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# EDITORIAL

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## Between Seasons

We are between the outdoor and indoor seasons now . . . I think. It seems, like golf, we compete continuously throughout the year. But, there has to be a time to take stock . . . as archers to fiddle with our equipment and as coaches to reflect and plan. Doesn't there?

Well, we are just going to have to take the time, I guess. We have included several articles for coaches in this issue. Brian Luke continues his story of shooting right-, then left-, then right-handed. Linda Beck shares her experience with her two young archers with international travel on the line. And AFm newbie David Clink shows how to help your students access the Zone.

There is plenty for archers, too. And, as we promise, we have articles that cover the spectrum from beginner to elite. Rick McKinney is back and Tom Dorigatti continues his articles on how to get to the top of the compound mountain . . . and stay there.

In my own personal journey, I took a Level 4 Coach course from USA Archery (formerly known as the NAA) and got a significant dose of the "B.E.S.T." method. I am looking for people to write about the exciting new programs emanating from the USAA—any takers? Until there are, I am sharing some of my thoughts and questions in this and the next issue.

And we have Ty Pelfrey, Lorretta Sinclair, and Ava McDowell, too! I love this job!



Rick McKinney

# The United States Archery Team - The Beginning Years-Part 2

## The Elite Archer

*In my last article I described the very first testing and training camp sponsored by the National Archery Association. With Dr. Charles Dillman, Dr. Topper Haggerman and Dr. Dan Landers, the archers were tested, prodded, and probed in order to understand the makings of an elite archer. The results were very slow to come back to us and it discouraged most of the archers. After all, we live in a society that wants immediate results and that “demand span” is becoming shorter and shorter every day. However, there were useful results and, the more I read them, the more I realized that most of the archers were looking for that magic result that would elevate them to a higher level. This was not to be the case. The results were excellent and they offered proof that certain attributes in an archer will help you improve your shooting, if you are willing to train for them.*

Dr. Charles Dillman ran tests on a force platform to see if there was anything that stood out in an elite archer and their shooting performance. What we found out was that the better archers were more stable. However, there was no correlation between a very stable shot and its score versus a less stable shot and its score. We came to the conclusion that there was another factor that corrected the less stable shot resulting in a 10 or 9 anyway. This stands to reason since we are constantly aiming and adjusting our aim while at full draw. Say, for instance, you are at full draw and you start to lean, ever so slightly. This will show on the force platform but if your upper body makes the necessary adjustments so your sight is still on the center of the target, the shot goes well. So, with a slight motion from the bottom, then a correction from the top part of the body happens automatically.

What was also interesting was that on the force platform the center of gravity varied from

one archer to another. This makes sense if you recognize that each bow weighs a different amount and each bow's stabilizer positioning and counter weights causes the center of gravity of the bow to shift somewhat. Also, stance will change the location of the center of gravity of the archer. However, what was good about this test was it showed the archers that, no matter what stabilization you used and no matter what stance you took, it was important to have a strong lower half of the body to keep stability at an optimum.

In conclusion, the scientists did feel that the better the archer, the more stable the base. Thus, the force platform was able to verify that you need good lower stability in order to shoot more consistently.

This was verified when the physiology team tested the archers with a Cybex machine. This machine tested the strength in the extension and flexion of the legs. The basic conclusion was that the better archers had a much stronger relationship of leg strength relative to body size than do lesser shooters. While the average archer had a ratio of body size to strength less than 1 to 1 or lower, the top archer had an average ratio of 1 to 1 or much higher (the two top males were 1 to 2!). Thus, the conclusion was established that leg strength was a good factor to help a top archer achieve a much more stable platform while aiming.

The percent body fat of the archers was also tested for and compared with body size and type. Most of the archers were within the norm for average human beings. The average top male archer was considered ecto/meso while the female archer was considered endo/meso. What does it mean? Well, there are three body types considered in testing the typical athlete: ectomorphs are considered

skinny or linear (great for long distance running), mesomorphs are muscular (like wrestlers or boxers), while endomorphs are more rounded or “fluffy.” With blends of these three types you get a skinny muscular (endo/meso) archer such as Darrell Pace or John Williams while in the women you got a more rounded muscular (endo/meso) woman such as Luann Ryan or several of the Korean women archers. Thus, nutrition and physical training were a necessary for athletes to learn.

Next was some testing on heart rate before, during, and after shooting arrows. It was immediately clear that some archers stressed out a lot during their shots. Heart rates were anywhere from 71 to 126 at pre draw and 88 to 147 at full draw. As you would guess, the lower heart rates were from the top archers. Archers were shown how to breathe properly (in the lower part of the chest versus the upper part of the chest). Also, we discussed ways to lower the heart rate by cardiovascular workouts and mental training. Another thing that came out of these tests was that if you shot right on a heart beat, the shot was normally a very poor shot. Although it would be virtually impossible to “time” your shots to not shoot on a heart beat, it is believed that if archers can lower the heart rates, the better the chances are of shooting off the heart beat. Also, rhythm and timing were discussed as a good method to avoid the “heart beat shot.”

Dr. Landers ran a “reaction” test. As most recurve archers know, it is important to have a good reaction to the clicker. Some people believed that a good archer could react out of autonomic response to the sound of the clicker. The speed of the click to the reaction will be extremely fast if this mechanism is involved. It was never achieved. So since it is not autonomic then reacting to the clicker had to be a conscious reaction. The reaction time from the sound of the click to the actual letting go of the string hit between 0.132 seconds to 0.189 seconds. There was no correlation to the hypothesis that the faster the reaction, the better the shot. As a matter of fact, most of the top archers were just about in the middle of the time frames.

Standard flexibility testing was conducted in order to find out if an archer needed to be very flexible or not. According to the results there was no statistical evidence to prove one way or the other. However, it did appear that those who were extremely flexible or not flexible at all were the lower scoring archers. Thus, extremes in flexibility are not necessary for archery. Being just flexible enough to not cause injury to the body while shooting is all that is necessary.

High speed filming was used to get an idea of how the bow, string, arrow, head, hand, and arms reacted before, during, and after the shot. Although the films were very fascinating, the end result was there was too much information and not enough attention to a specific area in order to learn anything.

There was one particular area of the film testing that helped me. At that time I was using a very stiff arrow with a high brace height. I used to be ridiculed for having the slowest bow on the line at many of the major events. As a matter of fact, in 1977 when I won my first world title I did have the slowest bow on the men's line. This was proven when everyone shot through the chronograph that was set up at the event. However, I was able to prove that speed isn't everything. Winds were strong enough for archers to miss at 90 meters. What does this have to do with the high speed filming? Well, I noticed that my string oscillated rather radically compared to the rest of the archers. After discussing it with several of the archers it was decided that if I lowered my brace height the performance might be more stable. I did and the following year my shooting performance was more consistent and much higher on average than in the past. Since I lowered the brace height I had to drop down one arrow size which gave me not just better stability, but a bit more speed.

Finally, Dr. Landers ran a battery of psychological tests in order to determine what mental attributes the top archers had. There were three major sport psychological tests taken and measured. It appears that they measured areas of Confidence, Focus-Current Movement, Imagery, Self-talk, Thoughts about Past Mistakes, Psych-up, Reassurance, Challenge, and Concentration. The results, although fascinating, were just the beginning of in-depth tests to find out more and, more importantly, what to do about what was learned. These items will be discussed in my next article.



**Rick McKinney** is one of the world's most decorated archers. He was born in Muncie, Indiana where his father was a professional archer and managed a pro shop. His mother and brothers were also archers. Rick won the 1977, 1983, and 1985 World Championships. He won the U.S. National Target Championships nine times, Field Championships six times, Indoor Championships three times and Collegiate National Championships seven times. He has two Olympic Silver medals, 1984 (Individual) and 1988 (Team). His best score is 1352. Rick is currently President of Carbon Tech, a manufacturer of arrows, in Sacramento, California.

## B.E.S.T. or Better?

*When Claudia and I recently took our Level 4 Coaching training from the USA Archery (formerly the NAA), the focus of the entire training was on the Biomechanically Efficient Shooting Technique, or the B.E.S.T. method. This is understandable because the author of the B.E.S.T. method, KiSik Lee, was recently hired as the USAA's national coach. This method was first made available in Coach Lee's book, Total Archery (reviewed in AFM, Vol. 9, No. 3), and subsequently in a series of seminars and trainings by Coach Lee. The entire first day of the five day Level 4 Coach training was devoted to a presentation on the B.E.S.T. method by Coach Lee. Major parts of the rest of the program also focused on this method.*

*The acronym is unfortunate because even Coach Lee insists that it is evolving continually. In this article I intend to see how revolutionary the B.E.S.T. method is, or rather how evolutionary.*

### **In the Beginning**

I have books on archery form going back 450 years. Up until recently virtually all of them espoused the author's opinions/biases based on their personal experience with little attempt to justify them. Here is an example:

"A very common defect is in drawing with the right hand too low. Never suffer yourself to shoot with the right hand below the top of the right ear."

*from "The Modern Archer," 1878*

It must have been challenging to shoot a York Round this way as the author goes on to say the

point blank range for a fifty pound longbow using his technique was 26 yards!

The first inkling I can see of any effort to take a more scientific approach was in the early 1980s and the only one who wrote about form extensively was Rick McKinney. Now, when I mention Rick McKinney, I assume you associate him with his best-selling book, *The Simple Art of Winning*. Actually, I will refer most often to an earlier book, *The Confident Shot*, which was published much earlier. This book was simultaneously published in English and Japanese by Yoshi Komatsu. (Yoshi is the publisher of Archery magazine in Japan and a founder of this magazine.) *The Confident Shot* resulted from a series of interviews of Rick McKinney at Arizona State University in 1983.

We will see McKinney also making claims based on what he thinks works, but also he tries to provide a rationale for what he recommends. He also refers to efforts to measure his muscle responses and reaction times made in Japan and by the USOC.

### **The B.E.S.T. method**

I have neither the space nor the expertise to write with authority about the B.E.S.T. method. (I have extended an open invitation to Coach Lee and to many others to do so and I hope to provide you with definitive information later.) What I intend to do is to highlight a number of points clearly delineated in Coach Lee's book and seminars to see how innovative they are. I have chosen



some of these topics according to how much “buzz” or interest there was in my Level 4 Coach training. (A number of the coach trainees were High Performance Coaches who were specifically being trained in B.E.S.T. to provide information on it throughout the country.)

### Some Comparisons

***String in Hand and Hand at Anchor*** In *Total Archery*, the bowstring sits in the fingers just ahead of the first joint of the index finger, behind the second joint of the middle finger, and ahead of the first joint of the third finger. (I am not sure about the position of the string on the first finger as Coach Lee also emphasized making a deep hook on the string—really wrapping the fingers around it—and I am not sure these two ideas are compatible.)

Coach Lee argues that the back of the draw is not to be perpendicular. Having the string slightly angled on the hand allows it to rest along the jaw with greater contact making a firmer anchor.

In *The Confident Shot*, McKinney is quoted as saying, “The line of the string fingers isn’t at right angles to the arrow, if you shoot with a hook behind the first joint in the top finger and past in the bottom.”(page 50). On page 53 there are pictures of McKinney and Darrell Pace at anchor, with their hands along their jaw bones, not strictly under in a classic “side” anchor.

***Line*** The basic aspect of good archery form of “having good line” has been around for a long time. Consider this quotation:

“If you twist the string awry, even in the smallest degree, or hold your bow so nearly vertical that the shaft falls away to the left, or *hold your right elbow so that the forearm makes an angle with the arrow*, or keep your right hand too far from your face, *you cannot shoot in the line of your aim.*” (italics mine)

*from How to Train in Archery by Maurice and Will Thompson, 1879*

And the Thompsons give credit in their writings to the great archers who came before (Horace Ford in particular) and from whom they learned.

Considerable amounts of the B.E.S.T. method are designed to provide alignment at full draw in which the draw elbow is swung past the point of being exactly in line with the arrow. The advantage of getting past that point is, because of the normal variation from shot to shot, if you start behind line and are a little off, you will never be short of the arrow line. If your form ends with you being exactly in line, sometimes you will be behind and sometimes outside of that good alignment. Being

outside of the arrow line leads to plucking (see my article, “Pluck, Pluck, Pluck” in Vol. 10, No. 3) a major cause of large groups.

To accomplish this ideal alignment in the B.E.S.T. method, the draw is made slightly downward, then the string hand is brought up to anchor. Also shoulder muscles are activated to get the draw side shoulder blade (*scapula*) down and back. This prevents the shoulder blades from blocking each other and restricting the arc through which the draw elbow can be swung.

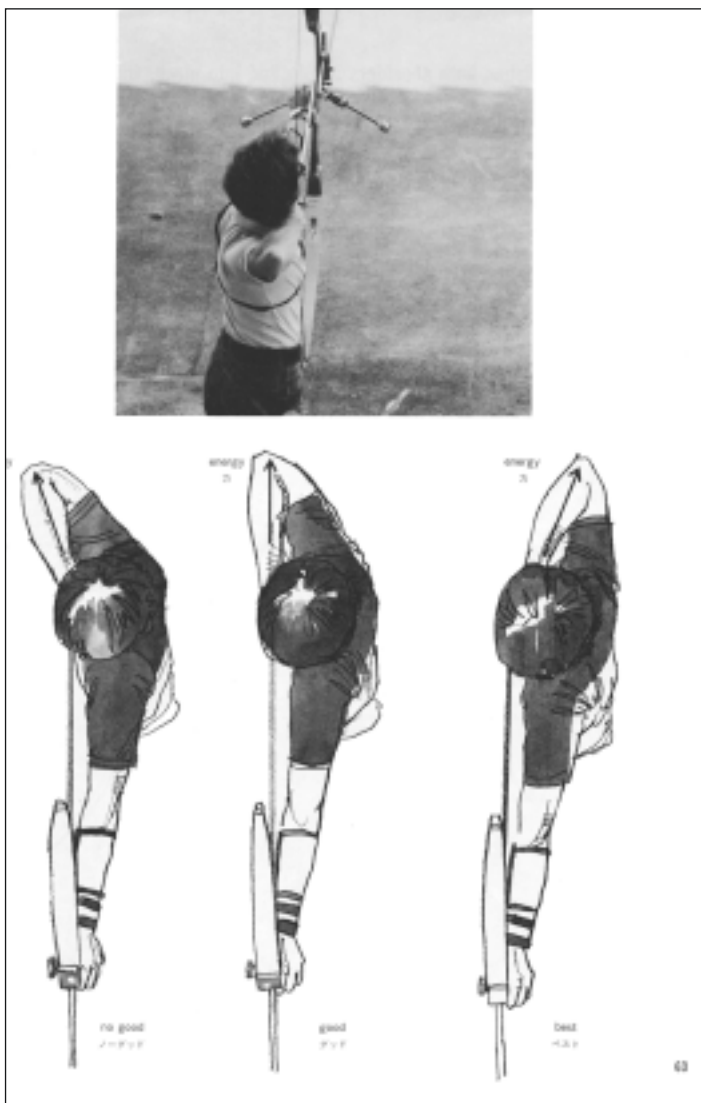
McKinney stated much the same thing (see the facsimile of page 63 of *The Confident Shot* on the next page). The top photo clearly shows McKinney’s elbow several inches past alignment with the arrow. The diagrams below are “Good,” “Better,” and “Best” with “Best” being as demonstrated by McKinney above. McKinney thought, at the time, that he had an advantage of having longer forearms and shorter upper arms which allowed him to do this more easily than others. Subsequently measurements indicated Rick is no different from the norm in that respect. So, how did he get so far past “basic line?”

My best guess is that Mr. McKinney was striving for as much advantage as he could get. There are two ways to get high energy shots (once a bow design has been selected): draw weight and draw length. Rick was shooting as much as 51 pounds in hand when he won his World Championships. More draw weight was unlikely to be controllable. Not being particularly tall, though, his draw length could be lengthened if he were to lean back somewhat, which I believe he did. Getting as much draw length as possible results from swinging that elbow back as far as it will go. A lot of stretching and practice are required to get there, though.

Leaning backward (away from the target) is not optimum form. But remember Rick was shooting aluminum arrows with vinyl vanes and 7% NIBB points at the time. If he had had Easton ACEs available in the same spine range, he could have added 30-40 grains to the point and still had an arrow 60-70 grains lighter than his Easton X7s. More on this later.

***Back Tension*** Coach Lee emphasizes not just the use of back tension but tension using the lower and middle *trapezius* and not the upper traps. Use of the upper traps restricts the range of motion, not allowing the draw elbow to get behind line. McKinney is quoted (on page 70), “I have many times undergone a muscular test. It is very interesting that all of the tests produce the same result . . . a certain muscle works well with much more

*Continued on the Next Page*



A facsimile of page 63 of *The Confident Shot*. The diagrams at the bottom are labeled (left to right) "no good," "good," and "best" and the photo at the top shows Rick McKinney characteristically with his draw elbow inside of the arrow line.

tension in comparison with other archers. That's the trapezius." and "... if you would like to try, I would recommend you to use the middle and bottom part of the trapezius. The top must not be used."

**Bow Shoulder** In the B.E.S.T. method, the bow shoulder is stabilized by using the *latissimus dorsi* supported by a flexed *triceps*. This locks the shoulder down and reduces the range of motion of the shoulder joint and, hence, increases its stability.

McKinney is quoted as saying (page 68), "The *serratus anterior* stabilizes the bow, attaching to the bow arm at the base of the shoulder." The *serratus anterior* is the

muscle just under the *latissimus dorsi*.

McKinney's bow arm is considered by many to be his strongest asset. A photo, on page 71 of *The Confident Shot*, shows his shoulders tilted with his left shoulder higher than his right. A pronounced acromial notch in his bow shoulder shows good structure otherwise. I believe that if Rick McKinney had his own carbon arrows to shoot, or ACEs or X10s, his shoulders would have been level as is being recommended now. Light, stiff, carbon arrows have done much to help elite archers achieve more repeatable form and execution.

### Evolution, Not Revolution

There is much in the B.E.S.T. method that is different from current teaching. The comparisons above were meant to indicate that much of what is in it was anticipated by others.

So what is new? A great deal, but as I have indicated much is nuanced (with the exception of the phase of the draw where the load is transferred to the back in such a way to allow the draw elbow to get behind the arrow line) and represents small differences in what is going on. Coach Lee's genius lies in having proven that this method is teachable. His success in Korea is indisputable. But many people look at the Korean system as one in which a great many elite archers undergo ferocious competition, resulting the best of the best being very good indeed. Coach Lee took his system to Australia and the result was medals in both the Olympics and World Championships. Australia did not have 500 elite archers waiting for him when he arrived.

Also, Coach Lee is at the forefront of those arguing that archery has to be more scientific. If there is a better way to shoot and it can be proven, why would anyone do anything else? Coach Lee is so committed that he continues to experiment and make changes based on what he learns (see the sidebar "Lies, Damned Lies and Statistics"). The biggest experiment is resident in the hiring of Coach Lee. Prior to that, the entire American system of Olympic archery was athlete driven. The new system is coach driven. We are all eagerly awaiting the results. If the energy and enthusiasm of the Resident Athletes at the Chula Vista Olympic Training Center are any indicator, we should expect good things.

**Steve Ruis** is editor of *This Magazine*.

## Lies, Damned Lies, and Statistics

If we in the archery community are going to get better at addressing archery scientifically, then we need to get better at understanding statistics. The title of this sidebar is from another Mark Twainism and it refers to the ability of statistics to be used to confuse and obfuscate. Statistics in themselves are neutral; it is the interpretations we make of them which are always suspect. For example, “98% of the prisoners on death row ate peas and carrots as children. Why we still serve peas and carrots to our children, I don’t know.” Just because there are coincidents (“on death row” and “ate peas and carrots”) doesn’t mean they are connected. There must be a mechanism in order for there to be a connection between the two.

An archery-related example comes from Coach Lee’s website ([www.kslinternationalarchery.com](http://www.kslinternationalarchery.com) which is well worth checking out, by the way). He shows the average scores on 12 arrow rounds over the years he was coaching in Australia. In order to get to 12-arrow rounds, you have to be very good and very successful, and this is where the pressure really mounts in international target archery (You are getting close to winning!). Three of the four highest average scores are by Australians, coached by Coach Lee. The point he makes is “his take on archery form and execution holds up under pressure.”

Well, maybe. There is a great deal else I would want to know. For example, how many rounds does each average represent—it is easier to get a high average with few rounds than with many. How many of these rounds were against other people in the top 10 on this list ( a gauge of the level of competition)? I could go on but just consider how many statistics are flashed on your television screen during a football or baseball game. People have been arguing for years over what baseball statistics actually tell you about the players and there is now a whole branch of sports statistics devoted just to baseball! In the list of Coach Lee’s, I am inclined to accept his conclusion (provisionally) because the time span was

long (six years) and the likelihood of Australians dominating that list before he came around was almost nil. But I would prefer a better set of standard statistical comparisons.

Another example comes from Total Archery. On page 130 (of the first edition) he describes an experiment in which three elite archers were asked to shoot two sets of three arrows through a chronograph in, first, a 2.5 minute time period and, then, a 30-50 second time period. The results showed a range of chronographed arrow speeds for all six arrows for the generous time period to be 7 fps, 7 fps, and 4 fps, but for the very short time period, the ranges were 1 fps, 1 fps, and 2 fps. The conclusion: shooting quicker results in greater consistency. This is an excellent piece of work. I would like to see this experiment repeated with more archers to answer the question, “Is this a general behavior of all archers or just these three?” Additionally, if this is general, what is the optimum number of seconds per shot? Is that optimum the same for all archers or is there a range? Can an individual find his own optimal rhythm this way?

The point here is we have done very few experiments on archers and published very little of the results. It takes a considerable amount of time to set up and do these experiments, but if the results of such experiments were communicated, someone else might be inspired to do the followup work. This is how science works.

And, as always, the statistics must be picked apart to find the connection between the “cause” and the “effect.” So, what is the connection between shooting quickly and consistency? It is suspected that the less time there is to think, the less time to make mental mistakes (over aiming, etc.). We think. . . .

Ty Pelfrey

# Book Review

## Hunting With the Bow and Arrow *by Saxton Pope*

On a crisp winter evening take the time to warm your archery soul by reading Saxton Pope's *Hunting with the Bow and Arrow*. Then recommend the book to a friend.

Pope's book, first published in 1923, takes the reader into the romantic world of early twentieth century archery from the front cover to the very last page. You'll find yourself savoring the seventeen chapters and wanting more. Pope's engaging stories pull you right into the sport of archery. The book was the literary platform that brought archery back into vogue during the early 1900s. Pope goes afield with handmade longbow and wood arrows in quest of adventure and a fair chase hunt. But, he goes beyond the chase and introduces the reader to proper equipment, form, and materials for archery equipment manufacture.

He begins his book with the history of the Yana and hunting tricks from Ishi, the last Yana. There are a dozen or more adventures recounted by Pope that culminate in a hair raising grizzly bear hunt in Yellowstone National Park with Art Young. You can almost feel the homemade broadheads drawn to full draw pricking the finger of your bowhand before they are loosed as Pope wields words to share his passion for archery.

The book is liberally illustrated with over 48 drawings and photographs. Remington Schuyler captured the very essence of the book with his hand drawn cover which was inked in exchange for a

good yew bow and a dozen shafts. Even the book's dedication reaches into the breast of every person who has let loose an arrow: "Dedicated to Robin Hood, a spirit that at





*This is the Saxton Pope-inspired quiver I made from deerskin, even though I am not what you might call "handy."*

some time dwells in the heart of every youth."

I sequestered myself pressed in my leather chair surrounded by deer mounts and coyote skins reading one chapter each night, savoring the adventures and holding at bay the conclusion of the book. Only when I had finished the book did I realize the power of Pope's writing. I found myself reviewing the illustrations and wanting something more than the written word. The necessary archery equipment drawings on page 98 and Pope's great explanations of archery equipment led to my considering making a quiver made of deerskin. I'm not accomplished using my hands, but Pope made almost anything related to archery sound possible, so I manufactured a deer skin quiver in the Pope style - with a little coyote fur added. Then, I started shooting a longbow. Oh, what

fun!

Saxton Pope's book is a great diversion from the world of today's modern archery equipment and replenishes the soul with wood, feathers, and simplicity. The book brought back a little of my youth and the sights and sounds of shooting a wood arrow. Pope brings back that feeling of watching an arrow leap from the bow, spin through the air, and in a long arc hit its mark. Pope definitely hit his mark with this text. My only regret is I didn't read it twenty years ago! Pick up a copy of *Hunting with the Bow and Arrow* today and remind yourself of our sport's humble modern beginning.

*Ty Pelfrey*

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Lorretta Sinclair

*Getting the Priorities Right*

# Archery and Real Estate

Special Feature

*Having recently moved from Utah to California, we found ourselves back in the house hunting business. This is not something we looked forward to and have not had to deal with for a number of years. Finding a house is hard enough. Finding a house when you are deeply involved in archery is a whole different matter. Now, before you wonder why I would write an article on real estate for an archery magazine; let me explain.*

*I'm an Archery Mom and I have priorities!*

In Utah, we had access to one of the nicest indoor 18m ranges I've ever seen. With 20 marked lanes, 15-foot high foam mats stacked and rotated on a regular basis, and lighting that could be adjusted for various considerations, we always had a great place to shoot in inclement weather. To top it off, we could shoot for free if we volunteered some time at the range. Since we practice five or six days a week, volunteering saved us considerable money as well as let us 'give back' to our sport. We also owned six acres of what used to be farmland. Being archers, not farmers, we had converted it to a full FITA range. After our first year in archery, we bought a bunch of used Whitetail target mats from Idaho. We marked off the distances with stakes, had tar-

gets for every Cub, Cadet, and Junior distance and even held outdoor tournaments at our house. My sons were able to practice distance shooting, go in to cool off (or warm up depending on the season), eat lunch, go back out and finish practice whenever they wanted. It was ideal.

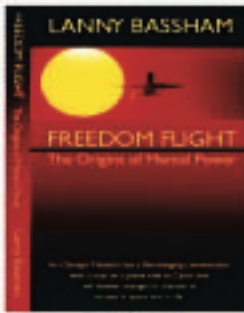
But then, we moved to a hot, dry, and very windy area of southern California. There are no indoor ranges within 100 miles of us and we do not have a piece of property for a FITA range (. . . yet). Having been seriously spoiled with a great indoor range and now having nothing, meant we needed first to find somewhere to shoot, especially in inclement weather. This priority, of course, came before worrying about how many bedrooms or bathrooms a house would have. This priority came before caring whether there was a patio or not. This priority came before worrying about almost everything 'most' people needing real estate would think about. But then, we already know . . . I'm not normal. I am an archery mom. Have nocks, will travel . . . but need a place to shoot!

We also needed to be able to set up a place to 'distance shoot' on a permanent basis. Out here in the hot, dry desert the only grass you

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see is where someone has a small postage-stamp size yard. We will have to shoot among the mesquite and the sagebrush, standing in the searing heat and dirt. The sands blow with the slightest breeze, and breeze is not a word used for the air currents here. The word 'wind' doesn't do them justice either as they often blow at up to 80mph. A 'normal' wind seems to be in the 30-40mph range. Talk about wind shooting! When the wind and the sand blow, . . . well, it's not a pretty picture. Add the summertime heat of 120° by noon and you really have a good picture of our miserable weather conditions or, rather, you have a good idea of our extreme training conditions.

When we first relocated, we decided to rent while trying to find a house on property. We quickly discovered that the realtors don't understand us. They found themselves unable to find us a suitable house for renting, never mind suitable for buying. You see, our priorities are different from anyone else these realtors have worked with. We need a FITA range. We need to be able to shoot inside in inclement weather. We need an appropriate house!

When we first got here and started looking for

***“We even held outdoor tournaments at our house. My sons were able to practice distance shooting go in to cool off (or warm up depending on the season), eat lunch, go back out and finish practice whenever they wanted. It was ideal.”***

rentals, we went from house to house finding nothing acceptable and unable to explain the dilemma. We never explained our intentions, because obviously, we were going to rent, and we decided it would be prudent to be quiet about our favorite sport . . . and our need to practice indoors. We knew they wouldn't understand. They would have visions of whackos running loose with bows and arrows. They would envision holes in the walls. Frankly, they would think we were crazy. (Shhh, no one needs to know the truth.) From house to house we went with the rental list, sometimes knowing as soon as we drive up that the house won't work because the lot is too small, or the layout of the house doesn't provide a long inside distance. I would go through the kitchen to see if I liked it, and then basically distract the realtor while Bob paced the hallway off, paced off the garage, or paced off the yards.

One day while looking through several rental properties, the realtor commented to me that she didn't quite understand what we were looking for. She had shown us some very nice homes and we hadn't wanted any of them. She wondered out loud, in a nice way, "What was wrong with us?" On that particular day, we were standing inside a lovely home with a wonderful, fully landscaped back yard. It was so full of trees and shrubs and flowers that you could measure off the grass and patio area in 5 steps. "Yes, it is lovely, but, it won't work," I said, the yard was just 'not adequate.' She is baffled. The yard is actually paradise, especially in this desert.

We wandered inside the house and the garage is enormous. Bob and I get excited as he nods to me, which means 'keep the lady busy' while I pace this off. Then I see him pacing between the master bedroom,

*Continued on Page 32*

Tom Dorigatti

*D-Loop, Draw Length, Nocking Point, & Peep Height*

## Proactive Bow Setup Documentation Part 2: - A Pictorial Review

*Since my first article on "Proactive Setup Documentation" (Volume 10, Number 3), I have received quite a few requests to explain a few of the items in more detail. Since your shooting accuracy is based upon your consistency, and if you miss a shot or two, your ability to make a quick analysis as to whether it is you who erred or something in your equipment has changed, setup documentation is essential to ensure you can quickly check any part of your setup. Then, if something has changed, you may also accurately duplicate the correct setting with confidence. This article deals primarily with how to get the measurements on the items dealing with draw length and the peep height above the nock. These have proven themselves time and again to be nearly "dead-on" when I have had to make a string and/or cable change, change a D-loop, or have to reverse the center serving on the bow string, thus requiring you to re-establish your correct nocking point.*

The steps below are based upon the assumption that you have established your correct draw length, peep sight height, nocking point, and arrow rest positioning and that the bow is grouping well. Once you have documented and

marked everything, you should be able to duplicate these settings with ease; especially during a bow string and/or cable change, or a change of your D-loop.

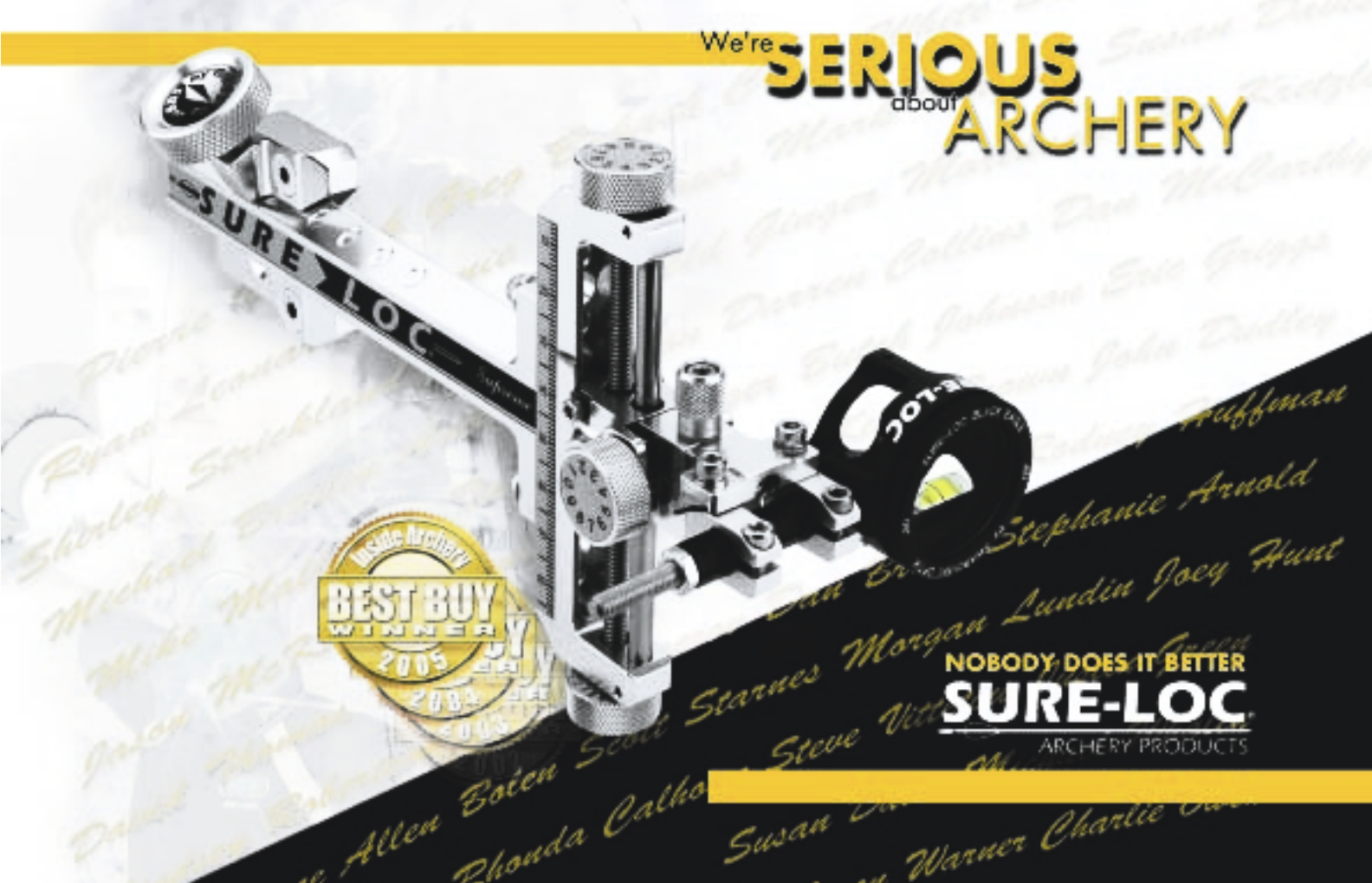
### **Items Required**

1. Tuned bow with correct draw length and proper grouping already established (final tune completed)
2. Bow square
3. Measuring instrument, millimeter gauge or ruler marked in  $\frac{1}{64}$  inch increments, and calipers (optional)
4. Tape measure
5. Fine-tipped permanent marker and masking tape
6. Long arrow or measuring arrow

### **Items Being Reviewed in this Article**

1. D-loop Measurement - string to inside of D-loop
2. Brace Height: Transferring the measurement to the sight window
3. True Draw Length Measurement using #2. above
4. Nocking Point Height with a Special Tip





## 5. Peep Height from Top of Nock

1. **D-Loop - String to Inside** I use a set of calipers to measure the “length” of the tied D-loop from the outside of the bow string to the inside of the stretched out loop (see Photo #1). This is a very important measurement, because it does affect your anchor point, which also directly affects how your draw length feels. When changing a D-loop, if you have pre-made your spare D-loop the same length as #3 above, then this should fall into place when your D-loop is secured. A word to the “wise” on changing D-loops. It is a better practice, when changing D-loops, to remove only one end at a time. First place a nock on the string, and then remove one end of the D-loop. Tie on that end against the nock or tied on



*Photo 1*

nocking point, and then tie on the other end of the D-loop. However, if you tie in serving above and below the arrow nock, and then place the D-loop on the outside, then this is not necessary.

2. **Brace Height** Many bow manufacturers specify a given brace height range for optimum performance of your bow. However, if the brace height changes, then it also changes your true draw length, thus affecting your performance as a shooter. Most good shooters will operate from the True Draw length rather than the AMO draw length as far as bow tuning and set up are concerned. Over the years, I've come up with a sure way of establishing a consistent measuring point for obtaining true draw length, based upon the brace height of the bow. By doing it in this manner, you always have a positive reference point that is the correct True Draw of the bow. I use this method in lieu of simply measuring to the tip of the launcher blade or arrow rest. Why? It is because this method works even when the arrow rest has been changed or re-positioned! Here are the steps I use to get a good brace height marked onto the bow itself and onto the bow square so it can be quickly checked at anytime.

a. Using your bow square or any straight edge long enough lay the “T” part of the square into the deepest part of the grip and then mark the square or straight edge at the inside edge of the bowstring when it is at rest.

*Continued on the Next Page*

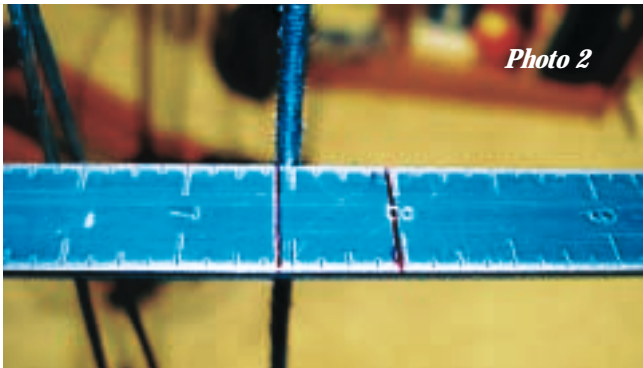


Photo 2

- b. Reverse the “T” of the bow square or straight edge so that the “T” is resting against the inside edge of the bow string—do not clip the bow square onto the string—place the edge of it against the inside of the bowstring. Be careful not to displace the bowstring.
- c. Align the bow square or the straight edge horizontally along the inside of the sight window and along the centerline of the holes in the riser for arrow rest attachment.
- d. Using a Fine Tipped magic marker of a color you can see, make a straight vertical line on the inside of the riser that matches the distance you marked in Step a. (immediately above). On many bows, you will notice that it is not in the center of the mounting screw hole, and in many bows with two holes, you will find that it is not exactly between them. You can be off by as much as  $\frac{3}{8}$ ” if you just pick a point. Even more interesting is that if you have a grip on your bow and then remove it, generally the brace height measurement above will change by as much as  $\frac{1}{2}$ ”, due to the thickness of the grip itself! (This is shown in the photograph; the mark on the left is the brace height of the bow without the grip)

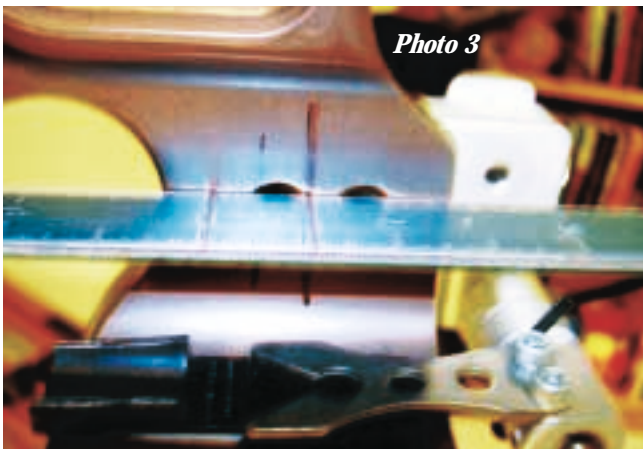


Photo 3

3. **True Draw Length** The mark on the riser you end up in Step 2d can be used to establish your true draw length as the bow is now set up, which is easily duplicated, time and again, unless you change grips, or add a grip, or remove the grip (Notice I marked both brace height measurements). I feel that it is more accurate and useful than marking at the tip of the arrow rest or launcher blade, mostly because this can be used regardless of the arrow rest you mount on the bow and won't have to be redone unless you change brace height. This will measure the true draw (not the AMO draw) of the bow. Steps to get this measurement are simple:

- a. Load an arrow on the string and then draw the bow back to the stops either with your release aid or use a crank board and mark a long arrow at where the arrow and the vertical line match up. You should repeat these three times to insure it is the same each time. If line “moves” then you are not pulling consistently and must “average” the lines and go for the middle, or start again.
- b. If you are not using a measuring arrow, then measure from the bottom of the nock slot to the line on the arrow and write this distance down as close to the measurement as your measuring instrument measures.  $\frac{1}{6}$ ” is close enough, in my opinion (see Photo 4).

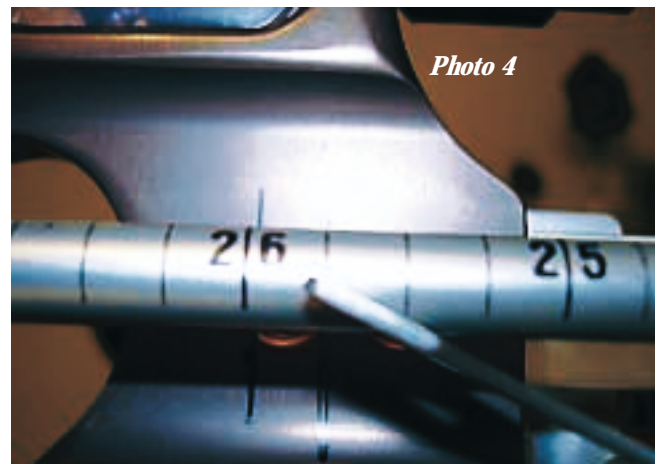


Photo 4

- c. You now have your true draw length that your bow is set for. To get your AMO draw length, simply add  $1\frac{1}{2}$  inches to this measurement. (Remember, if you change your brace height, then your mark on the riser needs to be re-done).
- d. It is a good idea to set aside that arrow that you marked for a permanent reference to have available in case you suspect the string or buss cable has stretched, thus changing the bow's draw length. If you suspect a

change, all you have to do is draw back this arrow and see if the lines on the bow and the arrow still match or not.

- e. Remember, changing the length of the D-loop does not change the draw length of the bow; it simply moves your anchor point and makes it feel like the bow has changed.

4. **Nocking Point Height** This is one of the most critical parts of your documentation. Most people try to match up a mark on their bow square with placing the tips of the launcher blade just nicking the bottom of the bow square then reading across a small gap to the lines on the “T” of the bow square. Others use a split arrow shaft of the same size they are shooting and place it onto the bottom of the bow square and then place that onto the launcher or other arrow rest to get their nocking point. Special Tip I have recently found a way of duplicating your nocking point nearly perfectly with a single positive measurement, as long as the arrow diameter and arrow length are not changed! Here’s what to do:

- a. Place your bow into a bow vise or get it set into a steady vertical position.
- b. Place an arrow your bow is tuned to on the bowstring and also onto the arrow rest.
- c. If a fall-away rest, raise the rest to the full up position and hold it solidly there. No need to draw the bow back to full draw. In fact drawing the bow isn’t necessary and may be less accurate.
- d. Making sure your rest is in the full up position, (if a fall away, you’ll need a helper to hold the rest at full up position) go to the very tip of the arrow.
- e. Using a square, place one edge on the stabilizer and the other vertically to the tip of the arrow.
- f. Mark the stabilizer with a magic marker where the



Photo 5

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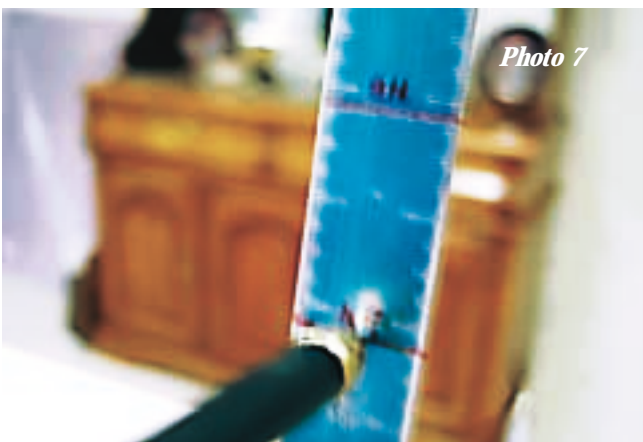
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- square now contacts the stabilizer. (For clarity, I put masking tape on the stabilizer to denote this point.)
- g. Using a good ruler or your bow square, place the “T” of the bow square on the top of your stabilizer directly under the tip (point) of the arrow.
- h. Be sure you are perpendicular to the stabilizer and then make a mark on the measure or bow square at the exact sharp tip of the arrow. Then, write down the measurement on the Table, and extend the mark on your measuring instrument (see Photos 5, 6, & 7—left and next page).
- g. You will be able to use this anytime that you change servings, strings, cables, or D-loops and it should, if you measure it correctly, return your nocking point to near perfect. I’ve used it to re-tune several bows after a string/cable change or a center serving change, and it has worked perfectly every time. In every case, the first shot has impacted, at worst in the bullseye, but often times in the X-ring.
- h. This is especially effective on center serving changes, where the cables and strings weren’t disturbed. In most

*Continued on Next Page*

Continued from Previous Page



cases I've tested, the first shot has been into or near the X-ring. Normally, if I make an error, that first arrow is high, but in the bullseye (I haven't yet figured out why.)

- i. Make sure you use the same length arrow and measure perpendicular to the stabilizer without pushing down on the stabilizer or moving the arrow when you mark the bow square or instrument you are using.

5. **Peep Height from Top of Nock** This is a very important measurement. I use the top of the nock because it is a very repeatable and positive reference point. I also shoot a hooded peep site, so I measure from the top of the nock to where the "Hood" contacts my measuring tool; again another positive and consistent, exact measurement (see Photo 8). I also mark this in millimeters, but some archers mark it using a steel measure in 64<sup>ths</sup>. It is next to impossible to accurately measure to the "center of the peep hole" and get it accurate enough!

We have discussed several techniques of marking the measuring tools and/or the bow to insure accurate duplication of the critical tune settings, thus saving you time and aggravation should something move or needs to be replaced. In conclusion, the most important aspects of this documentation are:

- Document items only when the new bow has been "shot in" and the new strings and cables have had some time to "seat" themselves.
- Once the bow is group tuned and your draw length is set, then measure and document everything in the Bow Setup Measurements Table (see the article in Volume 10, No. 3). Remember, the Bow Setup Measurements Table isn't cast in stone, and there may well be other items you wish to include in the table.
- It is important to not only write the measurements down, but it is also important to mark as many of the measurements onto the bow or onto a measuring instrument, such as your bow square. This gives you a quick reference any time you want or need it to verify that everything has remained the same.
- Your draw length can be quickly checked by using a mark on the riser and a marked arrow or a measuring arrow.
- The nocking point can be nearly exactly re-set by using your stabilizer and measuring up to the tip of the arrow and matching the number in the Table, or the mark the distance right onto your measuring instrument.
- Measurements should always be made with the same instrument and always made to a positive and consistent point of reference that can be duplicated and minimizes error. Always use your instrument and never someone else's; it is your instrument that counts.

In my next article, "Setup Documentation Part 3, a Pictorial Review," I'll readdress several items relating to the critical measurements on the arrow rest, cams, and cable guard.

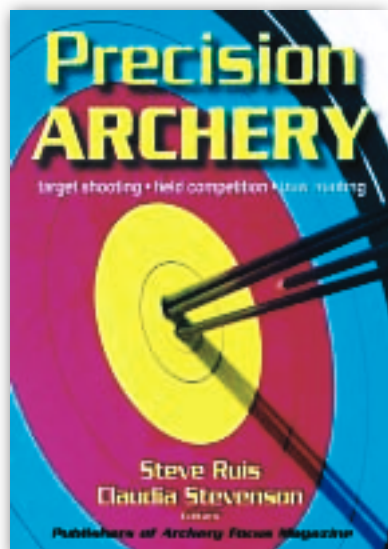
- Center Shot From Window to Edge of Launcher or Rest.
- Launcher Height from Arrow Shelf to Tips of Launcher
- Marking the Cam Positioning
- Marking the Angle of the Cable Guard

**Tom Dorigatti** has been shooting archery since he was 12 years old. He has been bowhunting and in competitive archery for nearly 40 years. During his archery career, Tom has competed or shot archery in no fewer than 38 of the contiguous United States plus Alaska, Hawaii, the Azores, and Guam. He has won numerous local and state tournament titles and has placed as high as second overall in three different sections of the



NFAA. Tom prefers to shoot in the Unlimited Division, but has recently been learning to shoot a recurve bow FITA style. He is also the mastermind behind the archery puzzles currently adorning these pages.

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# HOW WELL DO YOU KNOW YOUR FIELD SHOOTING RULES?

by Tom Dorigatti, ©2006

Today's shooters are becoming better-rounded with regards to their outdoor shooting. There are numerous venues, from 3-D shooting to IFAA, to FITA, and on to the American NFAA. The multiple-choice quiz below reviews some of the unique differences between the FITA field shooting rules and the NFAA field shooting rules. Place your answer in the blank that is to the right of the question number. The correct answers are at the bottom of the last page of the quiz.

See Page 32 for the Key!

- \_\_\_\_ 1. The maximum difference between the highest and the lowest elevation on a FITA field course should not be more than  
a. 1,000 meters      c. 100 meters  
b. 500 meters      d. 10 meters
- \_\_\_\_ 2. The color of the shooting stakes for the Recurve Division and the Compound Division on a FITA field course is  
a. red      c. black  
b. blue      d. yellow
- \_\_\_\_ 3. The yellow stakes denote the \_\_\_\_ in the NFAA, while in the FITA field yellow stakes denote \_\_\_\_  
a. Animal Round, Cadet Compound Division  
b. Youth Division, Cadet Barebow Division  
c. Animal Round, Cadet Barebow Division  
d. Hunter Round shooting positions, Barebow Division
- \_\_\_\_ 4. The accuracy standard for distance from the shooting peg to the target on a FITA field course for distances of 15-60 meters is  
a.  $\pm 2$  meters      c.  $\pm 25$  cm  
b.  $\pm 1$  meter      d.  $\pm 10$  cm.
- \_\_\_\_ 5. How far back must the group(s) waiting to shoot on a target remain on a FITA field course?  
a. no restriction      c. 2 to 3 meters  
b. 5 to 10 meters      d. one bow length
- \_\_\_\_ 6. The maximum number of arrows shot on each target for an FITA field round is  
a. 5      c. 3  
b. 4      d. 2
- \_\_\_\_ 7. The maximum draw weight of a compound bow in FITA field competition is  
a. 90 pounds      c. 65 pounds  
b. 80 pounds      d. 60 pounds
- \_\_\_\_ 8. The maximum draw weight of a compound bow in NFAA competition is  
a. 60 pounds      c. 90 pounds  
b. 80 pounds      d. 100 pounds
- \_\_\_\_ 9. For FITA field shooting in the compound division, the maximum distance that the pressure point can be placed back from the pivot point of the bow is  
a. 2 cm.      c. 6 cm.  
b. 4 cm.      d. there is no restriction.
- \_\_\_\_ 10. Which of the following type(s) of sights are not allowed in the compound division of FITA field? (multiple answers allowed)  
a. No restriction on sights in the compound division  
b. Electric or electronic  
c. Fibre optic and/or chemical glowstick  
d. Multiple site pins.
- \_\_\_\_ 11. In the Bowhunter Unlimited Freestyle Division of NFAA, which of the following is not permissible?  
a. Point weight under 125 grains for men  
b. Scopes with lenses.  
c. 5 or less fixed site pins.  
d. Stabilizer length of 12" or less.
- \_\_\_\_ 12. Which of the following is permissible on a FITA field course?  
a. Electronic communication device or headphones on the field course.  
b. Equipment modifications that serve the purpose of estimating distance or angles.  
c. Written memoranda or electronic storage devices for calculating angles or distances.  
d. Notes of the athlete's normal site marks.  
e. Mechanical instrument for estimating distances or angles.
- \_\_\_\_ 13. During a FITA field round, the pair with the lowest shooter number will  
a. Shoot first on the top targets, lowest shooter number on the left.  
b. The group decides who shoots first and upon which target.  
c. Have their choice of target and which side to shoot on.  
d. Shoot the bottom targets and shoot last on the first target.
- \_\_\_\_ 14. During an NFAA field or hunter round, those archers shooting first will shoot the \_\_\_\_ targets on those with multiple target faces.  
a. top      c. right  
b. left      d. bottom

*Continued on the Next Page*

# The *Ignition*- Mathews' Step-up Youth Compound

## Equipment Review

*For the last few years, I have recommended one of four bows to my young compound archers: Browning's MicroMidas and MicroAdrenaline and Hoyt's Rintec and Selena. Since the shop I coach in during the indoor season is a Mathews dealer, there were the inevitable questions: "What about Mathews? Do they have anything other than the Genesis?" Mathews has finally delivered, but does this new bow live up to expectations?*

In October 2006, Mathews introduced its long-awaited youth bow—the *Ignition*. Billed as a “sweet-shooting youth bow” that is forgiving, yet fast, it boasts a generous 6½” brace height. With an axle-to-axle (ATA) length of 31¾” on a 15½” fully machined *Aeroriser*, it comes in at a very light 2.9 pounds.

At first glance, it looks like a *Mustang* without all of the bells and whistles—specifically, no Harmonic Dampeners or roller guard. The *Mustang*, introduced in 2003, is a fast little bow that filled the need for those of us with short draw lengths (31¾” ATA and 51¾” brace, 19-26 inch draw lengths available). It is not a bow I usually recommend for youths. The bow retails for \$600 in target colors and the cams will set a parent back \$85 every time their child grows.

Since the *Ignition* bears such a resemblance to the *Mustang*, it seemed logical to shoot the two bows side-by-side. The 25 inch, 40 pound *Ignition* had a stock Mathews grip and was set up with an overdraw rest and nothing else. My daughter Katie's 24 inch, 45 pound *Mustang* was already set up with a Torqueless Grip, Pro-tuner rest, Super-Ball peep, Davis sight and target stabilizer. To make the test more equal, the sight and

stabilizer were removed.

The first thing we both noticed was the stiffness of the *Ignition*. Even though we both were used to shooting our bows at 45 pounds (I shoot a Conquest 2.), we found that we could not pull the 40-pound *Ignition* back very easily. After dropping the weight to 36 pounds, we were both able to draw it smoothly. This is not, necessarily, a bad thing. It could give a young archer a little more time before needing to change to stronger limbs.

The first shot told me a lot about the balance of this bow. The *Ignition* sat level in my hand during the shot with the bottom cam kicking up after release, just as expected. Surprising to both of us was the lack of hand shock. With no dampeners, we expected there to be more hand shock than in the *Mustang*. It was actually the reverse! There was even less shock with the addition of a 30” K&K stabilizer.

Accuracy is always a concern with smaller bows. Short ATA bows tend to be critical and unforgiving. While I loved shooting my *Mustang*, any slight form error was immediately evident on the target. Katie and I experimented with some of the form errors that beginning archers tend to have. We found that, while not as forgiving as a longer bow, it was not nearly as critical as the *Mustang*. We gripped the bow, punched the release, twisted and turned in any direction we could think of to test the bow. Our groups widened, but stayed within a 6” group - and this was without a sight on a bow with a draw length one inch too long!

I was curious about the missing Harmonic

*Continued on the Next Page*

Dampeners that have been a part of every other Mathews compound bow (except the Genesis) for the past half dozen years. To find out the reason for the omission, I contacted Mike Ziebell, marketing director for Mathews. Mr. Ziebell explained, "The dampeners had to be left out to keep the price down. (The bow) was designed as a first level Mathews."

Will I recommend this bow? Absolutely! It is every bit the quality of bow I expected from Mathews, completely living up to its billing. I would even recommend this bow to women who are interested in learning to shoot. With an MSRP of US \$329, it is offered at a price most parents will find to be reasonable, yet is not any lesser quality than its more expensive cousins. Even better, the price on replacement cams is only \$20. This makes adjusting the Ignition for a growing child easy and affordable.

If you are a parent reading this article and are thinking about a compound bow for your child, I will tell you this, as a parent: if the Ignition had been available when my daughter was looking for a compound, she would have had one. Come to think of it, so would I.

**Specifications**

<i>IBO Rating</i>	278 fps At 26 and 50 lbs. (approx.)
<i>Cam</i>	<i>Ignition Cam</i>
<i>Draw Weight</i>	20#, 30#, 40#, 50# (approx)
<i>Draw Lengths</i>	19" to 26" with half sizes available from 22.5" to 25.5" (approx.)
<i>ATA Length</i>	31 <sup>3</sup> / <sub>8</sub> " (approx.)
<i>Brace Height</i>	6 <sup>1</sup> / <sub>2</sub> " (approx.)
<i>Riser Length</i>	15 <sup>7</sup> / <sub>8</sub> " (approx.)
<i>Physical Weight</i>	2.9 lbs. (approx.)
<i>Letoff</i>	65% (approx.)
<i>Cable Length</i>	84 <sup>5</sup> / <sub>8</sub> " (approx.)
<i>String Length</i>	32 <sup>3</sup> / <sub>4</sub> " (approx.)



**Ava McDowell** is an elementary/middle school music teacher in New Haven, Michigan. She coaches in the Royal Oak Archers JOAD program in Lake Orion, MI, in charge of the Senior Division and compound archers. Currently she is working on a Level 2 coaching certificate as well as developing a comprehensive curriculum for the program. Ava is an avid student of the sport, competing at the state level with plans to move into national competition in 2006.



Linda H. Beck

## Coaching at 2006 NAA Outdoor Nationals and Junior World Trials

I have been instructing/coaching two cadet compound archers, Adam Wruck and Corey Muellenbach from the Sartell, Minnesota area, for two and a half years. Last year we attended the NAA Outdoor Nationals in Colorado Springs, CO to see what competing in FITA tournaments was all about. It was a huge learning experience for all of us. We had a great time at the tournament, with Adam finishing fourth and Corey fifth. They were featured in the first edition of Archery Focus for Kids on-line magazine (It is a free download at [www.archeryfocus.com](http://www.archeryfocus.com). Ed.). On the drive home to Minnesota we started planning for the 2006 NAA Outdoor Nationals and Junior World Trials.

Our 2006 tournament trail started with a strong performance and finish at the NAA Indoor Championships. Next, it was the JOAD Outdoor Nationals in Lebanon, Ohio. After a good performance but disappointing finish in Lebanon, I sat down in my motel room, thought

about their respective performances, and determined what they needed to practice before the Junior World Trials to achieve their goal of making the team. I developed an action plan for each of them with specific tasks to improve physical aspects of their shots and mental games. I discussed their respective "to-do" lists with each of them. In addition, I took what I learned from networking with other coaches about tuning Easton X10 arrows and made some equipment changes.

Coaching at this year's Outdoor Nationals and Junior World Trials was one of the most exhilarating, challenging experiences in my coaching career. Throughout the four days my coaching skills were tested, providing me with many opportunities to learn and enhance my skills. I remember clearly the look on one of the boy's faces after he had just shot a group with most of the arrows in the red at one of the long distances. His expression was one of: "What just

happened? I have don't have a clue." I, too, didn't really know, but the placement of the arrows in the target as well as knowing the archer gave me a clue. It was critical I find the words to get him to forget what just happened, re-focus and shoot again as if it never happened. I found the words, he came right back to placing the arrows in the gold.

One of the most rewarding moments was when one of them came off the shooting line and told me he realized his cautious aiming/controlling shot didn't work as well as just shooting, trusting his skills and aiming as best he could, letting the sight aperture naturally float on the target. (What I refer to as a

# Coaching Archery



Corey Muellenbach, Coach Beck, and Adam Wruck at the NAA Outdoor Nationals.

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David Clink

# Coaching Archery

## Zone Mechanics

*Over the last few months I have been struggling with relieving tension in my student's shooting as well as my own. The typical student complaint was "How can I relax when I have to pull this bow back?" Usually, I begin by dropping the draw weight for those who are still having delusions of grandeur about being Sampson. Others struggle because they have been hit by a string and are ever vigilant against the mighty sting of the HMPE hornet. Basically, I really want people to enjoy archery or otherwise why do it, right?*

Do you ever wonder what folks are talking about when they say, "Man, I was in the zone today on the golf course today?" I used to hear that said when I played softball or racquetball and even on the ski slopes. At first I just assumed they stopped by the Auto Zone automotive parts store and bought some new windshield wipers. (Of course, they could have been talking about a Gentleman's Club someplace, but that is a topic for another time)

In archery, more so than other pastimes I have been involved in over the last 35 years, I have discovered this elusive zone. Unfortunately, it was often a one chance in every ten phenomenon that just seemed to occur on a given day. I knew what it felt like but had no clue how to get there on command. Was it the weather, or a breeze, or some sound? Was it related to something that had occurred earlier in the day or week? I was sure it was not tied to something stressful or negative, but beyond that I was clue-

less. All I was sure about was that being in the zone was definitely a good thing for the arrows just seemed to go to the right impact point time after time.

It wasn't until I started offering private lessons that I started to believe that getting in the zone was actually controllable and was brought on more by a Zen-like approach to things versus some conscious endeavor. I went back to some of my soccer coaching materials and reviewed the concept of visualizing that I had taught players wanting to improve their shooting accuracy. I had first read about a thing called the "success mechanism" in books like *Psychocybernetics* by Maxwell Maltz. In this concept you learn about the subliminal capability within each of us to

***"It wasn't until I started offering private lessons that I started to believe that getting in the zone was actually controllable."***

achieve success in many things by actually seeing or visualizing the end result. The trick is to be able to see it perfectly every time. This in turn programs this success oriented computer in all of us with a specific objective. The reason it works is that your mind can not tell the difference between a vividly imagined experience and an actual experience. Ben Hogan practiced

***“Here is a process to train yourself to get into the zone and stay there for the duration of a given shot or an entire tournament.”***

this—as a child he ached to play golf but didn’t have the resources to actually play. He would pretend to hit shots over fences and such while running errands for his mom. When he got a chance to caddy at a golf course no one could believe he had never played golf when he hit his first golf ball. Hilton (of the Hotel fame) did the same thing with hotels and by the time he built his first hotel he had the entire structure designed in his head down to the drapes and carpet. Later in the 1970s the concept emerged in books such as Inner Tennis, Inner Golf, etc. The better you become at visualizing what you want to do, the better you will be when actually doing the activity.

I started using this concept in archery before learning about “blind baling.” Initially I recommended shooting at an empty bale when trying to get students to master the feel of a surprise release as part of teaching them how to shoot with back tension. Later I implemented the visualization concept by having them close their eyes and visualize the arrows flying to the target and hitting the X. I had them see the arrow flying in slow motion and even “Robin Hooding” the previous arrow. Part of this was to get them to achieve a surprise release by not thinking about the release and instead thinking about aiming. The mechanics of how the arrow was released and all the other mechanical things that happened in a given shot sequence were kept to a minimum or just enough to correct really bad form from becoming a habit. I actually changed the shot sequence I had been teaching to include a pre-visualization of the entire shot so that when the time came, they simply xeroxed the process in their task performing mind.

Okay, so how does the average archer get himself into this Zen state or the zone? I am sure there are as many processes to do this as there are archers, but I seem to have a method that others have found a good start and I make sure they know that it is an individual thing they can modify, as necessary, so that the zone methodology doesn’t become yet another conscious activity. Once they commit to the shot, then the entire aiming effort lies in the realm of the success mechanism. The success mechanism couldn’t care less about wrist angle or elbow placement. The success mechanism is totally immersed in the X or the end product of the arrow launch.

For those that shoot in competitions this can be a valuable process to learn because it can completely

remove you from the conditions around you that can detract from a good shot. For another of my students I am hoping that it will help him with his buck fever which happens every time he gets an 8 or 12 pointer within range.

Some preliminary techniques must be taught for those just learning to shoot a bow. For this reason I consider the zone elements a second or third lesson concept. This allows new students to get over the excitement of new gear and the initial thrill of shooting their first arrows. Usually by the second or third lesson they are already wanting to know why the arrows aren’t piling up on the butt in dime size groupings. It is also enough time to see if they are really hooked on archery and whether they can deal with the discipline it takes to master it. Once they have committed to the sport and understand how it differs from other sports, then I can teach the blind baling and visualization ideas.

Here is a process to train yourself to get into the zone and stay there for the duration of a given shot or an entire tournament:

1. Never shoot when you have had a really negative day with a lot of unresolved issues from work or at home.
2. Perform the correct warm up and stretching exercises. You cannot stretch a cold muscle. Light aerobics are sufficient to get the blood flowing so that the muscles can be easily stretched.
3. If possible get 6-8 feet from the target such that you can close your eyes and not fear twanging an arrow into a light fixture or the neighbor’s dog. (The next part will be much easier if you have a place that you can mentally go that is your paradise. A deserted warm beach with nothing but the sound of the ocean in the distance, or your favorite secluded fishing spot with no one there but you and some 15 pound large mouth bass.)
4. Once you have assumed your stance, nocked an arrow, and hooked up your release, close your eyes and take in a deep breath through your nose and as you are exhaling slowly through your mouth, go to your special place. You can also develop a mantra to say on the exhale. One example of a mantra is “relax”. Repeat this process twice. It is a good idea to have a belt quiver equipped with a bow holster to carry most of the entire weight of the bow while executing the breathing steps.
5. After the second breath then place bow in the ready

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position with your bow hand set in the correct spot on the grip. Raise the bow above the target while continuing to silently repeat your mantra. This is important because it is helping you to achieve a relaxed state so necessary to getting into the zone.

6. Draw the bow and begin the calibration phase of the shot sequence. This is getting the bow level square and aligning the peep and settling into the rear touch point (anchor). Here it is worth mentioning that, if you are doing this with your eyes closed, it is more important to practice the relaxation technique than the calibration. Obviously when you are practicing this without your bow (using a string bow) you will be able to dedicate more of your effort to the relaxation elements.
7. If you are feeling a slight tingling sensation during the inhaling and exhaling phase then you are getting it right. You will actually feel a type of euphoria which is, in essence, putting you in the zone. Tension in your muscles or an excessive amount of adrenaline can impede Zone Mechanics.
8. When you are practicing remember to exercise your mantra with your journey to your special place that keeps you relaxed and calm. The phase for this is after the calibration step and after you have committed to the shot, when you are committing every ounce of your conscious mind to aiming. This phase is not over until you have completed your followthrough. If you do not have a destination for the followthrough, I would suggest the touch of your thumb to your shoulder for release shooters or the fingers across your neck for finger shooters. Whatever it is, it is the actual destination of your shot, rather than just loosing the arrow. The shot happens on the way to your touch point. This allows the arrow to leave the bow before any body movements can interfere with its flight. You will know it was correct if you see the arrow hit the target via your peep sight or aiming device. (David, are you saying you can see the arrow hit through the peep or the sight? This seems impossible.)

The objective here is to get your archery muscles in a relaxed state and keep them there from the first arrow to the last arrow. If you can do this you will not tire as quickly. Tense muscles burn more oxygen and tire faster than relaxed muscles. Compound shooters have an edge in that they only have to momentarily overcome the bow's full force, then they are holding only a fraction of that pull. Traditional shooters will need slightly more conditioning since they are experiencing increased resistance throughout the shot process. The good news is that

the human body is a marvelous machine and will quickly adapt to the demands placed on it.

There is much more to Zen concepts as they apply to archery and I in no way consider myself a Zen master. I have dabbled in the martial arts long enough to appreciate those who have a mastery of their inner self and the ability to bring a sense of peace and calm to their spirit. My oldest and dearest friend is a soft style Aikido instructor and has helped me understand better the body's energy flows and methods designed to stay centered and relaxed. I have been applying these methods with my students for two reasons: to help them become better archers and to have a pastime that they can do for a lifetime that brings them pleasure and sense of peace.

**Dave Clink** is a NAA Level 2 Instructor and Advanced Archery Instructor (Pellerite School of Advanced Archery). He retired in April 2006 after 15 years as a Test Engineer for the U.S. Navy Tomahawk Program. (He is a rocket scientist! Ed.) Dave and his wife Karen own and operate David Charles Photography in Fort Washington, Maryland and both enjoy archery. Dave is a member of Southern Maryland Archers Club, the NFAA, NAA, and Maryland Archery Association. He also enjoys building electric guitars and dabbling in woodworking.



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dynamic shot.) I had been working with him on this concept for months. He couldn't have found a better time to ingrain this concept into his shot. Abandoning his cautious shot and shooting dynamically the rest of the tournament resulted in his advancement from fifth in the first FITA round to first for the second FITA round.

The most challenging time was after the third day of competition. My other archer had struggled that day performing well below his abilities, which left him about 10 points out of third place. We both knew he had the ability to come back; it was a matter of self confidence and focus on shooting or performance. There could be absolutely no thoughts about score. (Score is an outcome, a result of performance.) He had to focus 100% on shooting and the score would take care of itself. Through out the fourth day I resisted the temptation to ask what his score was, or how much he was ahead or behind. If I asked him about score, I risked his focus switching from shooting to score, a risk he could not afford. I watched the running total and asked the runners about scores, so I knew his score, but kept it to myself. I knew I could show no outward emotion which could place additional pressure on my archer. Oh, there was a lot on inward emotion! I was constantly thinking, "You need to score a

30 this end." After last end was shot, he had come back, winning third place by one point. His shooting form never faltered; he did exactly what he had been taught to do. I am very proud of both Corey and Adam; they finished second and third in Male Compound Cadet Class for both the NAA Outdoor Nationals and the Junior World Trials.

Every tournament is an opportunity to learn: to learn what you did well and what you need to do to improve. That includes the coach! I learn from every student and every opportunity I have to coach. So, I am back to evaluating performance, creating action plans and "to-do" lists to prepare for the Junior World Championships in Merida, Mexico.

Brian J. Luke

# Traditional Archery

## My Second Second Chance (con't)

*If you read the article in the last issue, you learned how I, a right-hander, switched to left-handed shooting (and why) and how I am now trying to shoot right-handed again, but with my draw hand flipped over, palm out. Yes, I am saying that I shot my left-handed bow as a normal left hand person would do and then used that same bow, arrow, and sight settings to shoot right-handed, palm out and not change the sight at all to group in the same spot. As I stated in that previous article, this was just before the Christmas of 2005, I kept playing with this at home until I felt I was coordinated enough to go out in public and give this a try in an actual indoor shooting range.*

Each day I would spend about a half hour or so practicing this new style. If the weather was too bad to shoot outdoors, as it often is this time of year in Ohio, I would just practice drawing the bow. One of the things I was most impressed with is that my bow arm collapse from my right-handed shooting form did not find its way into this shooting style. Most dramatic changes to my normal shooting form would trick that nasty habit for a while, but usually after less than three weeks the collapse would come back, especially when I settled down to concentrate on aiming.

There were times when I decided to shoot both left-handed and right-handed just for the benefit of strengthening myself and not concerning myself with my right hand shooting and the nasty trained reflex. The interesting thing

that I noticed is the collapse was still there, I just did not care about it because I knew I did not collapse shooting left-handed. With that mental outlook my right-hand shooting improved in spite of the reflex bow arm collapse. With improved grouping came encouragement and the desire to beat this thing once and for all, but as soon as I entertained the thought of improving or possibly competing right-handed the groups would open up again, terribly. This told me that I not only have a trained reflex problem, but some target panic issues shooting right-handed as well. It became apparent to me that my right hand shooting trouble was a combination of the trained reflex collapse and my own mental anxiety, and the mental anxiety was more detrimental to my grouping than the physical collapse.

After about six weeks of playing with this at home I decided to go try this out in the local indoor archery range. I felt I could keep most of my arrows in the scoring zone on a three spot Vegas target and I was now ready to take the heat of trying something so weird. The improvement at home mostly came as a result of learning to get the tension out of my drawing hand along with settling on a comfortable and repeatable anchor. It was February the second; I know this as a certainty because I documented the event by dating and keeping my practice target. I did not keep score because I usually do not; I feel just as much can be learned by observing the grouping

in the target. By counting the holes I know I shot at least 90 arrows. Keep in mind that I have been shooting a long bow with no bow sight for the last fourteen years. I just recently got interested in shooting the recurve with a sight again. This will become very obvious when you look at the picture dated February the third (the next day), but this time shooting the same bow normally left-handed.



*This is the first time I shot palm out, right-handed in public; about six weeks after I had first tried it. I did not keep score, I was more interested in viewing the grouping. The next day I shot the same bow normally (left handed). The surprising thing to me is that the target from the first day didn't look much worse, if any, from my left hand shooting I have been doing the last nine years or so. I did not expect my palm out shooting to progress as fast as it did.*

The amazing thing to me is that I made a dramatic form change just six weeks ago, I only spent about a half hour of so a day working on it and you can tell very little difference between the two different targets-one day shooting right-handed, palm out and the next day shooting the same equipment left-handed as the bow was designed to do.

I went to the range on an average three days a week for about two hours a day. My grouping improved both shooting left-handed and right-handed, palm out. I would shoot one style one day and the other style the next. I felt it would mess with my head too much to practice both in one day. The funny thing was that I was now improving more rapidly shooting normally left-handed than I had been before I started messing with shooting right-handed, palm out. I really felt one style was helping the other. My bow arm was still strong with no evidence

of tension loss shooting right-handed. I had never experienced a strong bow arm this long shooting right-handed before, but I was not holding my breath.

My groups improved to the example of my target face of February sixteenth in both my left hand shooting and right hand palm out shooting. This was at the time I normally practiced a lot to prepare for the NAA Indoor Nationals.

The Indoor Nationals were held the first weekend of March and I decided to shoot both styles. This was probably not a good idea. I decided to shoot right-handed, palm out in the Traditional recurve division in the morning and left-handed in the afternoon in the Olympic recurve division. At this tournament you could not use aluminum arrows and a bow sight or stabilizer in the Traditional Recurve division. I had to shoot the right-handed, palm out style with wood arrows and no bow sight, using a point of aim marker instead.

I am sorry to report that my right handed, palm out shooting was nowhere near what I was able to do in practice. Perhaps it was just the fact I was trying to use it with the point of aim method and not like I shot (with a sight) in practice. Perhaps I was just putting too much pressure on myself exposing this new style of shooting the first time in National competition. It could also be that I was experiencing some target panic issues even though my bow arm remained strong. This was something I had never been able to do right-handed, so I really was not too disappointed.

My normal left hand shooting was, well . . . just plain funny. That is the only way I can look at it because I can't come up with a reasonable explanation. Just look at the picture of the white background FITA target, the one with the marked holes. It was as if I did not figure out what I was supposed to do until my third shot. I always start bottom left, top center, and then bottom right.

With that embarrassing day behind me now I still remained interested in the right-handed, palm out shooting, however I decided that I would only shoot my left-hand style in preparation for the NAA Outdoor Nationals in Colorado. I shot the Outdoor with both the traditional longbow and the traditional recurve. I did not shoot badly; but I was not able to shoot as well as I felt I could, but that is pretty much a normal thing for me in competition. The really strange thing to me is that I still felt my practice for the indoor by shooting left-handed one day and right-handed, palm out the next day showed much greater improvement in a much less time for both

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shooting styles than it did only practicing one style in preparation for the Outdoor.

Now that the Outdoor Nationals are over, my archery interest turns to practicing for hunting and the most exciting discovery about the palm out shooting style is yet to unfold.

I normally hunt with a longbow, but my recent interest in the recurve again inspired me to purchase a great little hunting bow on eBay. It is a left hand Wing Slim Line called the Red Wing Pro. Since I am right eye dominant, I must close my non-aiming eye while shooting left-handed. The problem I have is that I do not hunt with a bow sight and I feel it is a must to keep both eyes open for instinctive shooting. To shoot instinctively, I must shoot right-handed to have both eyes open.

I decided to shoot that left-handed Red Wing Pro instinctively right-handed, palm out. The only thing I changed is the anchor that I was using to shoot targets with a sight. I found a place just under my cheek bone to locate my anchor with the little finger firmly up against it while I drew the string all the way back until it stopped on the bone beneath my eyebrow. The anchor felt very natural and was even easier to adjust to from the under the chin anchor. I gained two inches of draw length from my under the chin style and I was almost immediately on, shooting that style instinctive. My bow arm was great, my release was fast and crisp and anything I aimed at under fifty yards was in serious danger of



*My target from the Indoor Nationals shooting the recurve normally left handed. The only thing I can do is laugh! Just check out the bottom right spot. It seemed as if I did not realize what I was there to do until the third shot. My head always seems to get in the way, but that is just one of the challenges that make this sport fun!*



*I had noticed by shooting both styles, right-hand palm out one day, and normal left-hand shooting the other that it seemed one style was helping the other. I was seeing more progress in my normal left hand style now, than before I started messing with the palm out method. I had not seen grouping like this since my days as a teen shooting a recurve target bow. The target pictured is from shooting normally left-handed; I had another target that I had shot shortly after this one with very similar grouping shooting my palm out style right-handed. Sorry, no photo for that one; the dog must have eaten it!*

being impaled. I have not enjoyed shooting that much in years. Instinctive shooting was always a nice break from target shooting, but my collapsing bow arm made even that frustrating to the point that I did not shoot instinctive very much anymore.

I really feel that now I have a second second chance. I can stump shoot once again in the carefree manner it was intended to be. This was the only thing switching to left-handed shooting could not do for me; But now I can shoot right-handed, palm out with a left-handed bow with both eyes open and can enjoy archery like I have not been able to do in years; decades rather.

An explanation for all of this I cannot provide, just observations and speculations. The observations I have documented here for you and you can draw whatever conclusions you wish.

The joy and excitement this new style has provided me was just something I needed to share in hope that someone else may find themselves in a similar situation and this is an option to try. I wish I had years behind me with this style of shooting to be more convincing, but it is late October at the time of this writing and I still have not had a bow arm collapse shooting right-handed, palm



out ten months after I first tried it.

Time will tell if that collapsing bow arm will ever haunt me again. My speculations about all of this are as follows and please remember this is just my very unprofessional opinion.

My trained reflex was a result of having no shooting instruction when I first started in archery. The shooting instruction I eventually got caused the anxiety that turned the trained reflex into full-blown target panic. I was my own worse enemy and I had proved to myself the twitch of the bow arm was not nearly as detrimental to the shot as my anxiety to overcome the reflex.

Shooting right-handed, palm out somehow confused my reflex by using different muscles with a totally different feel. Perhaps shooting on the other side of the bow from I would normally do right-handed had something to do with it. My mind did not trigger a collapse with the arrow on the right side of the bow as I had trained myself to shoot left-handed? This I am not completely sure of, but I believe it was a combination of learning new muscle memory on top of changing the sight picture my

mind was use to seeing when shooting right-handed normally.

All I know for sure is that this form change to shooting right-handed, palm out was many times easier that it was for me to switch from shooting right-handed to shoot left-handed. I would also like to add that my first assumption (about palm out shooting not working with a longbow that was not center shot) proved to be false. As it turned out, once I learned to get the tension out of my drawing hand resulting in a smooth release the arrows would fly online to the target. It must be that the center shot recurve is just more forgiving.

I hope none of you get to the point I did and have to result to such drastic form changes, but for the person who is about to give up the sport because it is just not fun anymore, what do you have to lose?



**Brian Luke** is a husband and a father of three young adults. He has worked as a tool and die maker since 1979 and has played with the bow and arrow nearly all his life. Brian has developed a deep respect and admiration for the accomplishments of the early target archers of the NAA. This admiration began in 1992 as a result of reading Robert Elmer's book "Archery" (circa 1926). From that time on Brian's quest has been to experience all that he had read about in Elmer's book from the making of his own wooden bows, arrows, and linen strings to competing in the traditional rounds of the NAA. Since then Brian has won six out of the seven Indoor Nationals and five out of the eight Outdoor Nationals he has attended, all shooting in the Traditional Longbow division of the NAA.

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down the hall, through the garage door and into the garage. He comes and asks me what I think about the kitchen. This I know means it's a good measurement.

"The kitchen? Oh, it's great!" We now have the potential of an 'indoor range'. I tell him the backyard is quite small and ask

him if he could perhaps see about the side yard. He goes outside as I chat with the realtor and continue to distract her from my husband and his weird habit that she has noticed of him walking hallways, walking through rooms, not seeming to care at all about anything other than how long things are. He comes in and quietly tells me that it would be a stretch, but from the front yard, through the gate into the backyard is 30 meters. We would still need to find somewhere for distance shooting but this is a good start. I try to keep my excitement down as I tell the woman that we are very interested in a long term lease of this house. She wonders out loud if I want to go through the rest of it, and I tell her "No, if Bob says it's okay, then it's okay." The kitchen is nice and I really care about that. We make arrangements to return to the realty office to complete rental agreements.

As Bob and I get in the car, we are both excited as he tells me that there is an easy 18 meters plus standing room inside the house and though the boys will have to be careful outside, they are good enough to master the narrow gate that they must shoot through between the front and back yards in order to get 30 meters. We are ecstatic! I have NO idea what the bathrooms and bedrooms even look like and I don't even care! All I needed was to secure a place to shoot when the summer temperatures hit 120°+ and the winds that come up every afternoon nearly every day will not interfere with our archery!

We signed a nine month lease and told the realtor that we are very interested in purchasing a home, but it has to be on acreage and the lot must run from south to north. She doesn't ask why, and I am relieved because I hadn't quite thought up a reason yet since I didn't want to let on that we would have two boys shooting up to 400 arrows a day in the house she was about to rent us. She asks how many bedrooms and baths and I tell her "three and two would be nice, but



we are willing to consider alternates but it would be really nice to find a long ranch house." She nods and I know she was thinking we are the most difficult clients around. I happily sign the lease papers knowing part one of this new journey is taken care of.

We are still several months away from finding our dream home. Out here in the hot dry desert, 'dream home' may be a misnomer. I miss the green (though not the snow) of Utah. I miss the indoor archery range and my JOAD program. I miss the weekend tournaments at Salt Lake Archery (though not the three hour round-trip drive). I know our realtor thinks we're crazy, but I don't care. I know my priorities are right. I know I need a big ugly piece of desert property to build a new FITA range and a long ranch house for shooting down the hallway into the garage during inclement weather. What else would an Archery Mom think of when looking for California real estate?

**Loretta Sinclair** is the mother of Dakota, Clarke, and Barrett Sinclair. President of Clarke Sinclair Memorial Archery Scholarship ([www.clarkesinclair.org](http://www.clarkesinclair.org)) and collegiate division publicist ([www.collegiatearchery.org](http://www.collegiatearchery.org)).



# HOW WELL DO YOU KNOW YOUR FIELD SHOOTING RULES? (CON'T)

## & KEY

See Page 20 for the Quiz!

15. When shooting the 20 cm face (smallest target) during a FITA field round, the shooter must shoot the following sequence of their designated target faces:
- Designated row, left to right in order, one arrow in each face
  - Designated row, right to left in order, one arrow in each face
  - Designated column bottom to top, or top to bottom in order, one arrow in each face.
  - Designated row, any order across, and one arrow in each face.
  - Designated column, any order, and one arrow in each face.
16. Red stakes on an NFAA outdoor course are normally shot by which of the following?
- All adult divisions during the Hunter round.
  - All adult divisions during the Field round.
  - All Youth and Young Adult divisions.
  - All Cub divisions.
17. What is the duty of the highest numbered shooter in a group of four on a FITA field course?
- Group leader and serves as deciding judge for the group.
  - Pull the arrows for the group.
  - Call the arrow scores.
  - Mark the arrow holes.
18. The blue stakes on an NFAA course are used by which of the following shooting divisions?
- Traditional
  - Cub
  - Youth
  - Barebow
19. On a FITA field course, the blue stakes are shot by all the groups below except:
- Cadet Barebow Division
  - Barebow Division
  - Cadet Recurve
  - Cadet Compound Divisions
20. On an NFAA Hunter round, the 11 yard target must be shot in which of the following sequences?
- Shooter's designated row, left to right or right to left, in order, one arrow in each target face.
  - Shooter's designated column, Top to bottom or bottom to top, in order, one arrow in each target face.
  - Any order, as long as a column and or row has one of the shooter's arrows in each target face in the row or column the shooter is assigned to shoot.
  - Each shooter picks their own row or column, and can shoot more than one arrow into any given target face in their row or column.

Source: *www. Archery.org, Book 4 FITA Constitution and Rules, Chapter 9, Field Archery, April 1, 2006.*

How did you Do? If you were correct on:

20-18 You are a Field Rules Guru

17-15 You are Very Knowledgeable!

14-12 Did you read all the questions thoroughly before answering?

11 or fewer, you might review the finer points of the rules.

Answers 1-c, 2-a, 3-c, 4-b, 5-b, 6-c, 7-d, 8-b, 9-c, 10-b, 11-b, 12-d, 13-a, 14-d, 15-e, 16-a, 17-d, 18-c, 19-a, 20-b

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*There are limited numbers of issues available from AFm's first four years.*

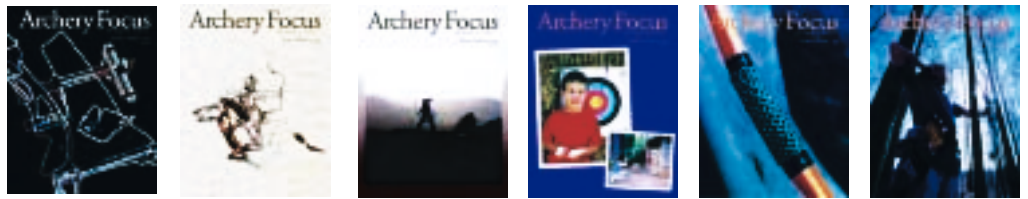
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