Trapshooting the Olympic Way

by Les Greevy

The Quiet Eye, applied to trapshooting

Several recent studies have indicated that the single most important observable difference between elite and novice shooters is what they do with their eyes in the seconds before calling for the target. The elite shooters are using the "Quiet Eye"—a "new and improved" term for a generally accepted concept in the field of sports performance, i.e., being in a "zone." In contrast to this somewhat vague and loosely defined term, the Quiet Eye concept is the result of scientific study and measurement to determine how an accomplished competitor "sees better" and then how these techniques can be applied and enhanced.

Dr. Joan Vickers of the University of Calgary has done ground-breaking work on the Quiet Eye phenomenon while studying competitors in various "self-initiated target sports" such as golf (putting), darts, billiards, basketball (free throws) and shooting. [*See sidebar article on these pages for an introduction to the Quiet Eye concept—Ed.*]

Additional studies of elite Olympic shooters have shown that they are markedly advanced in efficiency of gaze control. When good shooters shoot, their Quiet Eye period prior to calling for a target averages two to three seconds. Likewise with ATA shooters, the better competitors typically exhibit a QE period, with the gun mounted and steady, for more than one second before calling for the target. A shooter whose gun is wobbling when mounted before he calls is not executing QE; the gun is wobbling because the eye is also wobbling and not focused on a single spot.

Chris Janelle of the University of Florida in Gainesville has done shooting-specific research indicating that prolonged visual contact with the target yields deep concentration, which blocks internal and external distractors and allows the athlete to perform without awareness. This performance without awareness has been commonly identified as the "zone." He has found that experts in a particular sport, such as shooting, wait longer after focusing on their target (or in trap, their target acquisition point) and are able to quiet the left side of the brain much more effectively than less experienced shooters. It is the left side of the brain which sends the analytical messages that interrupt your shot concentration.

Athletes are able to improve their ability to respond accurately through coordinating the period of intense concentration on the target or target acquisition point and the duration of time they fixate on that point before responding. Janelle says, "Any skill that is self-paced and involves focusing on the target—such as playing basketball or pool or shooting—can be improved by this one-two punch of focusing and pausing (the Quiet Eye)."

"Across the various sports that have been examined, experts have traditionally shown a longer Quiet Eye period," Janelle noted. "But in this study, we show that it is apparently connected to more favorable brain wave characteristics."

Robert Singer, also of the University of Florida, has developed a five-step strategy to improve success rates among self-initiated target athletes:

1. The readying or preparatory step puts the player in the optimal mental/emotional condition.
2. Imaging involves creating an internal picture of the intended act and accomplishment (you can mentally rehearse seeing the target break).
3. Focusing attention calls for blocking out internal and external distractions and focusing on the most relevant cue (the target acquisition point).
4. Executing is the performance of the task with a quiet mind (letting it go).
5. Evaluating calls for a player to assess how everything went in order to make improvements in the future if necessary.

"The five-step strategy for self-initiated target games emphasizes the focus on a meaningful external cue," Singer said. "The better a player can focus and the fewer the distractions, the better he will perform."

Janelle's conclusions about quieting the left side of the brain go hand in hand with the findings of Dr. Debbie Crews from Arizona State University. In her studies of golfers, she found that the amount of activity in the brain, and whether it is balanced between the left and right hemispheres during the seconds immediately preceding a putt, can determine whether the putt will find its mark.

According to Dr. Crews, "The pattern

The Quiet Eye phenomenon

Dr. Joan Vickers, professor and director in kinesiology at the University of Calgary in Alberta, Canada, has been a pioneer in the identification, study and measurement of the Quiet Eye phenomenon in sports performance. The following material is a combination of direct excerpts from Dr. Vickers' excellent article, "A Quiet Eye" [Golf Digest, January 2004] and additional text inserted by me to illustrate how her findings while studying golfers' putting techniques can be applied to trapshooting.—Les Greevy

Why is it that shooting consistently high scores is so difficult for so many shooters? Almost anyone can learn to mount the gun and determine the lead in an acceptable manner. The difficulty lies in using your eyes to detect the right information about distance, speed and direction at the right time, then using your mind to relay that information to consistently make the shotstring and target collide.

By recording data under laboratory conditions (using sophisticated eye-movement tracker technology, which allows us to monitor precisely what the eye focuses on and for how long) the mystery of what separates really good competitors from the rest is beginning to be figured out. We call it the Quiet Eye; here's what it is and how you develop it.

The Quiet Eye occurs when your gaze remains absolutely still at the target pick-up point just before and as the target is called for and the gun move is initiated. There are two important aspects of this basic yet essential skill: *location* and *duration*.

Concerning *location*, the shooter must determine his target pick-up point (look point) with precision. It must be on the line of the target, and the look point must be identified with a very small feature in the background of the scene.

Quiet Eye *duration* is also important. The expert shooters have a Quiet Eye duration of 2+ seconds on average, while less skilled shooters hold the gaze for less than one second.

The same results have been found in a number of other sports, including rifle shooting, darts, billiards and basketball free throws. In all of the self-initiated target sports, the Quiet Eye is emerging as the primary indicator of optimal focus and concentration.

This QE period is essential because your hands are controlled by your brain. The brain gets valuable information from your eyes. As you shoot, your brain needs to organize more than 100 billion neuron networks that are informed by your gaze and then control your hands, arms and body as the shot is performed. These networks will stay organized for only a short period of time; a window of opportunity opens that must be used when it is at its most optimal. This is the QE period.

The notion of being in The Zone or of "flow" in sport has been around for a long time. Until now, there has been only unscientific evidence that The Zone exists, let alone has measurable characteristics. Perhaps the Quiet Eye will emerge as one of the objective measures.

The Quiet Eye is the glue that keeps neurons from being scrambled when under stress. It supplies the right information at the right time. Overall, the Quiet Eye has the essence of simplicity alluded to when the shooter is in The Zone. More research will tell. In the meantime, QE is something you can learn and add to your game today.

we see is that as people get ready to perform, the left hemisphere tends to quiet and the right hemisphere becomes slightly more active . . . . What we end up with is more balance in the brain. It is very important that the left side quiets—that's our verbal, analytical side—and when the brain attempts to make conscious adjustments, we are trying too hard."

Successful athletes concentrate on the target and on feeling the sensation of the winning movement to that target. "When an athlete is performing well, it's automatic; it's effortless," Dr. Crews said.

What Janelle finds is that concentrating, pausing and focusing on the target or target acquisition point for the Quiet Eye period blocks out internal and external distractions and allows the left side of the brain to be quiet. The Quiet Eye and the balanced brain are tied together.

How does this all translate to trapshooting?

The good shooter plans his shot by finding: 1) his break point, where the target will be broken; 2) his mount point, where he will hold the gun in anticipation of the target; and 3) his look point or target acquisition point, where his central vision will be located in soft focus along the line of the target and somewhat out from the house in order to most quickly see the target. The good shooter picks out a specific location in the background—a small location, such as a limb or leaf on a tree or a patch of grass, to fix his gaze, pause, and focus while awaiting the target. It is important that the gaze is fixed on a small area—the smaller, the better, but with a soft rather than hard focus.

The good shooter then repeats a mantra to focus his attention on the job at hand, such as: "See bird; shoot bird" or "Target, target, target." During that time he holds this quiet eye for 2+ seconds before calling for the target. Shooters who have trouble scoring consistently do not select a single spot in the background as their look point but let their gaze roam about in various proximities to the target line. They have a shorter duration of fixation on the look point, and their eyes are never in the same place when the target emerges. They will never be consistent because their erratic scan path and fixation clouds their focus and concentration. Dr. Vickers puts it this way: "It is evident that the brain is getting a jumble of signals about where the [target] is" and where the shooter wants the shot pattern to go.

In addition, Dr. Vickers notes that "under stress, the Quiet Eye is often the first thing to go . . . When you choke, the billion cells in your brain lose their effective complexity in solving . . . problems" (in trapshooting, those problems are time, distance, speed and lead), and athletes lose their ability to stabilize their gaze.

The stability in the gaze that is the Quiet Eye is very important, as this is the source of the information you need to make the shot. If your gaze is moving when you call for the target, you will never have the same starting point; gun move and consistency will suffer.

A typical QE routine for a shooter would be as follows:

1. Plan your shot. Find your break point, mount point and look point with a great deal of accuracy.

2. Visualize the target breaking. Mentally rehearse it appearing, your gun setting up the lead, the shot, and the target breaking.

3. Settle your eye on the look point, a small precise look point. Use a mantra such as "See bird; shoot bird" to focus your concentration; focus and pause for 1+ seconds.

4. Eye on the target. Begin to move your gun as soon as the target appears, focus visual concentration on the leading edge, and let your eyes "pull the trigger." Let the shot go.

Dr. Vickers stresses that an athlete's QE routine should not become a "rigid counting exercise," nor should it lead to slow response and execution. She has found that the Quiet Eye, when properly executed, will cause the mechanics to self-conform and regulate to the most efficient way of completing the job. QE allows the athlete to focus concentration and eliminate distractions. Once you have habituated the process and your brain has this information, the shot is "easier to perform, and your confidence will rise as your scores improve," Dr. Vickers concludes.

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Much of the information in this article came from these sources: Dr. Joan Vickers' article from *Golf Digest*, January 2004; the 2001 National Shooting Coaches College, U.S. Olympic Training Center, Colorado Springs, "Presentation on the Quiet Eye" by Chris Janelle; and the PBS television show *Scientific American Frontiers*, "Eye on the Ball, Presentation on Quiet Eye and Balanced Brain" with Alan Alda (both a video of the show and printed excerpts from the show can be found on the PBS website *www.pbs.org*).

This isn't just theory. I first met Chris Janelle in October 2001 at the Olympic Training Center during the National Shooting Coaches College when he made his presentation, which was then focused toward rifle shooters. I was so impressed that I adapted his concepts to shotgun, and we began teaching his Quiet Eye methods to the Youth Development Shotgun Team with great success.

Plans are currently under way to do the types of visual testing shown on the PBS video with Olympic trap and skeet shooters. Janelle attended the Spring Selection Match at Ft. Benning last year, and preliminary testing has also been done at the Gator T&SC in Gainesville, Fla. The plan is to use elite shooters from the U.S. Army Marksmanship Unit and compare their visual and gaze-tracking patterns to those of recreational shooters. It should be very interesting.

Please feel free to e-mail me at Les@greevy.com *with your comments.*

Chris Janelle, researcher on the Quiet Eye phenomenon at the University of Florida in Gainesville, looks on as Matthew Drexler, National Development Team member for Double Trap and 2004 Junior Olympic national champion, puts the eye-tracker device through the paces at Ft. Benning, Ga.

At Ft. Benning, Staff Sgt. Sean Dulohery of the U.S. Army Shotgun Team tries gun mounts with the eye-tracker apparatus in place. The device consists of a lightweight helmet outfitted with miniature cameras and a visor which acts as a mirror. The cameras measure 1) the center of the pupil and corneal reflex, which tracks eye-line of gaze in the scene viewed; 2) the subject's gaze, accurate to less than 1° of visual angle; and 3) the subject's movements. All three images are sequenced so that the eye, gaze and actions are recorded every 33.33 milliseconds. Because the images are synchronized, where the shooter is looking at specific points during the shot sequence and how this affects his accuracy can be measured and evaluated.