



Coaching Tips 5 CLEARANCE

Elements of Shooting

There are 5 factors that effect good performance

Equipment Set Up

Ensure the equipment is set up correctly- refer to Archery Australia Recurve Set-Up and Compound Set- Up procedures.

Aim Steady

Having the ability to aim steady is totally related to the shooting technique using the correct biomechanical technique, although this is covered in the document, further information can be found in the Archery Australia coaching document - Biomechanics.

Release while aimed

You must maintain the focus on aiming as you release. It is common for the mind to wonder from aiming onto the release, as this happens the archer is no longer aimed correctly.

Shooting Technique - Drawing and holding the bow correctly and consistently

This subject is fully covered in the document, further information can be found in the Archery Australia coaching document - Biomechanics.

Ensure arrow has a clear path of travel from the string past the bow

This refers to creating clearance problems with the arrow, either related to technique, anchor, release or equipment set up.

If we look at the last point, "Ensure arrow has a clear path of travel from the string past the bow which is know simply as "Clearance". Clearance has a direct relationship to other points listed above such as Equipment Set Up and Shooting Technique.

It is considered the most significant factor effecting high scores is clearance. Most people think of clearance problems as being the arrow (usually the fletches) making contact with the bow or rest as it passes by. But the most significant cause of clearance is contact with the face or chest as the arrow starts to move forward.

Recurve Bow

To explain clearance lets look at how an arrow shot from a recurve bow flexes as it leaves the bow. As an arrow is shot the initial movement upon release from a recurve bow has the rear of the arrow moving about 15 mm in toward the archers face (refer Coaching Tip 08/2 Recurve Bow Tuning). If the anchor position is down the side of the face this face contact will interference with the strings movement creating significant clearance problems. There will also have a dramatic effect on tuning.

Some archers can feel the string tough the face upon release and in some cases the string will graze the face causing pain and in some cases bleeding, to prevent this they place tape on their face to

prevent rubbing of the string unaware of the effect this face contact is having on the accuracy and efficiency of the arrows.

The most significant cause of this problem is the “Side of Face” anchor. Many use this as a means of achieving drawing elbow alignment, but this anchor position can result in excessive face contact with the string upon release preventing the string movement and tuning. If tuning indicates you need stiffer spine arrows then the manufacturer chart recommends then the anchor position is most likely causing clearance problems.

Just look at many of the top successful recurve archers and where they anchor. They usually anchor up the front of their face which allows the string to move forward and move into its flexing action without any interference. If achieving drawing elbow alignment is a problem there are methods that can be used to achieve good alignment such as learning to draw the bow by moving the entire shoulder and scapular. Unfortunately most people draw by rotating the humerus in the shoulder socket and using their biceps to draw.

Below are two images taken from the Beiter Slow Motion video that clearly show the side flexing action of the arrow.

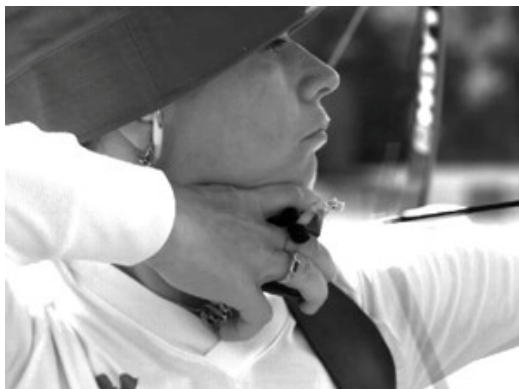


It is clear that if there is any contact particularly along the side of the face this will interfere with the arrows natural flexing action causing clearance and tuning problems.

When attempting to tune a bow with side of face contact you usually receive the indication that the arrow is too soft and a stiffer arrow is required.

Below are images of Natalia Valeeva (Italy) 2007 World Target Champion showing a front of face anchor. The arrow leaves with face with no string side of face contact





Remember if there is any side of face contact with the string, the string will make contact with the face upon release causing interference. Most importantly the amount of contact from shot to shot will not be consistent and will vary causing inconsistencies in the side to side movement of the arrow on the target and unexplained left to right arrows.

Compound Bow

Face contact can be worse with a compound bow due to the let-off associated with compound bows.

The let-off of compound bows in particular those with large let offs such as 80% can see an archer holding very light weights 8lb to 14lb making it easy to distort the bow string at anchor. The archer below has his draw length adjusted way too long and is making excessive face contact with the string.



In fact there is so much face contact the string is being distorted out of line. To demonstrate this point a line has been drawn down the string which shows how much the string has been distorted.

Unlike a recurve bow the nature of arrows shot out of a compound is not to flex side to side upon release, in fact the flexing action when shot from a compound bow using a release device is an up and down action, unless you are shooting "Barebow Compound" where you face the double whammy of both up side to side and up and down flexing action.

The issue of face contact can be made worse with the design of the release device. Some release devices open away from the face while other open into the face.

The design of a release device has the string usually held by an arm which pivots and open as the release is activated. As the release is activated the string remains on the arm until the arm is completely open, depending on the length of the arm the string can be moved from 2 mm to 5mm off line before it leaves the arm. If the release device has the arrow being released into the face then this will increase any face contact.

General

Another significant clearance problem is string contact with the chest and or armguard. If you have chest clearance problems you can -

- Check your clothing is not loose or interfering with the string, particularly in cold and wet conditions when you wear bulky clothing.
- Wear a "Chest Protector" and make sure it is tight fitting and has a smooth surface; rough surfaces can create further interference with the string.
- You may be leaning back; this is the most common cause of the string to come in contact with your clothing and chest. It is common for people to prepare for the shot with even body weight on both feet when at Predraw but, the natural tendency is to transfer body weight onto the back foot as they draw.

If stance creates clearance problems then go back to the basics and look at the stance at full draw and in particular where the pressure is on the feet when at full draw. Body weight should be evenly distributed on both feet at full draw or even slightly forward with up to 10% more on your front foot. At full draw you should also have 60% to 70% of your body weight on the balls of your feet and only 40% to 30% on your heels.

To ensure correct body position at full draw preload body weight onto the front foot (up to 70% of your body weight) at Predraw, as the bow is drawn back body weight will be evenly transferred onto both feet.

If the problem is hitting the armguard then again go back to the basics and look at the shooting technique, in particular bow hand, elbow and shoulder position. Most likely the bow arm has been rotated out of line causing the elbow to come into the path of the string.

Written and images by James Larven
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