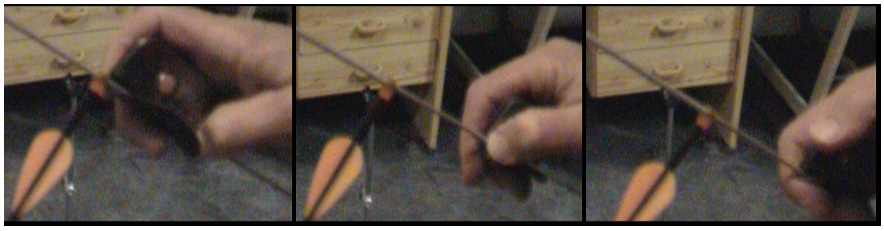
WALKING THE STRING varies from point of aim in as much as the point of the arrow is sighted on the centre of the target, whenever possible, while the nock end of the arrow is varied by altering the finger position up or down on the string for the varying target distances. (in other words walking the string means that the arrow point is held into the target centre but through different finger positions on the string it is compensated for the different distances to be shot).

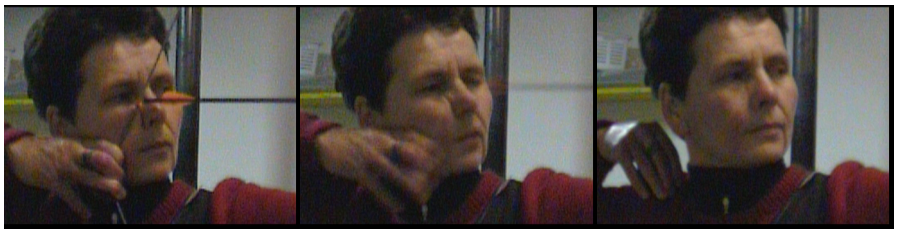
This method of shooting Bare Bow is the most commonly used for field archery.

How to place the draw fingers for different distances:
Start with the top edge of the tab touching the nock; then move the thumb nail down to the point (marked on the face of the tab) which the archer has sorted out for a certain distance; keep the thumb nail on that point and move the tab down so that the top edge aligns with the thumb nail. Then place the draw fingers in the usual way.
(Some bare bow archers have even a longer and straight thumbnail just for string walking)
Shooting this way the archer can shoot different distances with reliable aiming and with a lot of check points.

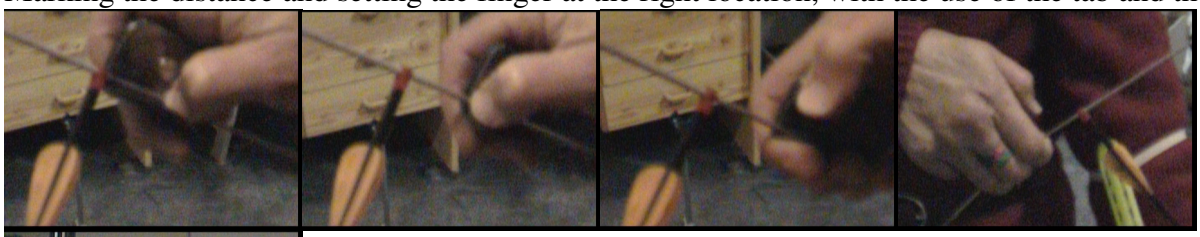
The standard grip for this way of shooting is three fingers under the nock, the basic facial reference point is the tip of the forefinger touching the corner of the mouth while having the basis of the forefinger firmly pressed underneath the cheek bone.

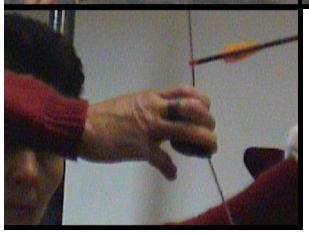
The following pictures demonstrate what is described above for a shot on a short distance of approx. 10mtr.)



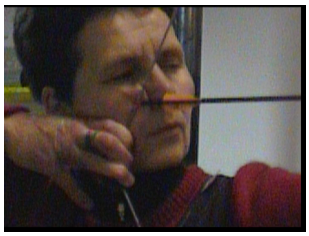


Notice the distance from the eye
For example the middle distance +/- 30 mtr.
Marking the distance and setting the finger at the right location, with the use of the tab and thumb.

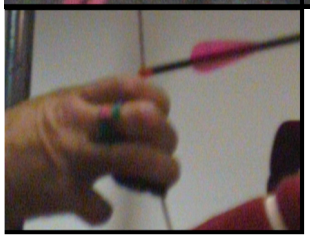




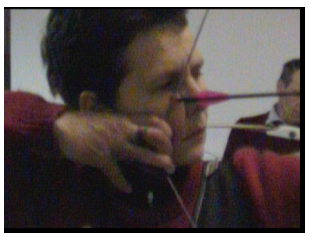
Notice the distance from the eye.



For example the long distance +/- 50 mtr.
Marking the distance and setting the finger at the right location, with the use of the tab and thumb.

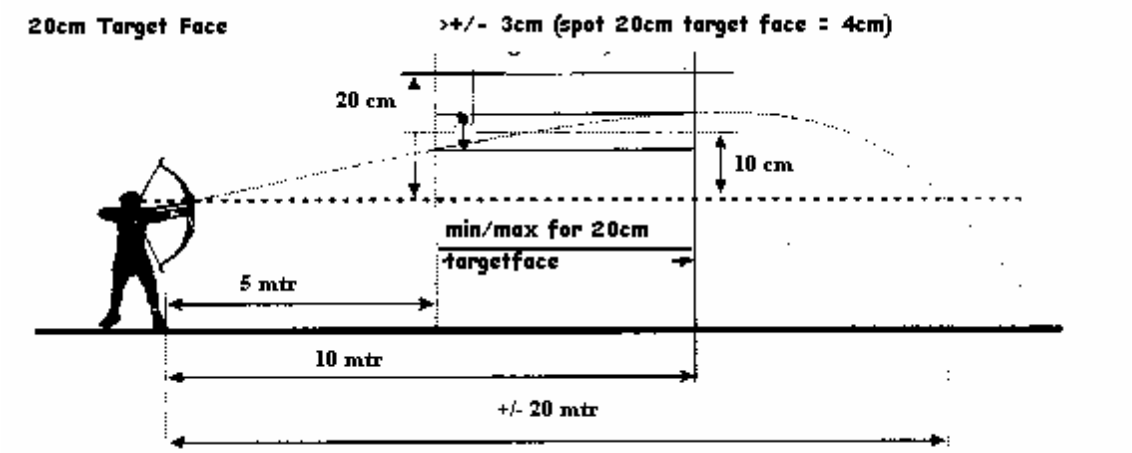


Notice the distance from the eye.

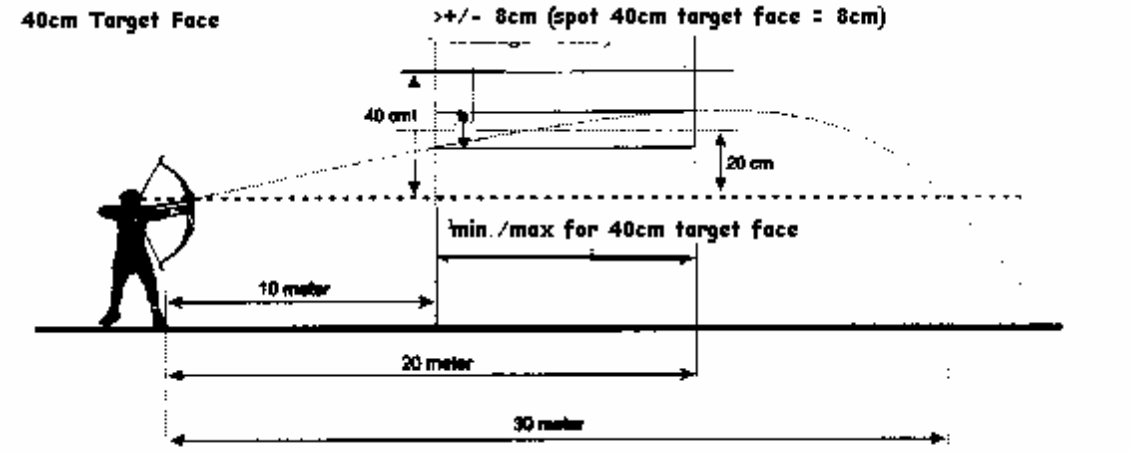


Combination of face and string walking:
The archer takes two or three anchoring points and combine these with the location of their fingers on the string. Thus cover a lot of distances.
This method is used a lot by the Long Bow archers. These bows expel the arrows at a much lower speed so that the archers needs more possibilities to master different distances.

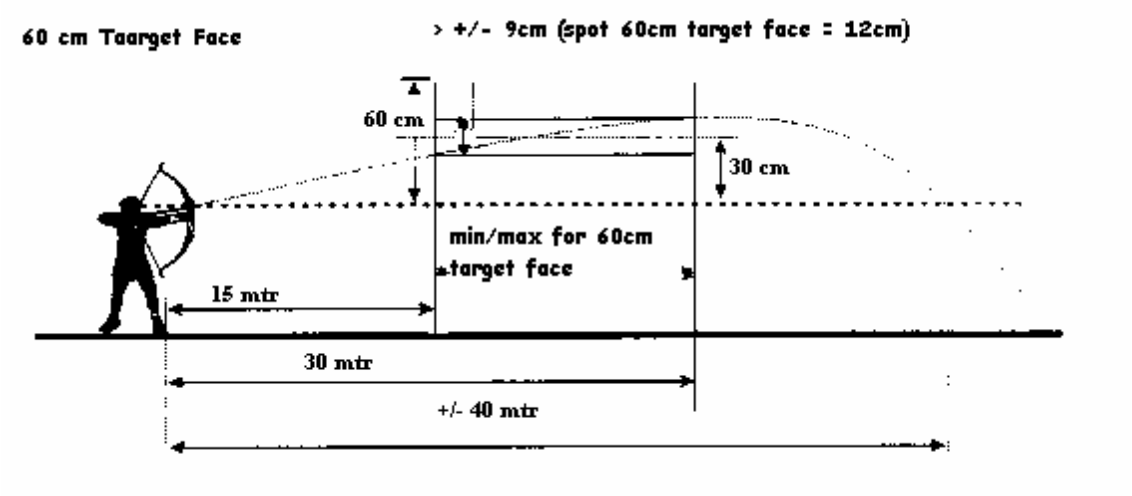
String walking with so-called Gap- shooting:
This method is getting more common and is just the same as string walking but simpler.
The archer takes for every target face, thus for the 20, 40, 60 and 80cm target face, a certain location on their string. This is further than the longest distance shot on that particular target face. The archer uses the part of the trajectory where the arrow is still in a straight flight before the descending line is reached.
For example the 20 cm target face:



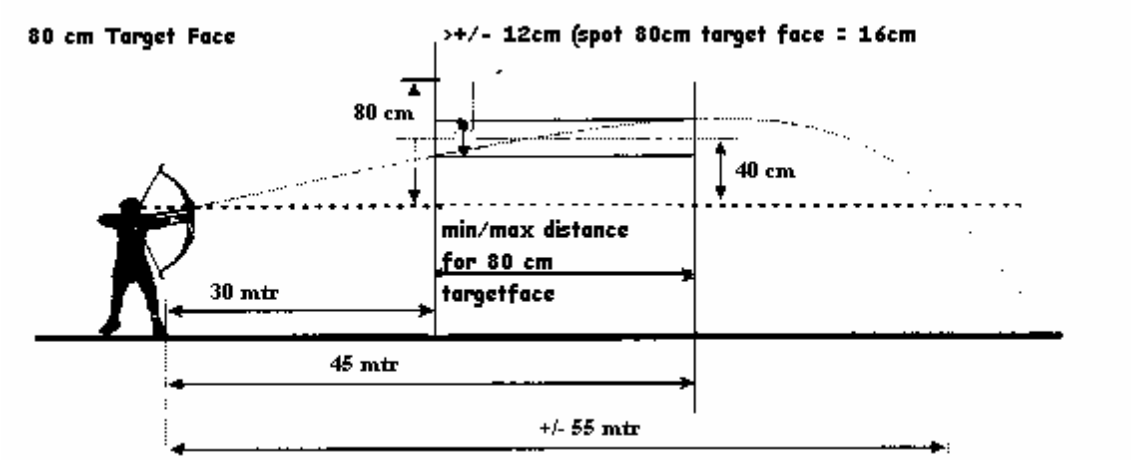
For example the 40 cm target face



For example the 60 cm target face



For example the 80 cm target face



It may happen that the archer has the same sight / aim for different distances. It is important to know where their personal reference points for different distances are; they must be sorted out in practise by intense shooting.

For example:
At a 40cm target face the archer place their fingers on the string at a distance of 25 meters, shoot the first arrow on the shortest distance, say 10mtr. Aim into the middle of the target face, the arrows will hit the target face at the top in the 1 or 2 ring. The second arrow the archer shoots with the finger on the same location on the string (25mtr) on the longest distance of the 40cm target face and the arrow will hit in the lower part of the target face..
Now find out /search for how much the archer has to adjust to come in the centre.
If the archer got a 1 or 2 high he would then have to aim into the 1 or 2 ring low in order to hit the centre of the target face.

The target faces 20cm, 40cm, 60cm and 80cm determine the location where the archer place their fingers on the string. After shooting their first arrow alter the placing if necessary. With this system the archers have a constant anchor point. They only have four markings on their string. This is a lot easier, as they do not have to measure their distances.

The archers have less points to keep in mind and therefore can concentrate more on their technical part of shooting, such as keeping up a consistent draw length, aiming and release which are highly important when shooting bare bow.

5. SHOOTING METHODS

In the FITA level 1 manual the use of the shaft aiming method is mentioned, however the recommended way to teach archery to beginners in Bare bow is to start teaching “point of aim” (aiming over the arrow point) technique which to all intents and purposes would be bare bow style. *But we should be open to all other ways also; sometimes, people simply don't have all the facilities we would like to have with them, or they come with their own equipment.*

In FITA Coaches Manual- Entry Level the beginning archer has been taught the basic elements of shooting so we can now go on with the aspects that concerns shooting with the bare bow.
It is recommended for beginning bare bow archers to start at one distance – 15meters (depending on age and draw weight, sometimes only 5-8 m) - to learn and stabilise the shooting and basic fundamentals and movement concerning the bare bow before going on to other distances.

Draw and anchoring are vital parts of the shooting movement and have to be consistent before going on to different distances. (5-8smeters or 15 meters because the archer can either shoot with the eyes closed or open and has one constant string and anchor point and try to get as small as possible arrow groups at first)
It’s a good idea for beginners in order to find the correct anchor point to use a kisser button which has to be adjusted by the coach at eye level; thus the archer can correct themselves quite easily

a. Stance:

The archer's stance must be consistent from shot to shot.
As bare bows are mostly shot in field and/or 3D competitions the stance is mainly determined by the terrain which can change from shot to shot.
The beginning archer should at first become consistent in their shooting performance; most archers prefer an open stance, nevertheless they have to practise all different kinds of stances and learn how to balance on uneven terrain where often the main weight of their body rests on one leg (with uphill and downhill shots the lower leg is carrying the main load).
Very steep downhill shots sometimes force the archer to kneel on his/her rear knee. The same applies just the other way round with very steep uphill shots where the archer may kneel on the knee pointing towards the target.(front leg)

(Practise such situations during training; the archer may use a chair or similar devices indoors to simulate uneven terrain). (See in this Manuel “Field archery- Training for Field archery”)
Whereas the body weight recommendation in target archery is that the body weight is evenly distributed evenly on both feet a recommendation for the bare bow is that the balance of body weight is approximately 60% of the total body weight is on the front leg – the one closest to target- and 40% is on the rear leg.
(The weight of a bow held on the extended bow arm the body is simply not able to have an equal weight distribution unless the upper body is bent to the string side; that's physics. A discussion about 60 / 40 % ratio is a good recommendation but in the end the archer should feel comfortable and balanced according to the different situations).

b. Body alignment:
The basis for a good body alignment is a well balanced stance as described above.
Like a,”tall straight tree reaching for the sky with the roots deep in the ground”.
Entire body in the shooting plan
Shoulders above your hips & feet
Head orientation
Chin & nose pointed toward the target.
Maintenance of this preset posture while raising and drawing of archers bow.

c. Grip
Placing the hand on the bow handle in a comfortable position may not be the ideal way for the archer to shoot consistent groups we are striving for.
This does not mean that a good hand position has to be uncomfortable.
Generally the reason a change in the archers hand position on the bow feels uncomfortable is simply because they are used to the old way. However, after a diligent effort to practice the new position, it will begin to feel comfortable and the better groups will soon convince him/her that he/she made a good change.
We have several methods available to check if the palm of the archer’s hand is placed correctly on the bow grip:
a. Cover the bow grip with vaseline. Let the archer shoot and check his/her hand is sliding to the right or left. If that happens add a layer of material to the corresponding side or file away on the opposite side.
It is normal that archers hand slips up toward the bottom of the throat. (Pressure point)
b. Check before the shot if archer’s hand palm is placed correctly.(*) After the shot notice how the bow leaves the palm of the hand. When the bow leaves the palm hand either to the left or the right. If that happens add a layer of material to the corresponding side or file away on the opposite side. The bow should leave the palm of the hand straight forward.

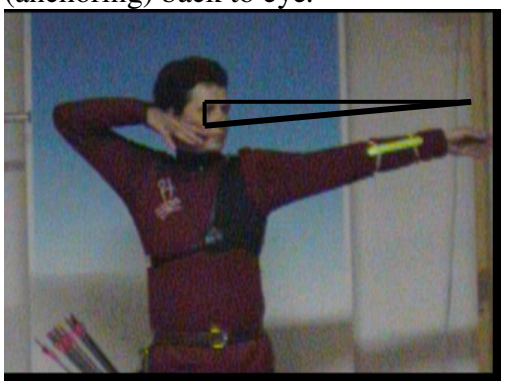
(*) Take care that the bow grip has no contact beyond the life-line of the archer's hand (no contact towards the side of the little finger). With the "Y" and that hand position there is normally no sliding of the grip to either side; the grip is pushed towards the pressure point. Leave it up to the archer's feeling comfortable if they choose a high or a low or a medium grip, no matter if they want to put extra material or file accordingly. If we put extra material to the grip, thus making it more suitable to our way of gripping, we are in danger that only slight inconsistencies positioning the wrist joint will change the groupings.
At the conclusion of this test let archer clean grip and his/her bow hand.

c. Drawing:
Drawing is the act of pulling the bow string to the anchor point on the archer’s face in one smooth movement

The most important aspect in bare bow shooting is the consistency of the draw length; this is a problem because there is no indicator as draw check device such as the clicker on the recurve bow or valley/wall on the compound bow.
To control the consistency of the draw length of your archer for practise purposes, you may attach a white tape on the inside of the bow window with a marking on the tape. While the archer is at full draw make a mark on the arrow in line with the marking on the tape, or make a mark on the arrow where it is in line with the front/back end of the sight window.




Also when using a sight there is a so called form of a four sided figure- eye to sight pin to arrow tip to arrow nock and back to the eye. When shooting a bare bow it is a triangle – eye to arrow tip to arrow nock (anchoring) back to eye.



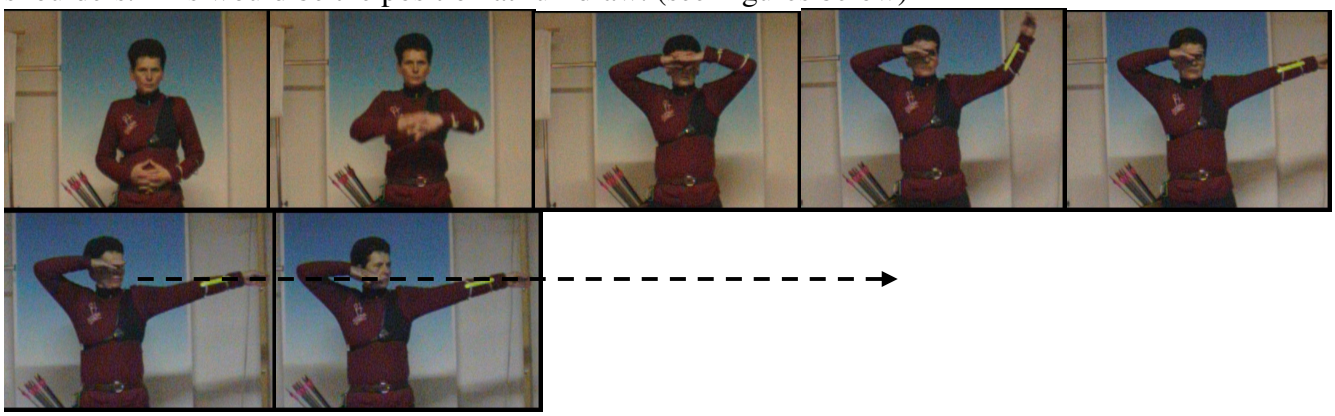
Triangle –Eye to arrow point to arrow nock back to eye

When a sight is used in archery the aiming process is quadrilateral as explained in our level I coaching manual; without sight we're using the triangular method.

To determine the right draw for bare bow it is advisable that to start the draw a little higher then shoulder height, the bow shoulder will be pushed towards the butt as far as possible, thus is **not** contracted or squeezed towards the spine whereas the shoulder blade of the string side is squeezed towards the spine. The muscles responsible for that are antagonists which mean that the one has to relax when the other one is tensed.

Technique suggestions:
a. Have the archer hand/fingers interlaced: palms against his/her stomach, arms slightly curved at the elbow level. Lower his/her shoulders, (responsible for lowering the shoulders is mainly the latissimus dorsi muscle, partly the lower part of the trapezius and finally and partly the anterior serratus muscle). and archer should feel a stretching feeling.
Have the archer raise his/her arm up in front of them as high as they can maintain their shoulders DOWN. The archer should finish their arms rising with an angle of about 45 degrees between their body (vertical) and their arms. This means that we can raise our arms up to 45 degrees, without raising our shoulders . (*A healthy person reaches almost 90° because of the possible movement in the shoulder joint 90 °is not only reachable for healthy persons but also for archers as long as they don't have shoulder problems*).
Now let the archer separate his/her hands, and move their arms down and laterally, WITHOUT changing the curve of their arms. The archer should feel that they open their arms as a fan. Let the archer feel that the opening motion comes from their shoulders, which moves down and apart, also archer feels the "opening" of their rib cage, a kind of thorax expansion.

b. Have the archer hand/fingers interlaced: palms against his/her stomach, arms are slightly curved at the elbow level. Let the archer lower his/her shoulders, archer should feel a stretching feeling.
Let the archer rise his/her arm up in front of them to eye level
The archer should turn his/her head towards the target and focus on the gold; now let archer move his/her bow arm slowly towards the target and hold a little higher than shoulder level, so that archer can see the gold slightly below and to the left of his/her bow hand, and at the same time let archer bring his/her drawing hand to the anchor point on their cheek (A "push and pull" movement at the same time) and archer should feel his/her shoulder blades come down whereas the tension is divided throughout the whole shoulder blades and not at the top of his/her shoulder blades. Archer should feel that the opening motion comes from his/her shoulders. This would be the position at full draw. (see Figures below)



Let archer try this until they have the right movement and are aware of the "feeling" of "back tension".
The "push and pull" movement requires a good coordination from the archer.
After the archer has done that try the draw using a (Elastic) Deuser band with little resistance.
Simulate the bow rising, with this feeling of maintaining his/her shoulders as low as possible,
once raised notice that the upper arm of the string side (just the upper arm, not the forearm) describes an angle of about 45° to the horizontal with archers body once again. At this step, the archers forearm, both hands and the imaginary arrow in between is level with the archer's eye.
You may also place a little sandbag on the archers head to keep his/her head aligned towards the Target to avoid bending of the head.

Continue by simulating a draw, avoiding the use of his/her upper arm of the string side for the draw action. The archer should feel that the opening motion comes from his/her shoulders, which moves down and apart, also the archer should feel the "opening" of his/her rib cage, a kind of thorax expansion. Continue the archers simulated draw, ensure that his/her hands - especially the string hand - describe a smooth curve until the end of the draw, i.e. until "landing" at his/her cheekbone and jaw.
The archer should lower his/her string hand PROGRESSIVELY, avoid stepping down.
The hands should remain at the same height and parallel to the floor (valid from short shooting distance)

The bow string must be drawn to the head instead of bringing the head towards the bow string
After the archer got the feel of it let the archer try this with the bow. (see Figures beneath)
Different angles of the draw

d. Anchor point or "Facial mark"
Depending on the way the archer wants to shoot bare bow:
Gap shooting- string walking- face walking- or even a combination out of these three.
Preference for a particular anchor point usually is given by such factors as facial contour and type of shooting.
It is recommended that the beginning archer in bare bow starts with string walking (which is also the most accepted style) and a point of anchor on the face, preferably the cheek bone just underneath the eye.
Anchor points/ Facial marks are usually described as being high or low on the face.
An anchor point/Facial mark on or under the mandible or jaw bone is termed low.
An anchor point/Facial mark on or underneath the cheekbone is called high.
Both types of anchor points/Facial marks can be used effectively for any kind of shooting.

String Walking:
1. The archer's anchoring is always on the same place against his/her cheekbone, and uses his/her thumb as a support under the jawbone and can also place his/her forefinger against his/her mouth corner or tooth.
Or:
2. The arche's anchoring is always on the same place against his/her cheekbone, and uses his/her thumb as a support against archers jawbone while the space between archers forefinger and thumb is placed behind the jawbone, just behind and above the neck.
Or:
3. On the side of the mandible or jaw bone
Or:
4. An anchor point/Facial mark under the mandible or jaw bone. (like recurve archers)
These are good combination of anchoring, which is very important when shooting with bare bow.
Preference for a particular anchor point/facia mark is usually given by such factors as facial contour but remember that the bow string must always be drawn to the head instead of bringing the head towards the bow string. It is only at full draw when the string has been placed correctly at the anchor point (according to the

facial contour) that the archer might slightly lean his/her head into the string to get a good aiming point in line with the arrow- point.

Face walking:
Here the archer's anchor point/facial mark "walks" on his/her face from eye height- cheek bone- side of jaw bone to under the jaw bone depending on the distance of the target.
A disadvantage of face walking is, that left- right variations occur, the reason for this is the facial contour.
As you can see there are a lot of possibilities but it is recommended to start off with string walking and a point of anchor on the face, preferably the cheek bone just underneath the eye at 15 meters (or 5-8 meters) with a constant point on the string and a constant anchor point/facial mark.

e. Aiming:
POINT OF AIM as the name suggests, is achieved by using the point of the arrow as a sight and selecting a point of aim to align it. The point of aim is an aiming mark that varies with the distance to be shot.
The beginning archer on bare bow should primarily not be concerned about any aiming procedure until he/she feels comfortable handling and performing the basic fundamentals of the bare bow like stance, drawing, anchor point, release and follow-through. To gain confidence they should become familiar with simple shooting skills on a short distance, e.g. 5-8 meter or 15 meter) this eliminates the pressure to aim during the first shooting sessions. When a general understanding of fundamentals of the bare bow is acquired, the archer should draw attention towards aiming and getting small groups of arrows at first on one constant close distance (5-8 meter or 15 meter) on a large Gold (from 122cm face) and thereafter on various distances.



When the archer's head is in the correct position, the archer tends to "look through" the bow string. The setting and checking of the bowstring alignment becomes automatic with experience and most of your concentration for aiming purposes must be directed to
the arrow point.
Before the archer starts focussing on the gold, and whilst drawing the string towards his/her anchor point, archer should align the bow string and bring the point of the arrow in their focus line on the gold.
Most archers prefer to set the arrow point just underneath the centre with the top edge of the arrow point just touching the lower border of the gold. Especially at the longer distances so that the arrow point will not cover the whole gold.
On the short distances they prefer to set the arrow point on the gold.
Training "on the job" is the best teacher

Beginning archers with the bare bow have the tendency to release the arrow as soon as they are in the gold without properly aiming. (snap shooters) Let them hold for 1 to 2 seconds as soon as they are "in the gold" for proper aiming.

Each archer has adopted an aiming procedure according to their shooting form, and usually provides a slightly different version as of how his/her task is accomplished.

The most important aspect in bare bow shooting is consistency in draw length, especially when aiming. Beginners have a tendency to creep forwards (move their head towards the bow) while they are fully focussed on aiming; thus, they get low hits on the target. Another problem is that some beginners tend to "throw" their bow upwards on release or a split second before and will consequently get hits high in the target or even miss it completely.

After the archer has acquired experience in aiming with the bare bow the archer can practise with the original target faces on the correct distances. It is also recommended, as bare bow is mostly shot in the field or 3D discipline, to use field target faces on their distances and even practice with 3D animals on their specific distances.

There is a subjective, kinaesthetic feeling, the experienced bare bow archer attains when the arrow point is being placed on the gold during the aiming process prior to release.
Progress is made only through intense attention, and nothing must be allowed to interfere with the intensity when the arrow point is being placed in the gold.

As soon as a good basic form has been mastered the concentration switches over to the aiming process and the degree of scoring success one has whilst shooting bare bow.

One must be aware of what effect on the accuracy of the arrows the weather conditions have at different velocities and directions. (Of course, different weather conditions have their specific effect on the arrow flight). Aiming adjustments have to be made and the experience in different weather conditions becomes the best teacher.

Through extensive practice over a long period of time, the archer increases skills related to bare bow shooting and kinaesthetic awareness, to correct responses to different conditions, e.g. changing wind speed and directions. These factors and others, enable the skilled archer to adjust rapidly as he/she looks over the arrow point towards the intended target.

f. Release:
The release of the arrow is calculated to coincide with the visual perception of the gap being closed by the arrow point coming into view of the target whereas the bow will be held motionless for a second when the gap has been closed in order to implement an efficient release. It coincides also with the kinaesthetic perception of good and stable form

Releasing the arrow is one of the most important fundamental of shooting.
The key elements are relaxation and concentration.
Both of these elements must be under complete control.
Releasing the arrow is not the result of forceful finger extension; it is an act of relaxing tensed fingers and muscular interaction with the bow hand. (“Push and Pull” interaction)
The bowstring literally pushes the fingers out of its way forward if the fingers have been relaxed sufficiently

It is very important that the archer understands that the drawing arm moves through its range- of- motion without interruption. (Dynamic release)

Some bare bow archers have the tendency to have a static release, holding their bow hand against their face and forcing the fingers to extend causing the arrow to hit anywhere on the target and in due time it can also cause muscular injuries.

Technique suggestion:
a. Simulation of string hand relaxation.
With his/her string fingers, the archer shall grasp middle bow finger that is pointed down. Have a flat string wrist & hand (the wrist joint should be straight); the archer's string hand should be "twistable".
Both elbows should be slightly up.
Let the archer simulate a release while watching his/her string hand. At the end of the simulation, be sure that the archers hand is relaxed, the wrist should be bent down and the fingers quite relaxed
b. To get a good " mental picture" of bow hand relaxation try following:
Take a bucket with a thin iron handle and fill it with sand.
Now let the archer hold the bucket at the side of his/her body until it drops/glides out of his/her hands due to the fact that he/she relaxes the pulling fingers and he/she cannot hold it any longer.
This " mental picture" is the same as releasing the string.
The archer should try to remember this while practising a perfect release.

g. Follow through:
Follow through is essential for consistent performance and minute accuracy. The arrow hits the target before the archer relaxes. The follow-through should be always the same, no matter if the archer shoots on a long or on a short distance, thus getting the sound of the arrow impact after different time spans.

h. Analysing:
After every shot the archer should analyse his/her procedure and the outcome. (Scoring)
Probable causes:

Arrow hitting the target face in the upper region:
• Possible throwing of the bow
• Finger position on the string too high - place DOWNWARDS 9 (See pictures below)
• Make sure the archer is not pushing against the bow grip with the entire hand or palm of his/her hand
• Make sure the archer has the right anchor point/facial mark
• The archer should take time to aim so that archer releases when the arrow points to the proper aiming point

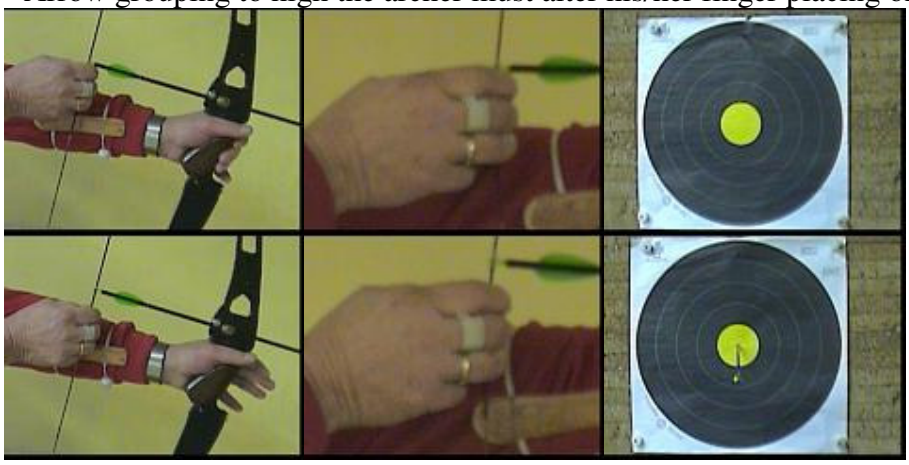
Arrow hitting the target face in the lower region:
• Keep the wrist stabilized and extended at release so no extra motion occurs in that joint.
• Archer should adjust his/her finger position on their string UPWARDS (See pictures below)
• Make sure the archer has the right anchor point/facial mark
• Make sure the archer has the right draw length while releasing and not creeping forward at full draw.
• Check the archers anchor point/facial mark
• Archer should take time to aim so that archers release will coincide with the arrow point intersecting the desired spot of aim.
• Maintain the correct bow- arm position without lowering it until arrow hits target

Arrow hitting the target face in the right region:
• Check the archer's stance: align his/her body with the target instead of rotating it to the right.
• Check the archer's head position: align his/her head upwards as archer may be "leaning: into the string
• Adjust the archer's grip to eliminate any possibility of a clockwise torque of the bow upon release
• The left handed archer may also push too hard with the bow arm which causes high- right hits
• Check to see if the archer's string alignment has not moved to the left

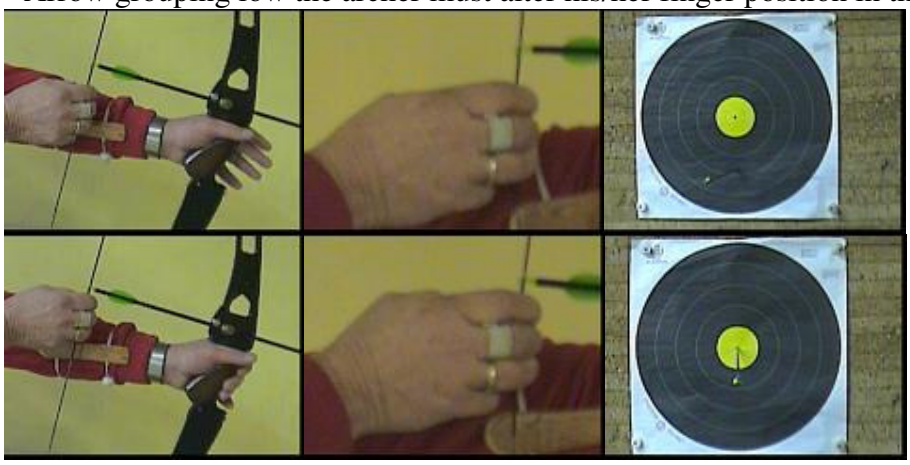
• The archer should concentrate on the relaxation of (the flexor muscle) finger joints during release. Any extra action such as plucking the string will cause a group error to the right
• Archer should concentrate on extension of the bow hand in a straight line backwards
• Check the archer's anchoring; as archer might be pushing it to hard in his/her face or just brushing it.

Arrow hitting the target face in the left region:
• Check the archer's stance: align his/her body with the target instead of rotating it to the left.
• Check the archer's head position: align his/her head upwards as archer may be "leaning backwards.
• Check the archer's bow- grip as he/she may be grabbing the bow- use a bow sling
• Check the archer's position of the elbow on the bow arm: the elbow should be fully extended at all times as archer may be flinching or flexing the elbow at release. (The same applies to the bow shoulder which should be pushed out at its maximum)
• Check the archer's anchoring/facial marking; as archer might be pushing it too hard in his/her face or just brushing it.
• Archer should concentrate on extension of the bow hand in a straight line backwards

Arrow sighting:
On the recurve bow the bow sight is always moved to the arrow grouping area.
In bare bow it is just the opposite:
• Arrow grouping to high the archer must alter his/her finger placing on the string LOWER



• Arrow grouping low the archer must alter his/her finger position in the string UPWARDS.



Coaching:
Coaching of all forms of Bare Bow Archery should concentrate on correct style with emphasis being placed on the facial reference and string alignment.

The basic upright form as introduced in the Entry Level Coaching Manual should be encouraged.
Variations to this form is inevitable if used for Field Archery due to the uneven feet position in the field but a good sound basic form should be developed.

The facial reference is the rear sights and as such must be consistent.
Depending on the archer's style his/her facial reference will be dictated by the aiming method used. Both the Straight Line Method and the Triangle Method of aiming are both comprehensively covered in the Entry Level Coaching Manual.

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