



The 2002 TREXPO (Tactical Response Exposition) East conference will be held at the Baltimore Convention Center August 12 - 14, 2002. Seminar topics will include law enforcement firearms and tactical training, personal protection, and other timely tactical response and security issues. In addition, the National Tactical Officers Association (NTOA) will sponsor a series of seminars over all three days of the conference. Come visit us at our booth. For more information, visit "[www.trexpo.com](http://www.trexpo.com)".



The NRA's Law Enforcement Activities Division, in cooperation with the law enforcement training community, is sponsoring "TUITION-FREE" training courses, provided by the companies whose logo's appear here. Please visit our website at [www.nrahq.org/law/training](http://www.nrahq.org/law/training) for a complete schedule, or to register online.



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# L.E.A.D.

LAW ENFORCEMENT ACTIVITIES DIVISION



Summer 2002

## NRA Law Enforcement Officer of the Year

Agent Clay B. Tippit, U.S. Border Patrol, stationed in Marfa, Texas, has been selected as the National Rifle Association's Law Enforcement Officer of the Year for 2001. Agent Tippit, a 16-year veteran of the Border Patrol, flies fixed-wing aircraft and helicopters to patrol the Rio Grande River between Sierra Blanca and Sanderson, Texas. In addition, he is the 2001 NRA National Police Shooting Champion and the current championship record holder.

Agent Tippit's selection was based on his contributions to his community, his frequent actions to aid persons in need, and his influence on training and individual proficiency with firearms among his fellow Border Patrol members.

In particular, the recommendation to honor Agent Tippit cites his actions, when he directed operations to rescue a rancher, Ted Harper, who had suffered serious injuries after falling from his horse. The area in which the rancher had fallen was rugged, isolated, and generally inaccessible except by horseback or helicopter.

Agent Tippit flew his aircraft to the area, and then, at considerable personal risk due to the hazardous terrain, landed and provided first aid to Harper. Lacking a suitable means to transport Harper, Agent Tippit directed a second aircraft to the site and to a safe landing.

Due largely to Agent Tippit's prompt and highly professional response, Harper was treated and released after only a few days' hospitalization.

Agent Tippit's contributions to Border Patrol marksmanship need little introduc-



Agent Clay B. Tippit, of the U.S. Border Patrol. Winner of this year's NRA Law Enforcement Officer of the Year.

tion. In a law enforcement agency with a tradition of individual firearm expertise, Agent Tippit is a standout. He is a two-time NRA National Police Shooting Champion (1997 and 2001). He also has won, at various times, the Stock Semi-Auto Championship, the Service Pistol Aggregate, the Semi-Auto Distinguished Match, and the President's Match. In 2001, he won his fourth consecutive victory in the NRA Special Aggregate for the Bill Jordan Commemorative National Border Patrol Trophy.

In his off-duty hours, Agent Tippit consistently demonstrates the public spirit that is a Border Patrol hallmark. He works closely with the youth in the Fort Davis area, teaching respect for firearms, firearm safety and marksmanship. He also serves as the area leader for the shooting sports for the Fort Davis 4-H. He is currently a certified Texas Concealed Handgun Instructor and a Texas Hunter Education Instructor.

Agent Tippit's personal initiative, persistence, and sense of purpose are truly demonstrated in his pursuit of excellence

in his official duties, in his continuing efforts to mold the lives of young people in his area, and in his projection of a positive image for the shooting sports. As a role model for local youth and for other competitive shooters, he has had a significant impact on the shooting sports and on the image of America's law enforcement community. Agent Tippit is a proud representative of all the best traditions of his profession.

Ron Kirkland, Director, NRA Law Enforcement Activities Division, stated that "Agent Tippit is an asset to his country and exemplifies all of the finest qualities of professional law enforcement. NRA is honored to recognize him as our Law Enforcement Officer of the Year."

The NRA Law Enforcement Officer of the Year Award was established in 1993, and recognizes exceptional valor, public service, and dedication to the principles of our Constitutional heritage. Nominations for the 2002 NRA Law Enforcement Officer of the Year Award are being accepted now. All nominations must be submitted on the official form and be postmarked by September 1, 2002. Nominations may be submitted by the nominee's agency head or by an NRA member, and must be endorsed by an NRA Life Member.

For more information, contact Emma Bailiff by mail at the National Rifle Association, Law Enforcement Activities Division, 11250 Waples Mill Road, Fairfax, VA 22030, or call her at (703) 267-1649. You may also contact the Law Enforcement Activities Division by e-mail at [lead@nrahq.org](mailto:lead@nrahq.org).

# DAVIDSON'S ENDOWS NRA NATIONAL POLICE SHOOTING CHAMPIONSHIPS

Davidson's Supply Company of Prescott, Arizona has pledged a gift of \$100,000 to establish the Davidson's Law Enforcement Endowment of The NRA Foundation. The new endowment will be used to help permanently fund the NRA's National Police Shooting Championships (NPSC). The NPSC is conducted as an integral part of NRA's Law Enforcement Training Program for America's law enforcement agencies.

Davidson's is one of the largest and progressive firearms wholesalers in America. Founded in the midst of the Great Depression in 1932, they have evolved to a national leadership position in the firearms industry. Living up to their reputation as an innovative leader, their commitment is the largest single gift thus far to The NRA Foundation's Law Enforcement Endowment. "Davidson's is very excited about our new partnership with NRA Law Enforcement in the establishment of a new endowment for the National Police

Shooting Championships. We view this as an excellent opportunity to show Davidson's support for the commitment and dedication towards excellence shown by our country's law enforcement personnel," stated Bryan Tucker, Davidson's President and CEO. The NPSC is an annual premier training event which serves as a testament to the hard work and effort that officers put forth to enhance their police combat proficiency in order to better serve and protect their communities. Officers from across the nation and world train year-round for the championships and use it as an indicator of their skill level. This year's championship will be held September 23-27 at the Jackson,

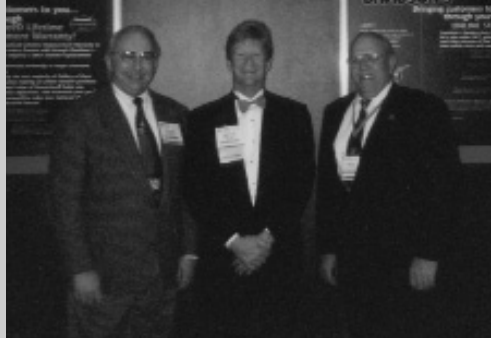
Mississippi Police Firing Range where over 500 law enforcement officers are expected to compete in the five day event.

In an effort to further serve the law enforcement community,

Davidson's will offer special firearms discounts and promotional offers to students attending our law enforcement instructor schools. These offers will also be extended to all current certified law enforcement instructors as well. New officers attending our training will have the information provided to them on the first day of school. Previously certified officers will receive information with their renewal information.

"We greatly appreciate Davidson's leadership in helping to permanently endow NRA's Championships. Their partnership with The NRA Foundation further assures that this critical training program will always be available to our nation's law enforcement agencies," stated NRA Executive Vice President, Wayne LaPierre.

Further information on the 2002 NRA Police Shooting Championships can be acquired at [www.nrahq.org/law](http://www.nrahq.org/law) or by calling P. Zollman, NRA Manager Police Competitions at 703-267-1632. Information on Davidson's can be acquired through their Website: [www.GalleryofGuns.com](http://www.GalleryofGuns.com) or officers and agencies can call Richard Norman, Vice President or John Werkhoven, Law Enforcement Specialist at 1-800-367-5855.



From L. to R.; H. Wayne Sheets, Director Endowments NRA Foundation; Brian Tucker, President & CEO of Davidson's; Craig D. Sandler, Executive Director NRA General Operations.



## OSHA Regulations and Exposure to Lead on Shooting Ranges

Jack J. Giordano

### (Part One of a Series)

#### INTRODUCTION

The OSHA Lead Standard, 29CFR1910.1025, applies to all industry. It is important to note that the federal regulation does not specifically mention exposures on shooting ranges. However, the National Institute for Occupational Safety and Health (NIOSH) has published information specifically dealing with lead exposure and related health issues on shooting ranges. It is also important to note that some states, including New Jersey, have regulations and engineering requirements regarding shooting ranges used by public employees. The New Jersey Department of Labor, Public Employee Occupational Safety & Health (PEOSH) Unit, has basically adopted recommendations published by NIOSH.

#### SOURCES OF LEAD CONTAMINATION

Lead contamination on indoor and outdoor shooting ranges

occurs for various reasons. The cartridge **primer** causes one source of contamination. The primer contains approximately 25 to 30 milligrams of material of which approximately 35% is lead styphnate and lead peroxide. When the projectile leaves the barrel of the firearm, a percentage of the lead compounds contained in the primer become airborne as gas and particulate.

When a bullet is fired, partial **vaporization** of the base of the bullet also occurs. The intense heat (2000° F) built up within the cartridge case and firearm during the firing sequence causes the base of the projectile to vaporize. This vapor enters the atmosphere almost immediately after the cartridge is fired.

**Friction** between the bore of the firearm and the fired projectile also causes **vaporization** and **microscopic fragmentation** which enters the atmosphere as gas and particulate.

The **pressure buildup** within the firearm of approximately 18,000 to 20,000 pounds per square inch

Continued on page 3

also causes lead particles to be blown out the sides of the firearm. Cylinder and barrel misalignments (in revolvers) and gaps from wear and manufacturing tolerances also cause projectile fragmentation.

Another source of lead contamination is caused when the **projectile hits the backstop**. Most ranges in use today have been in use for many years. The backstops on these older ranges use smash plate technology. Outdoor ranges generally use earth backstops. These types of backstops tend to cause significant projectile fragmentation. As technology progresses in the area of shooting ranges, we do see several backstop designs being offered today that are designed to minimize or eliminate projectile fragmentation.

On typical indoor and outdoor ranges, projectile fragmentation at the backstop normally does not cause concern due to the distance of the shooter from the backstop during shooting activities. However, on law enforcement ranges where training requires that shooters and instructors remain very close to the backstop during shooting activities, it is a significant concern.

### OVEREXPOSURE CONDITIONS

There are two types of overexposure conditions to lead contaminants: **chronic overexposure** and **acute overexposure**.

**Chronic overexposure** is the slow, continual absorption of lead over a long period of time. This condition is the type of overexposure which we generally see in the shooting industry.

**Acute overexposure** is the absorption of very large quantities of lead contaminants over a short period of time. This condition does not normally occur in the shooting range environment.

### HOW LEAD CONTAMINANTS ENTER THE BODY

Lead enters the body in two ways: **inhalation** and **ingestion**. As discussed, lead contaminants enter the atmosphere during the firing of firearms. When we breathe in these areas of contamination, lead gases and lead particulates can enter the body through the lungs.

Another way that lead contaminants can enter the body is through ingestion. Lead particulate can settle on the top of a cup of coffee, or on top of a pack of cigarettes in a breast pocket, or just on your hands which might then touch your mouth. All of these situations can cause lead to be transferred through ingestion.

The type of lead which we are exposed to in the shooting range industry cannot be absorbed through the skin.

### ASSOCIATED HEALTH RISKS

Lead adversely affects numerous body systems and causes forms of health impairment and disease that arise after periods of

exposure as short as days (acute exposure) or as long as several years (chronic exposure).

Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems. Common symptoms may include:

Loss of appetite	Weakness
Pallor	Nervous irritability
Constipation	Hyperactivity
Excessive tiredness	Muscle or joint pain and soreness
Headache	Anxiety
Fine tremors	Insomnia
Abdominal pain	Numbness
Metallic taste in the mouth	Dizziness

Damage to the central nervous system in general, and the brain in particular, is one of the severe forms of lead poisoning.

According to OSHA, chronic overexposure to lead also significantly impairs the reproductive systems of both men and women. Lead can alter the structure of sperm cells, raising the risk of birth defects, and there is evidence of miscarriage and stillbirth in women exposed to lead or whose husbands have been exposed to lead. Children born of parents who have been overexposed to lead are more likely to have birth defects, mental retardation, and behavioral disorders, or to die during the first five years of childhood.

*(Author's note: The above information on chronic overexposure to lead was supplied by OSHA and is, in my opinion, very suspect.*

*I have no doubt that overexposure can cause reproductive problems as stated. However, I am very curious as to the reason for the increase in mental retardation, behavioral disorders, and the fact that children whose parents are exposed are more likely to die during the first five years of childhood. Is it due to the parents' overexposure and reproductive damage, or is it a case of lead particulate being transferred from the work environment to the home, thereby causing children to become overexposed?)*

You can see that overexposure to lead can cause very serious health problems.

### TO BE CONTINUED

*In the next issue, I will be reviewing the OSHA LEAD STANDARD, and also discussing how it applies to individuals working on a shooting range. In the third and final installment of this article, I will discuss how we, as range workers, can minimize our exposure levels.*



Firing close to the backstop like the situation shown above can cause higher exposure to lead for the shooter and other participants.



# Vision and Shooting

## Part 2: Continued from the spring issue

Edward C. Godnig, O.D., FCOVD

It is important to remember that the sympathetic nervous system can exert its neural messengers either in a focal manner through secretion of noradrenalin or norepinephrine at local end organs (as is the case at the ciliary muscle of the eye's focusing system), or through releasing noradrenalin or norepinephrine directly into the bloodstream to prepare the body for combat.

It is worthwhile to note that during the BAR there are a series of other biochemical and hormonal changes that are activated throughout the body. One example is that the adrenal glands secrete a group of hormones called *glucocorticoids*.

*Cortisol* is the most prevalent of these hormones. Cortisol increases blood sugar levels to contribute energy for muscle function. Research has also correlated decreased learning and decreased memory function, as well as attention anomalies, with increased cortisol levels in the body. These changes in response to cortisol levels increasing during the BAR help explain, in part, why visual memory and visual attention is narrowed during the BAR.

These types of physiological changes that accompany the BAR begin to explain the perceptual changes called *tunnel vision* and *perceptual narrowing*. Humans have an innate tendency to narrow attention upon a threat during extreme stress. It can be argued that learning how to expand peripheral awareness of space can minimize the effects of tunnel vision during the BAR. Other strategies to overcome the tunneling effects of perceptual narrowing will be outlined in the visual training section of this article.

From a behavioral perspective, Dr. A. M. Skeffington (the father of behavioral optometry) theorized that during stress, the human ability to center on a task and identify and maintain meaningful awareness on a specific target is severely hampered. *The Body Alarm Reaction (BAR)* type of stress causes a decline in your ability to derive meaning from your visual memory image due to a perceptual narrowing that accompanies the breakdown of optimal human performance. Skeffington's theory, postulated in the 1940s, has gained strength and understanding during the last half century because much current neurological and psychological research has proven the bulk of his intuitive understanding of human responses to stress.

Other behavioral and performance changes have been reported to be associated with perceptual narrowing. The theory of *perceptual narrowing* suggests that as the level of demand increases on a central, straight-ahead target, there will be a corresponding decrease in the visual area surrounding the central area from which peripheral information can be extracted.

Increased arousal causes increased narrowing of the attentional focus, with a progressive elimination of input from the more peripheral aspects of the visual field.

Another way of viewing tunnel vision is that as stress increases, there is a reduction of cues used to regulate performance. When stress lev-

nature of how visual information travels from the retina to the brain. One pathway (*M-pathway*) is more sensitive to coarse visual forms and images that move quickly. The other pathway (*P-pathway*) is more sensitive to fine spatial details of forms that are stationary or move at very slow rates.

It appears that the P-pathway processes visual information that is dominated by central, detailed labeling of information, whereas the M-pathway processes information dominated by peripheral vision awareness of movement, orientation, and location of visual images.

It may be that these pathways work in a synchronous manner to efficiently process visual

## Humans have an innate tendency to narrow attention upon a threat during extreme stress.

els are further increased, there is a further restriction in the range of visual cues used to sample visual space. Under stress, the useful field of view shrinks, and the amount of processing of visual information is narrowed.

A summary of behavioral changes that are associated with high levels of stress, such as those seen during the BAR, include:

- \* Narrowing of attention span and range of perceived alternatives.
- \* Reduction in problem-solving capabilities.
- \* Oversight of long-term consequences.
- \* Inefficiency in information search strategies.
- \* Difficulties in maintaining attention to fine detail discrimination.
- \* With intense fear, a temporary loss of fine visual-motor coordination (such as eye-hand coordination).

With the possibility of some of the above-mentioned changes affecting shooters during high stress encounters, it follows that a person involved in a combat situation may have difficulty accurately recording and remembering all the details of an encounter.

During the active stages of the BAR, it may be quite difficult to recall with high accuracy and detail the events that have just occurred during a shooting exchange. However, once the high stress has been relieved and a shooter returns to a state of more controlled relaxation, there may be recall of more visual images related to a specific previous combat situation.

Contemporary visual research describes a parallel, dual-processing visual system that is useful in further understanding the complex

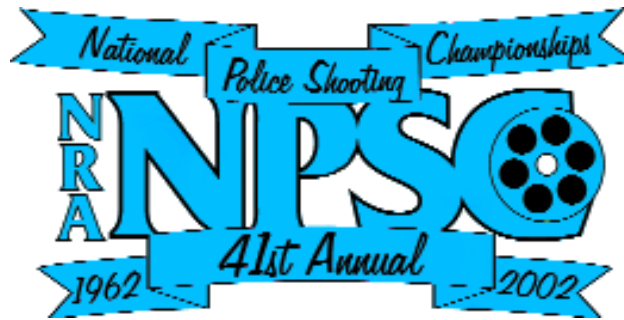
information. Under high stress, there seems to be an imbalance between the P- and M-pathways such that one pathway overrides the other. *Tunnel vision* appears to be related to P-pathway dominance and M-pathway inhibition during the BAR.

There are certain visual attributes relating to object visibility that can help shooters better understand why certain targets are easier to see than other targets.

For example, the size of a target is related to visibility because relatively larger image sizes have the potential to stimulate more retinal cells, resulting in more information being sent to the visual areas of the brain for processing. The chances of a more accurate visual interpretation of the details of the target of interest are thereby increased.

Contrast of a target is a critical variable directly related to ease of visibility. Contrast corresponds to the ability to discriminate a dark visual image from a lighter visual image within a total visual surround. In general terms, *contrast is the relationship between the lighting intensity of two adjacent areas*. A dark target approaching black (having no reflected light) is most easily seen next to a white (reflecting all light) background. Shades of gray that have similar light reflective intensities are most difficult to visually discriminate and separate because the contrast values are most similar. Shading differences, reflective light patterns, and texture gradients are learned behaviors that improve a shooter's ability to recognize contrast.

*Colors* of objects have a direct influence **Continued on page 6**



## 41st Annual National Police Shooting Championships September 23–27, 2002 – Jackson, Mississippi

The National Rifle Association proudly sponsors this premier training event, which serves as a testament to the hard work and effort that officers put forth year-round to enhance their police combat proficiency in order to better serve and protect their communities. Officers from across the country and the world train year-round for the NPSC matches and use it as an accurate indicator of their skill level while practicing the safe use and handling of firearms.

### Over \$200,000 in prizes to be awarded, including over 100 Firearms!

Officers, both public and private - novice to experienced - will compete for honors in both individual and team challenges. The NPSC is strongly supported with donated merchandise from the shooting sports industry. This merchandise is awarded to officers competing at all levels of expertise.

### Does Your Pistol Team Need Financial Support?

NRA has grants available to assist you in obtaining funding for your pistol team to travel to and compete at the annual NPSC. Funding could include travel expenses, food, housing and entry fees. Grants are also available to those interested in hosting Police Pistol Combat Tournaments. Contact our office to receive a Grant Packet.

### New Shooters

All first-time NPSC competitors or those that haven't competed in the last three (3) years will be automatically included in several gun drawings including two custom PPC semi-automatic pistols built by Jerry Keefer and Alan Tanaka. See the NPSC program for details!

### Bring a Partner Program

This is an incentive program to increase participation. If you were at the 2001 NPSC and you bring a competitor to the 2002 NPSC, both you and the new shooter will be included in a drawing sponsored by Heckler & Koch for their new USP40 Compact LEM semi-automatic pistol. You'll also get to shoot one of the service matches for free!!! See the NPSC program for details.

### Complimentary Dinners

A number of complimentary dinners will be held in conjunction with the 2002 NPSC. The dinners are being hosted by: Armor Holdings, Beretta U.S.A., Blackwater Training Center, Davidson's, Safariland, NRA's Community Service Programs Division and the Jackson Police Department. See the NPSC program for details.

### X-Team Challenge

Due to popular demand, the X-Team Challenge will be repeated at the 2002 NPSC and is again sponsored by Springfield Armory. This is a 2-man team competition where all teams will be the equivalent of an Expert rating. Team selection will be done by computer and the top three (3) teams will receive firearms from Springfield Armory.

### Industry-Sponsored Side Events

These are events where your firearm and magazines (except for the SigArms Match...See the Match Program for details) will be issued to you on the firing line. Competitors must provide their own holsters and ammunition. See the NPSC program for details on equipment and course of fire. Three side events are scheduled this year sponsored by FNH, Glock and SigArms.

### New Semi-Automatic Pistol Classification

Officers planning to compete at the 2002 NPSC are encouraged to obtain their classification rating with the semi-automatic pistol. The Individual Championship is an aggregate of both the Revolver and Semi-Automatic Pistol 1500's. If you don't have a semi-automatic pistol classification you'll have to shoot Unclassified - High Master! Contact our office for clarification or additional information.

### Find Out More Today!

For additional information and/or the 2002 Match Program call Patty at (703) 267-1632 or e-mail at [pzollman@nrahq.org](mailto:pzollman@nrahq.org). You may also write to NRA Law Enforcement Activities Division, 11250 Waples Mill Road, Fairfax, VA 22030. For the latest updates please visit our Web site at [www.nrahq.org/law/competitions/npsc/npsc.asp](http://www.nrahq.org/law/competitions/npsc/npsc.asp).

**DON'T LET YOUR DEPARTMENT GO UNREPRESENTED!**

on visibility in daylight (photopic) conditions. In low light (scotopic) conditions, color has no influence on the visibility of a target because rod cell physiology operates during scotopic conditions, and rod cells do not have color discrimination ability. The colors *white* and *yellow* have the highest visibility potential, followed by *orange*, *red*, *green*, and *blue*. Since white reflects all wavelengths of light visible to the human eye, white is highly visible during daylight conditions.

Another visual attribute related to color and contrast is the *brightness* (luminance) of a target. When light falls upon a target, it is absorbed or reflected. The light reflected by a target is what the eye senses if the light is of sufficient intensity to stimulate the cones and rods. Materials that reflect or radiate the highest amount of light are most easily seen by the human visual system. Brightness is a shooter's subjective appreciation of the intensity of light entering the eye. However, glare (an excessive amount of light that serves no purpose) can be counterproductive to ease of visibility.

*Movement* of a target improves the ability to detect a figure from its surroundings. However, as the speed of a target increases, the ability to distinguish details of the target decreases. It follows that once you fixate upon a target, the chances of engaging and discerning details of the target with precise eye-hand-mind coordination improves as the target speed slows towards becoming stationary.

*Fixation control* is the ability to maintain steady and accurate eye position upon a stationary target. Many visual factors influence improved fixation control, such as high contrast of the target, color and size of the target, and flexible eye focusing skills.

Fixation control begins to deteriorate after a few seconds of steady fixation because the eye has an innate tendency to continually scan and move to change retinal areas of stimulation. Also, the ability to follow a moving target (*pursuit movements*) uses other neurological controls than does fixation control. Pursuit movements, as well as fixation control, improve as the quality of the target's contrast and brightness increases.

The following visual skills are important for shooter speed and accuracy of aim:

\* **Visual acuity:** Both static visual acuity (discerning detail of a stationary target) and dynamic visual acuity (discerning detail of a moving target) are important to a marksman. Good dynamic acuity will enhance a shooter's visual reaction time and eye tracking abilities.

\* **Peripheral vision:** Skillful shooters have reported a visual ability of maintaining an awareness of a central target while simultane-

ously maintaining a vast amount of peripheral visual awareness. A fully functioning visual system is capable of responding to objects located within a total visual field (which for each eye is approximately 40 degrees up, 60 degrees toward the nose, 70 degrees down and 90 degrees towards the temple measured from a central point of fixation). It is critical that shooters are aware of what is beyond and around the target to insure safety, and peripheral vision awareness is crucial to achieve this task.

\* **Depth perception:** An essential skill for the shooter who needs to judge relative distances between targets.

\* **Eye motility:** Eye tracking abilities are crucial to maintain accurate detail and awareness of any moving target. This skill is highly critical if a marksman needs to shoot a moving target.

\* **Eye-hand-body-mind coordination:** A necessary set of visual coordinated abilities that are used in developing precise trigger control while maintaining precise aim on target.

\* **Visualization:** The ability to use your mind's-eye to create a mental visual picture when direct view of a target may not be possible. This highly developed visual skill is useful to anticipate where a target or adversary is most likely to be located during episodes of lack of direct vision.

\* **Speed of recognition time:** Extremely important when a target may be only visible for a brief moment in time. The ability to accurately recognize as much of a target as possible in as little as 0.01 seconds can be critical in deciding to shoot, or not shoot, a target.

\* **Eye focusing flexibility:** This ability plays an extremely important part in a shooter's ability to quickly adjust focus upon targets that are located in different distances in space. The speed and flexibility of quickly changing eye focus from one point in space to another point in space has a direct influence on maintaining clear, single binocular vision while in a shooting competition or in combat.

\* **Color perception:** May prove to be a useful skill when confronted with the need to engage targets of specific coloring.

\* **Fixation ability:** Necessary to establish *sight picture* awareness and consistency.

\* **Visual memory:** Used to embed the learning elements of training in order to help skills reach the point of automaticity. Training to the point of automaticity implies that the speed of processing and performing a set of skills is fast, that there is a relative lack of effort to perform a skill, and that the skill is autonomous such that it may be initiated and run completely on its own without an active voluntary conscious

thought process. The automaticity realization of shooting skills is useful in avoiding visual perceptual overload that can result in confusion in target recognition.

\* **Central-peripheral awareness:** The ability to have awareness of central details of a target and simultaneously be aware of the visual space surrounding the target (the peripheral space around the target). This skill helps a shooter avoid getting locked into tunnel vision for extended periods of time.

What is exciting to report to shooters about the above-mentioned visual skills is that almost all of these skills (except for color vision) have a *learned component* involved in the acquisition of the skill, and this learned component can be trained to improve.

Not only are there testing procedures to determine how well these skills have developed and how efficiently they function, but there is emerging a growing body of visual training techniques which may enhance performance in those visual skills that are important for shooting.

*Sports visual training is the optometric art and science of fine tuning and enhancing visual skills and abilities.* Sports vision practitioners are designing exercises and learning opportunities to enhance and fine-tune visual skills used during shooting.

Why are some shooters able to maintain visual-motor (eye-hand) accuracy despite the high arousal seen during BAR that usually leads to lower visual focusing control? There are various models to help explain this paradoxically confusing relationship of visually monitored marksmanship control during the BAR. The one consistent thread that is part of most explanations is *professional, comprehensive firearm sports training, and knowing when and how to implement this training with confidence.*

Current neurobiological biofeedback research has clearly demonstrated that humans can be trained to control certain autonomic nervous system functions. This research implies that with proper training, particularly under stressful conditions, a well-established image of proper visual spatial alignment can be maintained as a consistent eye-hand-body-mind coordinate system. Shooters who can maintain sufficient and efficient eye-hand-body-mind coordination control and adequate visual attention during BAR will be capable of accurate marksmanship during high combat stress.

It is becoming increasingly evident that you can learn to *visualize* a visual image even without having direct accommodation (direct focus) on the object of regard. The ability to visualize and develop improved eye-hand-body-mind coordination skills

**Continued on page 7**

can be trained using a variety of visual training techniques.

An example of a sports visual training exercise is *flash recognition training*. This type of training is designed to improve a shooter's ability in the areas of speed of visual recognition time and short-term visual memory. The goal of this technique is to accurately perceive and retain visual information in increasingly shorter and shorter periods of time. One behavioral outcome of this type of training may be increased visual attention to increasingly complex visual stimuli.

During World War II, optometrists used flash recognition training to teach airplane recognition to U.S. Navy pilots. This training reinforced optimal *visual posturing* (the posture of every body part whose adjustment affects vision).

A 1995 research report discussed a three-month visual training program conducted with

the Catalan Government Special Intervention Squad at the Olympic Training Center in Spain. Pre-test and post-test results were compared for pistol shooting performance and visual function. Statistical analysis revealed significant gains in visual function and pistol shooting scores after the visual training program.

Another example of visual training is *biofeedback training*. Using an instrument that allows you feedback as the relative stimulation or relaxation of the eye focusing muscle (ciliary muscle) can exert a carry-over effect during intense shooting competition. A learned behavior of voluntarily stimulating a positive accommodation (parasympathetic response) during the BAR can act as a counter force to the negative accommodation response to the sympathetic nervous system stimulation during the BAR.

*ABOUT THE AUTHOR:* Edward C. Godnig, O.D., FCOVD, is a 1976 graduate of the New England College of Optometry in Boston,

Massachusetts. He maintains a private practice of optometry specializing in behavioral optometry. Behavioral optometry is a clinical discipline that diagnoses and treats visual skills and abilities that have an impact on learning and movement behaviors.

Dr. Godnig has a particular interest in enhancing the ability of shooters to use their visual system to improve marksmanship. He has developed visual training exercises for shooters to improve the skills necessary for fast and accurate shooting.

For more information on visual training seminars for individuals or groups of marksmen, contact Dr. Godnig by e-mail at [godnig@attbi.com](mailto:godnig@attbi.com). Dr. Godnig also acts as a consultant to law enforcement professionals specializing in the areas of visual perception and visual attention. He welcomes inquiries about his visual enhancement programs and consulting services.



## 2002 NRA Law Enforcement Instructor Development Schools



E-Mail Address: [LEAD@nrahq.org](mailto:LEAD@nrahq.org)

Web site: <http://www.nrahq.org/law>

School tuition - \$450.00

### HANDGUN / SHOTGUN INSTRUCTOR

July 8-12	E. Brunswick, NJ
July 22-26	El Dorado, KS
Aug. 5-9	Trinidad, CO
Aug. 19-23	Vancouver, WA
Sept. 9-13	Boise, ID
Sept. 30-Oct. 4	Fredericksburg, VA
Sept. 30-Oct. 4	Las Vegas, NV
Oct. 14-18	Evansville, IN
Oct. 14-18	Muscle Shoals, AL
Oct. 21-25	Baton Rouge, LA
Oct. 21-25	St. Charles, MO
Nov. 4-8	Pearl, MS
Nov. 18-22	Pittsburgh, PA

### TACTICAL HANDGUN INSTRUCTOR

July 15-19	Vancouver, WA
July 15-19	E. Brunswick, NJ
July 15-19	Palmyra, PA
Aug. 5-9	Burbank, CA
Aug. 12-16	Rochester, MN
Sep.30-Oct. 4	Pearl, MS
Oct. 7-11	Fredericksburg, VA
Oct. 21-25	Las Vegas, NV
Nov. 4-8	Phoenix, AZ

### TACTICAL SHOTGUN INSTRUCTOR

Sept. 9-13	Palmyra, PA
Nov. 18-22	Panama City, FL

### PATROL RIFLE INSTRUCTOR

July 8-12	Fredericksburg, VA
July 22-26	Keene, NH
Aug. 5-9	Castle Rock, CO
Aug. 26-30	Lubbock, TX
Sept. 16-20	Kennedy Space Ctr., FL
Sept. 23-27	Kingman, AZ
Oct. 7-11	Palmyra, PA
Oct. 28-Nov. 1	Selma, AL
Oct. 28-Nov. 1	Las Vegas, NV
Oct. 28-Nov. 1	N. Little Rock, AR

### PRECISION RIFLE INSTRUCTOR (SCOPED)

July 15-19	Fredericksburg, VA
Aug. 12-16	Castle Rock, CO
Sept. 23-27	Kennedy Space Ctr., FL
Sept. 30-Oct. 4	Selma, AL
Oct. 7-11	Sandusky, MI
Nov. 18-22	Las Vegas, NV

### SELECT-FIRE INSTRUCTOR

Aug. 26-30	Ventura, CA
Sept. 30-Oct. 4	Columbia, SC
Oct. 21-25	Phoenix, AZ
Dec. 9-13	E. Brunswick, NJ

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