Eliminating Bow Torque

Adapted from an Article by James Park

One aspect of our technique that has for a long time been of concern is the effects of bow torque. That is, by twisting the bow's riser as we draw the bow, we induce a sideways scatter of our arrows on the target. An arrow that has been shot well enough to hit the centre of the target, aside from the bow torque, can miss to the side by many rings simply because the archer twisted the bow in his hand.

Much thought has been given as to how best to place your hand on the bow's grip in order to minimize bow torque. Equipment manufacturers have given careful attention to the shape of the grip to assist this. Several innovative manufacturers have even created swiveling grips that make it impossible to twist the riser, but this generally results in a more complex and heavier riser than is desirable.

Bow torque arises through either incorrect hand location on the bow, or through changing the orientation of your hand as you draw the bow, or a combination of both. Ideally, we want the line-of- force of the bow to pass exactly through the contact point between your bow hand and the bow. The generally accepted best hand position is one in which the weight of the bow is taken on your “thumb muscle”, with the orientation of your hand such that the joint of the radius (one of the bones of your lower arm) at your wrist is directly under the arrow. The radius is the bone on the thumb side of your forearm. It is quite easy to check that your wrist is in this position by simply looking down when at full draw and seeing which part of your wrist is directly under the arrow. Correctly locating your bow hand in this position will also result in your thumb pointing directly at the target.

Even with your bow hand in the correct position on the riser at full draw, it is of great importance that you do not twist the bow as you draw it. For example, you could have your bow hand off to one side prior to the draw, turn your wrist as you draw the bow, and have your wrist correctly positioned at full draw. Unfortunately, in this case, you will have applied torque to the riser. Consequently, it is important to start with your bow hand in the correct position prior to drawing the bow, and retain it in that position as you draw the bow. Putting your bow hand in this position is one of the useful things you can do while relaxing between shots.

Now, while maintaining an excellent hand position in drawing the bow and making the shot is the key step in eliminating bow torque, can we minimize the impact of any remaining torque, or of any torque that might creep in during the pressures of competition? Indeed we can - there is a very simple means of canceling it out.

Looking from above the archer, a counter-clockwise rotation of the riser will result in the arrow going to the left of where it would have hit had no torque been applied (assuming that there was no arrow contact with the rest or launcher as a result of the bow torque). However, with the riser twisted as a result of the torque, your bow sight aperture will now also be pushed off to the left. With your sight to the left of its normal position you will be aiming a little to the right of where you would have been aiming had there been no bow torque. That is, we have two effects-the bow torque is making the arrows go left, and the sight extension is making you aim to the right when

you twist the riser. The two effects are in the opposite direction, so perhaps we can make one cancel out the other by selecting a suitable length of sight extension.

How to Adjust Your Sight. Start at a close distance, typically at 20 yards. With your sight extension set right up against the riser, try to shoot an arrow as well as you can, with no torque applied to the riser. Then adjust your sight so that your are hitting the center of the target. Then shoot another shot with a significant amount of torque deliberately applied to the riser. You need to be careful in doing this to not apply too much torque as you could otherwise have the bowstring come off the wheels or out of the nock grooves, which would not be pleasant! If you are right- handed, it is best to twist the riser counter-clockwise as viewed from above, as otherwise you may have the bowstring hit your bow arm. The arrow should hit the target well to the left because the torque will be the dominant effect.

The next step is to move your sight extension so that your sight is now much further out from the bow, and repeat the test. As you get closer to the optimum sight extension length the "torqued arrow" will come in closer and closer to the arrow shot without torque. Indeed it is possible to have the extension out sufficiently far that you can over-compensate and have the torqued arrow hit to the right of the good arrow. The optimum sight extension length is obtained when the torqued arrow hits the target in the same place as the good arrow. Seeing this work for the first time is rather amazing.

In carrying out this test, you do need to bear several points in mind. When you twist the riser you may get the arrow or fletches hitting your rest or even the riser, and this can completely mask the effects of the test. This is a problem with shoot-through launchers. Also, unless you have a reasonably fast bow, you may find that with the optimum sight extension length you cannot get arrow clearance at the longer distances, in which case you will need to use a sight extension and only partially cancel out the torque.

Remember, though, this technique is not removing the torque, but canceling out its effects.