



CHAPTER 4

Hooking



4 HOOKING

HOOKING, THE ACT OF curling one's fingers around the string, is the first permanent reference point attaching the archer to the bow. There are only two places the archer comes in contact with the bow: through the string with hooking, and through the grip at the bow hand. Because these two positions, hooking and grip positioning, are the only ways the archer interacts with the bow, these elements are critical—any inconsistencies or mistakes in other technique elements will be compounded here. The entire pressure of the bow meets the archer where he hooks the string and where he grips with the bow hand. Incorrect finger placement on the string can result in painful blisters, corns, or abrasions that end careers in archery before they even start. Great care is needed for the details of hooking not only to ensure the greatest possible accuracy, but also to ensure longevity in the sport.

The most overlooked mainstay of hooking is the importance of hooking upwards, especially with the top or index finger. If viewed directly from the side, the fingernail of the top finger should point slightly upwards, toward the sky. Most archers do the opposite and hook downwards, effectively losing all top finger pressure and control. See figure 4.1 for examples of hooking upwards and hooking downwards. Only when hooked upwards can the

Figure 4.1

The key finger is the top finger. One must squeeze the finger spacer between the index and middle fingers to allow the top finger to hook upwards, toward the jaw. Notice on the incorrect example how the top finger points down at the throat. On the correct example, see how the finger hooks along the jaw, toward the chin.

INCORRECT — HOOKING DOWNWARD



CORRECT — HOOKING UPWARD



Figure 4.2

This photo shows correct hooking of the top finger and an acceptable gap between the top finger and the arrow. Notice that it isn't much, barely more than a millimeter. A wider gap is difficult to achieve, and is unnecessary. With a smaller gap, the top finger will rest against the arrow. When first hooking the string, the middle finger may touch the arrow. Upon drawing the bow, the arrow will naturally rise toward the top finger as the string bends. Proper positioning can be seen in many pictures throughout this book. Also notice the positioning of the bottom finger. It still is securely on the string, however it does not hook like the top two fingers. The third finger cannot be allowed to slip off the string as it stabilizes the twist of the hand.



top finger have the correct pressure and direction to give the archer the sharpest, most cutting release. Mastering the upward hook until a locking sensation is achieved will free the archer from many common problems like inconsistent pressure or the string sliding through the fingers. To think of hooking upwards another way, remember that the bottom side of the top finger, the edge closest to the middle finger, is where all of the pressure should be felt. Squeeze the finger spacer at the base of the fingers, so that the top finger has the angle beyond the knuckle to hook upwards toward the chin. Refer again to figure 4.1, and to figure 4.3 on the next page, to see how the upper half of the top finger does not touch the string when the archer is hooking correctly. Hooking upward ensures clearance between the top and middle fingers, making it impossible for the archer to pinch the arrow. If the archer is having trouble pinching the arrow, or finds his top finger continues to make contact with the arrow, the problem surely will be solved when he masters correctly hooking upwards. See figure 4.2 for acceptable clearance of the top finger over the arrow.

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Figure 4.3

Here we see the string positioning on the fingers. The string is in front of the joint on the top finger, in the joint on the middle finger, and in front of the joint on the third finger. The thumb stretches down and back. The top two finger positions should be the same on nearly all archers. Only the third finger position will be different. Also, the red shape on the top and middle fingers shows that the pressure on the top two fingers should be felt exclusively in the bottom half of the fingers. We can see a slight upward turn of the top and middle fingers.



With the string in the correct position on the top finger, it will fall either in the joint of the middle finger or just behind the joint. The string will sit in the middle of the pad on the third finger (see figure 4.3). If the archer hooks behind the joint with the middle finger (more common for male archers than female, owing to their larger variance of length between the top and middle fingers), they may begin to build up a small callus. It is advised to keep the hands moisturized so any calluses do not crack and split. Also, it is helpful to take a small nail file and abrade the calluses down to flush with the surrounding skin every week or two so they do not become unmanageable.

Numbness, tingling, and shooting pains up the arm are all caused by incorrect finger placement or pressure on the string. (A tab that is too thin may also cause these problems. A tab that feels too thick at first will often squash down to a comfortable thickness where as one that feels perfect right away will become too thin after a few thousand arrows.) Moving the string position by only a

The second most important element of hooking is the string position as relative to all the joints of the fingers. Again, the top finger is the most important to position correctly, as it sets the standard for the rest of the fingers. The string should be placed 2-4 millimeters in front of the last joint on the top finger, toward the end of the finger. See figure 4.3 for an illustration of the string's position on the fingers. Once hooking is complete the string should not move, slide, or change from this position. Hooking in the joint of the top finger may make the joint very sore and stiff or develop a corn under the skin. For reasons that are not entirely understood, the middle finger may be hooked in the joint and will not suffer from these problems. It becomes considerably more difficult to achieve clean and fast releases should the archer attempt hooking deeper than is suggested here. The position of the string on the top finger should be exactly the same for all archers, while the positions of the middle and third fingers vary depending on the length of the individual archer's fingers.

millimeter on one finger can be the difference between shooting in pain or comfort. As the positioning is so exacting and critical, archers should carefully inspect their string hooking each time they grab the string to ensure consistent finger positioning.

It has been empirically found that the most consistent positioning is achieved when the archer first touches just the fingertips to the string, and then rolls the string into the correct position while hooking the fingers. The key element here is that the archer only makes one fluid movement with the fingers and never re-grips or double-takes on the position. Some archers have an unconscious anxiety that causes considerable mental disquiet until they re-grip the string, and will continue nervously re-gripping the string even while starting to draw the bow. These nervous ticks make it impossible to get consistent hooking.

Once the archer has set the position of the fingers on the string and transitions to placing his hand into the grip of the bow, he will eventually move all the way into “Set Position” detailed in Chapter 8. Now the archer can concern himself with the correct finger pressure. Remember that finger pressure is vastly different at full draw than it is at the set position: as the bow is drawn, the string takes a more and more acute angle. Where the string was nearly straight at set position, it now is bent 20 degrees in. This change of angle will change finger pressure, even though the archer does not change his amount of finger hooking (see figure 4.5 for clarification on the string bending

Figure 4.4

It is very important to visually check the hooking position rather than just attempt to feel it with the fingers. Also notice the comfortable position the archer is in here: bent bow arm and relaxed demeanor.



Photo by Di Zinno

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around the fingers, changing the resultant pressures). So: at the set position, the archer should feel as if his top finger is holding 70 to 80 percent of the force of the bow.

Repeated again, the top finger is the most important finger. As the bow is drawn, more force will naturally be transferred to the other fingers even though the amount of hooking and the string position on the fingers do not change. At full draw the percentages should be roughly 50 percent middle finger, 40 percent top finger, and 10 percent bottom finger. If the set position finger pressure is established correctly, the full draw finger pressure will naturally approximate the correct ratio.

The amount of hooking, or the amount of finger curl—not to be confused with finger placement, how deep into the finger the string is placed—is relative to each finger. If viewed from directly in front of the archer, the fingernails should almost be invisible—the fingernails of the top two fingers should point back at the archer’s throat, and not out to the side. The bottom finger does not hook as much as the others, and is instead used to stabilize the hand on the string and resist unwanted twisting. See figure 4.9. Once finger curl is established, it should not decrease in the slightest. Losing hooking at any moment while shooting, is the primary way archers loose the connection with their backs and end up shooting with a push-pull type tension. Coaches often tell their archers to “keep a deep hook,” but the distinction must be made that the archer is being told to curl his fingers slightly more, and not to change the position of the string to deeper in the hand.

Figure 4.5

As the bow is drawn, the angle of the string changes in the archer’s hand. Because of the angle change, the pressure felt on the individual fingers will change. At the setup position, the left photo, the archer should feel 80 percent of the pressure on his top finger. All the way back at full draw, the photo on the right, he should only feel approximately 40 percent on his top finger.



Photos by Di Zinno

Training Break

The 1000 Arrow Challenge

THE 1000 ARROW CHALLENGE is a test of both the mind and the body's ability to cope with pain, boredom, strength, and endurance. In one solid training session, archers will shoot 1000 arrows consecutively, a feat lasting easily eight hours. The fastest time on record is a few minutes more than six hours. At this rate, the record-setting archer knocked one arrow, shot it, *and* pulled it from the target every 21 seconds, for 1000 shots in a row. The ultimate test of the human body, technique, and biomechanics, only archers who shoot with correct form can maintain such a physical performance for eight hours straight. All of the techniques described in this book have stood up to the 1000 arrow challenge and have kept archers who use them effectively safe from injury. (Any archer attempting this should have professional supervision and months of prerequisite training to avoid injury).

Dozens of archers have all completed the 1000 arrow challenge without adverse physical effects. If 1000 arrows seems excessive for a single day, it is not for strength that archers attempt this grueling training experience. The psychological benefits are the biggest gains made during this difficult day. Shooting a 144-arrow FITA will have never before felt so easy. A 300 or 400 arrow training day will barely touch the physical and psychological depths an archer must reach to finish the 1000 arrow day. Even the most proud will find himself humbled by the ache in his fingers and the ever present thought, "Am I done yet?"

The 1000 arrow challenge is a wonderful capstone to mark the end of a long training cycle. By giving athletes a goal to strive towards, its successful completion can give anyone the confidence and maturity to step away for a few weeks. With a big task under the belt and some relaxation with loved ones, athletes can come back ready for competition.

It is hard enough to pull the bow back 1000 times, but pulling 1000 arrows out of the target is also quite a feat. When attempting the challenge, have a good target buttress and plenty of arrow lube nearby!



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Figure 4.6

The natural wrist position is depicted in the picture on the right. This is where the forearm muscles are the most relaxed. In order to hold the positioning for the picture on the left, the thumb must be pushed forward with tension held in the arm.

INCORRECT — NO BEND IN THE WRIST



CORRECT — THUMB STRETCHED BACK AND WRIST COCKED OUT



To ensure the correct usage of the muscles of the back for drawing the bow, the thumb must be positioned such that it puts the muscles of the forearm in a relaxed position. In order to keep the forearm relaxed, the drawing hand thumb needs to be stretched down and back such that the web of skin between the thumb and forefinger is stretched mildly taut. The pinky should be stretched back and curl into the hand much like the thumb. Proper positioning of the pinky and thumb of the drawing hand comes up again in Chapter 13, “Anchor Position.”

With the thumb stretched down and back, as in figure 4.7, the drawing wrist will appear bent outwards. Many archery texts in the past have incorrectly mandated a flat or straight drawing wrist, but, in fact, a bent wrist is the desired position. As an exercise, find a bucket, a grocery bag, or something the fingers can use to mimic holding a string. Hook the bucket with three fingers as though practicing a shooting position and relax the forearm and wrist as much as possible. The wrist will naturally bend out to the side as the hand/arm finds the equilibrium point, or the position of lowest energy. This exact same position of the wrist and hands, as seen in figure 4.6 and 4.7, should be used while shooting. With the forearm muscles at their lowest energy position, the powerful and stable

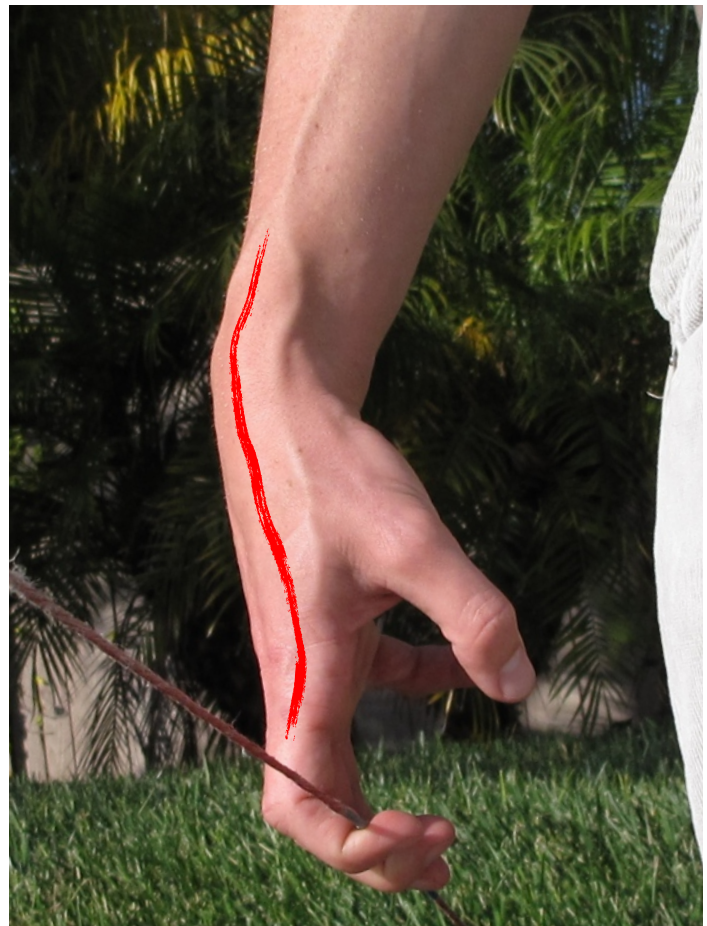
muscles of the back and core will be able to hold the complete force of the bow without any unwanted interference from the hand, wrist, forearm, or shoulder. Drawing and shooting with a bent outwards wrist is also vitally important to preventing drawing shoulder impingement and injury. Archers that shoot with a straight or inwards bending wrist run the added risk of injury because the extra forearm muscle activation makes it more difficult to relax the biceps muscle, limiting their capacity for angular motion. A tight biceps muscle can easily cause impingement in the shoulder joint and damage the delicate spinatus or deltoid muscles where they attach to the humerus.

A final clarification on hand positioning that pertains to the outward appearance of the knuckles of the forefinger, middle, and ring fingers: many archers have a common problem that makes their middle knuckle protrude more than the index and ring finger knuckles. The problem is created by having incorrect string positioning and/or finger pressure. Generally, the more upwards the archer can hook with his index finger, the lesser degree of knuckle protrusion he will have. In fact, the knuckles should all be cocked inward so as to flex the tendons through the middle of the hand, making them visible. With the thumb flexed backward and the wrist sticking outwards, the center of the hand is opened up, keeping the power in the fingertips holding the string, ensuring the sharpest and most cutting release. Examine figures 4.7 and 4.8 for pictures clarifying the slightly flexed positioning of the drawing fingers.

All of this work in securing the correct positioning, hooking, and pressure of the fingers is for naught if these complex positions are not exactly maintained and held through the remaining processes of shooting. Though these pointers will ensure the most advantageous position for shooting, many archers around the world have used other approaches with great success. Some may argue it does not matter how one hooks the string, but they must agree with the over-arching concept: that the chosen position and pressure does not change. Archery is a sport of repetition—if one technique is replicated time and time again without any changes, then it is a successful implementation of technique. The traits of correct hooking described above will provide archers with techniques that are easiest to duplicate, especially under pressure, and are the most biomechanically correct positions for ensuring power, comfort, and longevity.

Figure 4.7

This picture focuses on the stretching of the fingers forward while stretching the thumb back at the same time. This makes a bend in the hand as shown by the red line. It also flattens the knuckles in a motion opposite of making a fist.



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Figure 4.8

See in this picture how much the archer curls his top and middle fingers back towards his throat. Look at the fingernails, and note how it is only possible to see side profiles of them square to the chin. Contrast their positioning with the third finger which clearly displays the whole fingernail facing forward. Only by hooking this amount is it possible to have a very strong and tight anchor position, as is also shown by this picture and discussed fully in Chapter 13.



Review

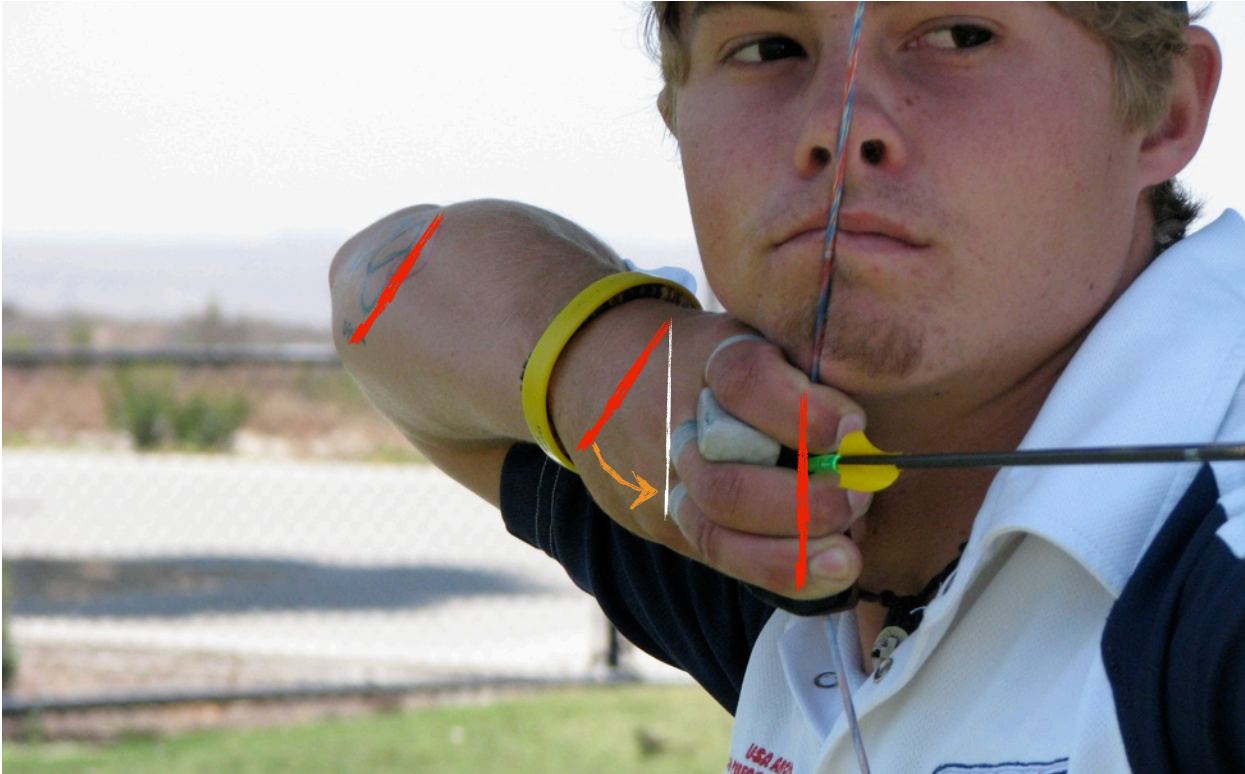
As one of two places where the archer comes in contact with the bow, hooking is especially critical. All aspects of technique must funnel through this single element. Correct hooking will allow for good expansion (Chapter 17), sharp releases (Chapter 18), and will help the archer to maintain overall control while shooting. There is not a more helpless and out-of-control feeling in archery than if the archer senses his fingers slipping on the string and does not feel secure with his hook. Hooking sets the position of the drawing wrist and predetermines the hand position at anchor position. From a health standpoint, correct hooking is also very important as it is very easy to build up painful sores, blisters, or calluses that could permanently damage an archer's fingers.

The key elements to remember about hooking are:

- the top finger controls most of the principles of hooking
- hooking upwards is critical to correct wrist, hand and anchor positioning
- the string must sit just in front of the first joint of the top finger
- the fingertips should hook so much that the fingernails point backwards and upwards at the throat

Figure 4.9

This picture is very good for illustrating how much the hand is rotated compared to the arm and the wrist. Most archers will attempt to rotate their wrist to get better hooking on the string, however the rotation must occur in the hand and fingers and not in the wrist. See how the wrist and the elbow joint here have essentially the same angle. (There is nothing wrong with the archer's eyes—he is using a special set of contact lenses that function as sunglasses.)



- the top and middle fingers should squeeze the finger spacer—although counter-intuitive, this helps to create a larger space between the fingers for the arrow
- when first hooking the string prior to raising the bow, 80 percent of the force should be held with the top finger. As the string bends while being drawn, this ratio will change to approximately 40 percent on his top finger, 50 percent on the middle finger, and 10 percent on the bottom finger
- the thumb and pinky must be pulled back, stretching taut the skin between the thumb and forefinger

The wrist must relax and bend outwards in the natural position. Once established, hooking must remain constant and consistent. Changes in finger pressure, wrist bend, or hooking direction will change the force and direction of the release, as discussed in Chapter 18. A common problem is to lose the amount of hooking while drawing or coming to the loading position, causing inconsistent draw length and expansion. Finger strength should be built up during holding drills (Chapter 16), to ensure an unchanging positioning.

