The Anatomy Of Fear and

How It Relates To Survival

Skills Training

" Research is to see what everyone else has seen, and think what no one else has thought"

Albert Szent-Gyorgy (Nobelish 1927)

Integrated Street Combatives

The Anatomy Of Fear and How It Relates To Survival Skills Training

An officer assigned to jail duty conducts a prisoner bed check when he observes that a male, who was lodged in the drunk tank, was laying face down not breathing in a corner of the cell. The officer attempts to verbally arouse the prisoner, but these attempts fail. The officer now believing that the prisoner is dead, proceeds into the cell, bends over and grabs the prisoner by his left shoulder in an attempt to roll him over. At this point in time the prisoner, spontaneously and by complete surprise, quickly rolls towards the officer, and with his right hand, swings towards the officerôs face. The officer ñinstinctivelyò pulls both of his arms in to protect his head, and moves backwards. The suspect has now moved to his feet, and again lashes out towards the officer with what the officer ñperceivesò to be a big right hooking punch, at which time the officer again puts his hand up to cover his head, crouches and again moves backwards away from the threat. The officer only now realizes that he is bleeding profusely, but doesnôt know why. The prisoner now lunges at the officer a third time, with a straight liner punch, at which time the officer sees the shinning glimmer of a metal object in the prisoners right hand. As this third attack makes contact with the officer, he instinctually attempts to push the prisoners hands away from his body, but contact is made resulting in a puncture wound to the officerôs chest area. The officer now realizing that he is in an edged weapon encounter, and cut several times, disengages from the cell area to call for help.

The above noted scenario happened to a police officer in my department in 1992. Although this officer had received training in edged weapon defence, and was one of the more officer safety conscious members of the department, he could not make his training work. Based upon the officers reaction to this spontaneous attack, I began to wonder if the ñinstinctualò physical reactions to this attack, which were totally different from the training he received up to that point in time, would be experienced by other officers as well, if placed into a spontaneous attack situation in which they had no idea that an attack was going to occur.

Iôm a big believer in, ñdonôt tell me, show meò so in early 1992 I conducted an empirical video research study. I had 85 police officers participate in a scenario based training session where unknown to them, they would be attacked with a knife. The attacker, who was dressed in a combatives suit, was told that during mid contact, they were to pull a knife (that they had concealed), flash it directly at the officer, yell ñIôm going to kill you pig,ò and then engage the officer physically. The results were remarkable:

- 3/85 saw the knife prior to contact
- 10/85 realized that they were being stabbed repeatedly during the scenario
- 72/85 did not realize that they were being assaulted with a knife until the scenario was over, and the officers were advised to look at their uniforms to see the simulated thrusts and slices left behind by the chalked training knives

When I reviewed the many many hours of videotape of the above noted scenarios, I also made two very important and interesting observations in how the majority of officers reacted to the spontaneous attacks:

- most flinched, bringing both hands up to protect their head while crouching at the same time, and attempted to disengage from the attacker by backing away from the threat. This usually resulted in the attacker closing the gap quite quickly with their victim
- Those officers that did engage the threat immediately, proceeded to effectively block the initial strike of the attacker and then immediately grappled with the attacker using elbows and knee strikes

After making these observations, I asked myself why I was seeing these reactions. During this 1992 research project, I had the opportunity to read an article authored by Bruce Siddle and Dr. Hal Breedlove entitled, ñ Survival Stress Reaction.ò In this article Siddle and Breedlove stated:

ñé research by numerous studies provide two clear messages why people will place themselves in bad tactical situations. The common phenomena of backing away under survival stress results from the visual systems deterioration of the peripheral field to attain more information regarding threat stimulus. Since the brain is demanding more information to deal with the threat, he officer will invariably retreat from the threat to widen the peripheral field. Secondly, the brains normal ability to process (analyze and evaluate) a wide range of information quickly is focused to specific items. Therefore, additional cues, which would normally be processed, are lost. This explains why people can not remember seeing or identifying specific facts which were relatively close to the threat.ò

The research by Siddle and Breedlove not only confirmed my findings, but also answered why our officers were acting this way. It also explains why one officer, who had actually caught the attackers knife hand with both of his hands and was looking directly at the knife, stated ñI didnôt see any knife.ò It was not until I showed the video replay that he believed there was a knife.

In 1995, Bruce Siddle released his first book entitled, ñSharpening The Warriorôs Edge The Psychology and Science Of Training.ò In my opinion, Siddlesôs published works began to answer a lot of the questions that I asked during my experience with, and empirical research into combatives

The first real studies in the area of Survival Stress Reaction (SSR) as it related to combat performance, were conducted in the 1930ôs. This study noted that soldiers, who were sending Morse code (fine/complex motor skill) during combat situations, had much more difficulty in doing so when compared to non-combat environments. The next real research in SSR came during the Vietnam War as it related to the location of buttons and switches in fighter cockpits. As a result of this research, cockpits were reconfigured to

take SSR into affect, as it specifically related to eye/hand co-ordination during combat situations.

Although much of the early research surrounding SSR was conducted by the military during times of war, recently (from about the mid-1960ôs to present time) a lot of research has been conducted in SSR as it relates to athletic performance.

Siddleôs definition of SSR as it relates to combat is: ña state where a óperceivedô high threat stimulus automatically engages the sympathetic nervous system.ò The sympathetic nervous system is an autonomic response process which, when activated, one has little control of.ò Why is SSR so important when it comes to combat/self protection? Because when activated, SSR has both a psychological and physiological effect to the body which could affect oneôs perception of threat in a negative way. So what are some of these effects according to Siddleôs research?

a) <u>Increased Heart Rate:</u>

- We know that SSR is directly related to an increased heart rate
- At 115 beats per minute (bpm) most people will lose fine complex motor skills such as finger dexterity, eye/hand co-ordination, multi-tasking becomes difficult
- At 145 bpm, most people will lose complex motor skills (3 or more motor skills designed to work in unison)

b) <u>Effects To Visual System:</u>

- The visual system is the primary sensory organ of the body for those of us that can see, due to the fact that the visual system sends information to the brain that is needed during combat/self-protection
- At approximately 175 bpm, a person will experience an eye/lid lift, pupils will dilate and flatten. As this reaction takes place, a person will experience visual narrowing (commonly known as tunnel vision). This is why it is very common for a person to back up from a threat in order to get more information through this tunnel. I t is also at this point in time, that a person becomes ñbinocularò rather than ñmonocular.ò This is why in Close Quarter Battle (CQB) shooting, I teach two eye ñbinocularò shooting rather than one eye aimed shooting.
- At 175 bpm, visual tracking becomes difficult. This is very important when it comes to multiple threats. During multiples, the brain will want the visual system to stay with what it sees to be the primary threat. Once this threat has been neutralized, the brain and visual system will then find its next threat. This is commonly known as the ñlight houseò effect. Studies have found that a person in SSR will experience on average about a 70% decrease in their visual field. This is one reason why in combat, we need to teach students to constantly be scanning their environment, looking for the second and third opponent.
- At 175 bpm, it also becomes difficult to focus on close object. One of the first things to go under SSR is depth perception. A fighter WILL become far sighted rather than near sighted. This is why it is very common for people experiencing

SSR to say that the threat was either closer or father away from where they actually were. Studies in SSR have shown that binocular fighting/shooting will improve oneôs depth perception by 20-30%

c) <u>Effects To The Auditory System:</u>

- At approx 145 bpm, that part of the brain that hears, shuts down during SSR. This is one reason why it is not uncommon for fighters to say, ñI didnôt hear that,ò ñ I heard voices but I couldnôt understand what they were saying,ò or ñI heard bits and pieces,ò and ñ I didnôt hear a gun shot.ò

d) <u>Effects To The Brain:</u>

- At approx. 175 bpm, it is not uncommon for a person to have difficulty remembering what took place or what they did during a confrontation
- This recall problem is known as ñCritical Stress Amnesia.ò After a critical incident, it is not uncommon for a person to only recall approx 30% of what happened in the first 24 hours; 50% in 48 hors; and 75-95 % in 72-100 hours.
- At 185-220 bpm, most people will go into a state of ñhypervigilance,ò also commonly known as the ñdeer in the headlightsò or ñbrain fart mode.ò It is not uncommon for a person to continue doing things that are not effective (known as a feedback loop) or to show irrational behavior such as leaving cover. This is also the state in which people find themselves in when they describe that they can not move, yell, or scream. Once a person is caught in a state of hypervigilance, it is a downward spiral that is very tough to get out of. Once caught in a state of hypervigilance information on the threat is reduced to the brain, which leads to increased reaction time. This increased reaction time then leads to a heightened state of stress that further exacerbates hypervigilance.

e) <u>Effects To Motor Skill performance</u>

- At approximately 115 bpm, fine/complex motor skills become less available/effective (pulling a trigger, handling a knife), but gross motor skills turn on and become optimized

So why is this information so important? Because Siddleôs research has found the higher the heart rate, the more SSR will affect oneôs perception of threat. It is this ñperceptionò of threat that dictates oneôs response options.

In a study conducted by Dr. Alexis Artwohl (author of <u>Deadly Force Encounters</u>) between the years of 1994-1999, she interviewed 157 police officers that were involved in deadly force shootings. Dr. Artwohlôs study revealed the following results specific to ñperceptionò issues:

- 84% experienced diminished sound (auditory exclusion)
- 79% experienced tunnel vision (peripheral narrowing)

- 74% experienced ñautomatic pilotò with little or no conscious thought
- 71% experienced visual clarity
- 62% experienced slow motion time
- 52% experienced memory loss for part of the event
- 46% experienced memory loss for some of their own behavior
- 39% experienced dissociation; sense of detachment or unreality
- 26% experienced intrusive distracting thoughts
- 21% experienced saw, heard, or experienced memory distortion
- 17% experienced fast motion time
- 07% experienced temporary paralysis

Dr. Artwohlôs research is also echoed by other researchers (Soloman and Horn 1986; Hoenig and Roland 1998; and Klinger 1998), who found the same ñperceptionò issues.

One must remember that in combat, a personôs heart rate can go from 70 bpm to 220bpm in less than half a second. So what is the ñcombat maximum performance rangeò when it comes to SSR and heart rate? In his studies, Siddle found that it is between 115-145 bpm. Siddle also found that a fighterôs ñmaximum reaction time performance rangeò is also between 115-145 bpm. In other words, the 115-145 bpm range is where fighting skills (gross motor) and reaction time are maximized.

As I said earlier, SSR is an autonomic response, which happens without conscious thought. Having said this, Siddle in his research has found that a person can manage SSR to attain that peak 115-145 bpm range in the following ways:

1) **Skill Confidence:**

    - This takes place through both mental and physical training

2) **Experience Through Dynamic Simulation Training**

    - Experience increases and builds confidence - reduces ñnewnessò of stimulus
    - Training should be ñrealisticò stimulus/response based
    - The more real the training experience (stimulus) the better

3) **Visualization (mental imagery)**

    - Commonly known as ñspinal tuningò we now know that the upper part of the spinal column holds a short-term memory.
    - This is one reason why I have taught our Victoria Police Departmentôs Emergency Response Team (ERT) to visualize both their plan ñAò strategy and plan ñBò strategy as they are enrout to their target.

- Remember that the mind can not easily tell the difference between fantasy and reality. The more one uses mental imagery, the more one becomes spinal tuned to deal with the task at hand.
- As a certified hypnotherapist, I use the science and art of hypnosis and Neuro Linguistic Programming (NLP) to pre-program stimulus/response issues directly into the subconscious, specific to combat performance. Not only have I have seen a DRAMATIC increase in combative performance in those students in which I am using hypnosis and NLP, but I am also experiencing about a 50% decrease in the amount of time needed to make a student unconsciously competent in the skill set taught, when compared to those who I have not conducted this type of training. In fact, I truly believe that hypnosis and NLP specific to combatives, will be the next nexus in training.

4) <u>Breathing</u>

- This skill has been used in the martial arts for thousands of years
- Known as autogenic breathing
- One wants to breath in through their nose for a three count, hold for a two count, and then breath out through the mouth for a three count. Studies have found that if a person was to do this for a 3-cycle count, it decreases oneôs heart rate up to 30% for up to 40 seconds. Again remember that heart rate is directly related to SSR. If a personôs heart rate was sitting at around 175-220 bpm, autogenic breathing would help bring them back down into that target range of 115-145 bpm.
- I have also taught this skill to our departmentôs ERT team. While they are doing their spinal tuning, they are also conducting autogenic breathing drills at the same time. Our ERT team has conducted a lot of empirical and ñreal worldò operations where they placed heart monitors on team members that have proven this de-escalation in heart rate.

5) <u>Value Of Life:</u>

- In our society a personôs life is considered to be precious. In fact, most of our morals and laws are based upon protecting oneself and others against serious injury or death.
- In a self defence situation, one may have to seriously injury or even kill another human being.
- Although a reality, many people involved in combatives training have not ñreallyò internalized or even thought about this. Because of oneôs ñbelief system,ò to kill or seriously injure another person is as foreign to them as committing suicide.
- If one does not come to grips with this issue one will fail to act in such a situation

6) <u>Belief In Mission / Task At hand:</u>

- If you do not believe in the mission or task at hand, or if the risks outweigh the ultimate benefit to you/society, you WILL hesitate in combat
- One who hesitates in combat, will usually levitate (12 feet under or be seriously injured)

7) <u>Faith System:</u>

- You do not want to go into combat without having things resolved
- Both the ancient samurai and the kamikazeøs during WWII understood this important rule
- Even in our modern times, there are certain special warfare teams around the world that are allowed to make peace with their deity prior to mission
- A strong faith system, whatever that faith system may be, MINIMIZES the fear of dying. As a graphic example of this, look at the events of September 11th and how the terrorists were not afraid to die and thus were able to carry out their mission. Also, look at what is happening in Israel right now with suicide bombers!
- Remember, combat is not the place for you to be making major adjustments to your belief system. You need to be concentrating on the task at hand and nothing else. Not to do so places yourself in jeopardy.

8) <u>Training:</u>

- Training for combat ñmustò be gross motor based. Why? Because we know that during combat, SSR will negatively effect fine/complex motor skill performance no matter how well trained!
- For any skill taught, there must always be a plan ñBò abort strategy conditioned as well. We must not be teaching multiple defences (responses) to a specific type of attack (stimulus). The reason for this is HICKS LAW!
- Hicks Law basically states the following: the average reaction time given one stimulus one response is about ½ second. If we now teach a student a second technique (response) to the same attack (stimulus) we WILL increase a personøs reaction time by 58%. On the street we want to DECREASE reaction time, not increase it. If we teach multiple defences to one specific attack, the brain will take time deciding which option to use. This increased reaction time could mean the difference between life and death.
- Instructors should always teach a new technique in slow motion. Why? It allows the studentøs brain time to observe the technique and begin the ñsoft wiring processò which becomes ñhard wiredò through physical and mental training in conjunction with repetition, as long as it is gross motor skilled.
- All physical skills should be chunked or partitioned into progressive steps, rather than taught all at once. Many instructors when teaching a physical

techniques will have the students practice the entire technique from beginning to end when first learning the specific skill set. This is a huge mistake. Remember that the brain first learns in pictures and through modeling. By teaching a technique from A to Z all at once, the student may not fully develop the proper and full ñmental pictureò needed to perform the technique properly which usually leads to frustration by the student. Teachers, coaches, and instructors must insure that the student understands step A fully, then move onto step B. Once step B is understood move on to step C and so on. By doing this, frustration goes down, while confidence and skill level go up.

- Once the skill sets are learned, they must now be applied in dynamic training in order to make the stimulus/response training as real as possible. Again, the more the real the training, the better-prepared one becomes for the reality of the street.

It must be noted, that most of Siddleôs pre-1995 published work, with regard to motor skill performance, was based upon the research of leading sports psychologists. Prior to 1995, most of the research surrounding motor skill performance used fluctuations in heart rate to measure performance, due to the fact that it was the only biological mechanism that was ñmeasurableò via scientific testing protocol at the time. Although Siddleôs research (based upon his book ñSharpening The Warriors Edgeò) has brought to light the physiological effects to the emotion of fear such as increased heart rate, fine complex motor skill deterioration, and what we can do as instructors to limit the effects of SSR during combat, it did not fully explain why and how the brain learned and responds to the emotion of fear, thus triggering SSR. To me, this is the key question to be answered if oneôs combative system or style is going to be able to consistently deal with an unexpected spontaneous assault, be it unarmed or armed. In other words, are our brains hardwired to the point where a trained response, no matter how well ingrained, be overridden by a more powerful ñinstinctualò response? If the answer to this question is yes, can this instinctual response be changed, molded, or integrated into a combative context?

Research into this question, specific to Survival Skills Training, has really been non-existent. Having said this, neuroscientific research into how the brain learns and responds to the emotion of fear, has taken off over the past few years, due mainly to brain mapping technology such as MRIôs. One of the more significant researchers, Dr. Joseph LeDoux of New York University, has led the way in tracing brain circuitry underlying the fear response in animals/ mammals, which have been directly correlated to humans as well. It is because of Dr. LeDouxôs pioneering research, that the neural pathways and connections that bring upon the effects of SSR are now being understood.

Dr LeDoux has stated, ñfear is a neural circuit that has been designed to keep an organism alive in dangerous situations.ò Through out his research, Dr. LeDoux has shown that the fear response has been tightly conserved in evolution through out the development of humans and other vertebrates. According to most in the Neuroscience field, the areas of the brain that deal with fear are located in the phylogenetically old

structures commonly known as the ñreptilian brain.ò Dr. LeDoux believes based upon his research that, ñlearning and responding to stimuli that warn of danger involves neural pathways that send information about the outside world to the amygdalya, which in turn, determines the significance of the stimulus and triggers emotional responses like running, fighting, or freezing, as well as changes in the inner workings of the bodyøs organs and glands such as increased heart rate.ò This statement explains to me, the correlation between SSR and heart rate increase as reported by Siddle in his research.

Siddleøs research drew a direct correlation between SSR and heart rate increases. The problem with this assumption is that for people such as runners who can have very high heart rates, SSR does not take effect. Why, the runnerøs high heart rate is caused by physical exertion, and not the emotion of fear caused by a spontaneous or immediate threat to body or life, which triggers the neurological response of the brain and more specifically, the amygdala, which in turn begins the SSR process. This also explains why instructors, who have attempted to mirror Siddleøs research through hooking students up to heart monitors like those worn by runners, and then subjecting them to physical exertion exercises like pushups and wind sprints, have failed to see any fine complex motor skill deterioration. It should also be noted, that even Siddle acknowledges the fact, primarily due to Dr LeDouxøs post-1995 research, that heart rate increase is nothing more than a ñthermostatò or ñindicatorò of a perceived stress level, and is ñnotò the driving force of performance deterioration.

Dr LeDoux has also found, ñthere are important distinctions to make between emotions and feelings. Feelings are ñred herrings,ò products of the **conscious mind,** labels given to unconscious emotions, whereas emotions are distinct patterns of behaviors of neurons. Emotions can exist of conscious experiences as well as physiological and neurological reactions and voluntary and **involuntary** behaviors.ò I believe the important thing to take from this statement is that the emotion of fear is an unconscious process that has been blueprinted at the neurological level, and when triggered, has physiological reactions that we may have little, if any, control over, but which can be molded.

Dr. LeDoux has also discovered that the components of fear go way beyond feelings and emotions. According to Dr. Ledoux it is also the specific memory of the emotion. A fellow Neuroscientist, Dr. Doug Holt expanded upon this fact and said, ñafter a frightful experience, one can remember the logical reasons for the experience (i.e., the time and place) but one will also feel the memory, and his body will react as such (i.e. increased heart rate and respiration rate, sweating).ò This is why it is not uncommon for a survivor of spontaneous assault to not only vividly remember each detail, but also when doing so, their body reacts as though they were reliving the experience. This is another reason why I believe that guided imagery, when used appropriately and professionally, will be the next nexus in combatives training. Although not all scientific research makes this particular distinction between emotions and feelings, most would agree that the fear response involves more than just the physical preparation for ñfight, flight, or hypervigilance.ò This initial, physiological response is followed by a slower, more detailed psychological assessment of the dangerous situation being faced, during which the individual becomes conscious of feeling afraid

So what happens in our brain when the emotion of fear is triggered? According to Dr. LeDoux and other Neuroscientist, once the fear system of the brain detects and starts responding to danger (primarily the amygdala which receives input directly from every sensory system of the body and can therefore immediately respond), and depending upon fear stimulus intensity, the brain will begin to assess what is going on, and try to figure out what to do about it using the following process:

- Information of the threat stimulus is detected via the senses of the body; sight, sound, touch, smell, taste
- Information from one or all of these senses is then routed to the thalamus (a brain structure near the amygdala that acts like an air traffic controller or a mail sorting station that sorts out incoming sensory signals)
- In a non-spontaneous threat situation, the thalamus will direct information received to the appropriate cortex of the brain (such as the visual cortex) which consciously thinks about the impulse, assessing the danger, and making sense of it. This is where the O.O.D.A. loop begin (Observe, Organize, Decision, Action)
- Once a decision has been made as to what to do, the information is then downloaded to the amygdala which creates emotion and action through the body to either perpetuate a physical response or to abort a physical response

Again, this process takes place in non-spontaneous type situations. This neuro pathway is commonly called the ñhigh road.ò This is the pathway in which most combatives instructors teach too. In other words:

- Person throws a right hooking punch which is seen and detected by the visual system
- Visual system downloads this stimulus to the thalamus that sorts it and send it to the visual cortex of the brain
- Visual cortex using the OODA loop, observes the stimulus, organizes it (right hooking punch), makes a decision as to how to deal with stimulus and then downloads the response to the amygdala
- Amygdala then creates emotion and action through the body and the punch is blocked

This is what Siddle and others have called stimulus/response training. A threat stimulus triggers a trained response is the goal, as long as that trained response is gross motor based and takes into consideration Hicks Law, as mentioned earlier in this article. Siddle has stated, ñan automatic response to a specific threat can only occur when the students practice a skill in conjunction with a specific level of threat. For a response to be conditioned or an automatic response, there must be an associated stimulus which triggers the response. Therefore, if a survival motor program is expected to be automatic to a threat in the field, the two must be combined early in the studentôs training.ò Although I do agree that we as instructors should be focusing our training at the development of automatic responses to a specific threat stimulus, what happens if those trained responses are not congruent with the bodyôs hardwired response during an unexpected spontaneous assault? Does it not make logical sense that we as trainers

should teach a physical response that would be congruent with what the brain has preprogrammed itself to do through millions of years of evolution?

Again, the answer to this question is a definite yes, and Dr. LeDoux has been able to prove scientifically why. Dr. LeDoux has found that frightening stimuli trigger neuronal responses along dual pathways. The first path is the one mentioned above ñthe High Road.ò The second path is known as the ñlow road,ò and this is the path that the brain ñWILLò follow in a spontaneous surprise attack for survival:

- In a spontaneous surprise attack, information received by the thalamus is quickly re-routed to the amygdala bypassing the cortex (the thinking brain in which OODA is followed)
- The amygdala immediately sets SSR (autonomic arousal) into effect with the added benefit of what neuroscientists have called ñSomatic Reflex Potentiationò also commonly known as the ñstartle circuitò or ñprotective reflexò (i.e., an exaggerated startle/flinch response). Other protective reflexes include: sneezing, eye blinking, gag reflex, pulling away from a pain stimulus, laryngospasm (closing of the airway to prevent water into the lungs)
- After passing directly through the amygdala, which initiates SSR and Somatic Reflex Potentiation, sensory information is then sent to the cortex.
- Once the cortex has received this information, the frightening stimulus is then examined in detail to determine whether or not a real threat exists. Based upon this information, the amygdala will be signaled both to perpetuate the physical response and deal with the threat or abort action. Because the amygdala is aroused before the cortex can accurately assess the situation, an individual will experience the physical effects of fear even in the case of a false alarm. The ñlow roadò has already prepared the body for immediate action.

Knowing that the brain has a dual pathway to deal with what I like to call progressive and spontaneous fear stimuli, Dr. LeDoux has stated, ñthere are problems associated with the double wiring between the higher cortex and the amygdala. Unfortunately the neural connections from the cortex down to the amygdala are less well developed than are connections from the amygdala back up to the cortex. Thus, the amygdala exerts a greater influence on the cortex than vice versa. Once an emotion has been turned on, it is difficult to exert conscious control over it at will.ò What this means to me is that in an unexpected spontaneous attack, if you are training motor skills that are not congruent with what the amygdala will cause the body to do, more specifically the ñSomatic Reflex Potentiationò no matter how well trained the response, it will be overridden. But many in the combatives field believe that we can make a trained response the dominant response through repetition and training using stimulus/response training methods. In a ñhigh roadò scenario this will work given SSR issues and Hickôs law, but in a ñlow roadò scenario, the answer will only be ñyesò as long as the motor skill taught is congruent with the automatic protective reflex the amygdala will cause the body to take.

To demonstrate the importance of this ñcongruencyò issue, an empirical study that examined 98 shooting scenarios that were either spontaneous or non-spontaneous in

nature, firearms instructor, Westmorland (1989), compared two shooting styles/systems (Weaver and Isosceles) to see which one was more suitable during times of what Westmorland called ñCombat Stress.ò In this study, Westmorland utilized dynamic scenarios based training with dye marking rounds. It should be noted that the majority of the officers involved in this study were ñWeaverò practitioners. The results of the study:

Spontaneous under 10 feet: 39 total scenarios

96.7 % Isosceles (29 events)

3.3% Weaver (1 event)

62.1% one-handed stance (18 events)

23.1% failed to respond (9 events)

Spontaneous over 10 feet: 27 total scenarios

92.6% Isosceles (25 events)

7.4% Weaver (2 events)

14.8% One-handed stance (4 events)

Non-spontaneous under 10 feet: 27 total scenarios

74.1% Isosceles (20 events)

25.9% Weaver (7 events)

Non-spontaneous over 10 feet: 5 total scenarios:

60.0% Isosceles (3 events)

40.0 Weaver (2 events)

Westmoreland study results:

56.1% two-handed Isosceles stance (55 events)

12.2% one-handed stance (12 events)

22.5% two-handed Weaver Stance (22 events)

9.2% officer failed to respond

Westmorelandôs study created quite the debate in the Weaver vs. Isosceles shooting camps, and stood alone until 1997 when a respected firearms instructor by the name of Bill Burroughs (former assistant Director of the Sigarms Training Academy) conducted a similar study. In Burroughs study, he asked two very important questions:

- ñWhat does the average trained officer resort to when faced with a simulated and spontaneous life threatening assaultò and;

- ñHow does this response compare to the officerôs previously trained shooting stance.ò

Burroughs empirical research study involved 157 officers:

- 47% were Weaver trained shooters
- 17% were Isosceles trained shooters
- 32% stated that they used a ñnaturalò stance

In Burroughs study, all 157 officers were placed into 188 life threatening dynamic training scenarios, which utilized Simunition technology. When Burroughs reviewed the findings of his research, he found what once officers were placed into a dynamic/spontaneous-shooting situation, the above noted percentages changed dramatically:

- 59% of the 157 officers adopted an Isosceles stance
- 19% of the 157 officers adopted a Weaver stance
- 7% of the 157 officers adopted a ñnaturalò stance
- The rest did not respond at all.

Another very interesting observation that Burroughs made during his research was that those officers who adopted a Weaver stance had the ñopportunityò to ñpre-selectò their stance before the scenario became critical.

The above two studies (Westmoreland and Burroughs) were further tested by Steve Barron and Clyde Beasly of Hocking College in Ohio. Both of these instructors are firearms managers for the regional police academy. Hocking College was teaching ñWeaverò shooting techniques to recruits, but when these same recruits were moved from static range training to dynamic force on force simulation training using Simunition cartridges, they noted consistently that the taught Weaver stance was not being used. Instead, they observed that these same recruits would adopt a two handed Isosceles shooting platform.

Many of the experts in the field of Sport Psychology and Motor Performance do not find the above noted research all that surprising. In fact, Robert Weinberg (PhD), a well known and highly respected sports psychologist, stated (after reviewing Westmorelandôs study), ñOne principal which seems appropriate is that individuals usually return to their preferred or instinctual mode of behavior especially under stress. When put into a

stressful situation, it is instinctual to face your opposition (Isosceles) rather than turn to the side (Weaver).ò

The purpose of the above noted studies is not to get into the debate between Weaver and Isosceles shooters, but rather to demonstrate the fact that if a trained response is not ñcongruentò with what neuroscientists have called the ñSomatic Reflex Potentiationò, it will be over ridden.

Remember, according to Dr LeDoux, this ñlow roadò signal system does not convey detailed information about the threat stimulus, but it has the advantage of speed. And in combat speed is of great importance to one facing a threat to their survival. Dr Ledoux pointed out that having a very rapid, if imprecise, method of detecting danger (such is found in the low road pathway) is of high survival value. As Dr. Ledoux has so eloquently stated in several articles that I have researched, ñ You're better off mistaking a stick for a snake than a snake for a stick.ò

As I stated earlier in this article, there is quite a large body of ñpsychologicalò research into stress and fear. One of the leaders in this field is Dr. Seymour Epstein who in 1994 did a comprehensive review of this topic area. Dr. Epstein had come to the conclusion, from a psychological perspective, that a person has ñtwoò distinctly different modes of processing information during a spontaneous high threat situation:

1. Rational Thinking: (low emotional arousal states) able to calmly engage in the conscious, deliberative, analytical cognitive processing

2. Experiential Thinking: (high stress and emotional arousal) an automatic, intuitive mode of information processing that operates by different rules from that of the rational mode, far more efficient during times of high stress than conscious deliberate thinking

Dr. Epstein, based upon his research, points out ñIn most situations that automatic processing of the experiential system is DOMINATE over the rational system because it is less effortful and more efficient, and, accordingly is the DEFAULT option.ò This is especially true in sudden, high stress, situations requiring instant physical performance

It is my belief that Dr. LeDoux has now provided the physiological explanation for what has been empirically observed for years, by researchers such as Dr. Epstein, about how people process information in ñhighò vs. ñlowò emotional arousal states. As Dr. Artwohl stated in an e-mail to me, ñIt's like saying we have been able to empirically observe for millennia that people 'see' things by their ability to report what they are seeing, but neurologists can now tell us 'how' the sensory information is transported to the visual cortex where it can be interpreted an translated into visual images.ò

So what is the correlation between the neuroscientific research of fear, and it relationship to survival skills training?

1. The brain has been ñhard-wiredò to deal with the emotion of fear
2. One pathway is known as the ñhigh roadò in which action can be based on conscious will and thought. This pathway appears to take effect during ñprogressiveò types of fear stimuli. Here a combatives student will be able to apply stimulus/response type training using the OODA model having regards to gross motor skills and Hickôs Law
3. A second pathway is known as the ñlow roadò which is triggered by a spontaneous/ unexpected attack. Here, the brain will take control of the body with an immediate ñprotective reflexò (downloaded directly to the brain stem where all of our reflexive responses to danger are stored), which will override any system of combat that bases its ability on ñcognitivelyò applying a physical response. This is especially true if the trained response is not congruent with the ñprotective reflexò (this is exactly what I observed in the 1992 video study that I conducted and mentioned earlier in this article)

So what can we as Instructors, coaches, and teacher do to incorporate the most current research in the field of Fear and Survival Skills Training?

- Absorb the above noted information and research it yourself
- Seek out instructors, coaches, trainers that are using this research in their training. You will be surprised that there are few that do. One of the leading pioneers in design and implementation of programs that incorporate this information is Tony Blauer and those associated with his organization in which I am not a member. Since 1992, the motor skill training programs I teach have also revolved around the principals of the above noted information as well. Another instructor, Richard Dimitri (Senshido) provides training based upon the above noted information. And of course, Bruce Siddle and his PPCT management systems is also a leader in the field of SSR, as it relates to motor skill performance in combative training.
- If you can not attend courses from the above mentioned, look at what you are doing in the area of self protection and ask yourself, is my training ñcongruentò with the above noted information, if not change what you are doing
- Train on the concept of ñcommonality of technique.ò The initial plan ñAò strategy that I use in an unexpected spontaneous assault (be it armed or unarmed), is no different than in an attack that I do see coming. Why, because no matter if the brain goes ñhigh roadò or ñlow roadò, my ñcongruentò gross motor skills will work in both paths. This is a definite tactical advantage.
- Understand that although the ñlow roadò reflexive motor responses cannot be changed, they can be ñmoldedò to fit a combative motor skill technique that are useable during a spontaneous attack. I use the Somatic Reflex Potentiation response, which I call ñpenetrate and dominate,ò in all my programs. Tony Blauer uses the flinch response in his SPEAR system. Richard Dimitri also incorporates the flinch in his training at Senshido.
- Fortunately, there are methods of reducing fear and inhibiting the fear response (see Siddleôs 8 steps to management of SSR earlier in this article.)

I am not a doctor or Neuroscientist, but I have been studying combatives for the past 14 years. Since 1992, I have been using training techniques based upon the above noted information, not knowing that I was doing so. In the past, my training was based solely on my empirical research here at the school, and what was happening to officers and civilians in the real world. The information in this post has now solidified my belief that what I am doing (and have been doing for years) in the area of combatives is correct. This belief is not only based upon my empirical research over the past 10 years, but as reported in this article, the scientific research as well.

The field of Neuroscience, specific to fear, is constantly evolving. Any true ñStreetò combative system or style, should keep abreast of these new discoveries, and integrate them into training to make their survival skills more street applicable.

Knowledge and the understanding and application of that knowledge is power. Please feel free to pass this information on, but remember give credit where credit is due.

Strength and Honor

Darren Laur
Integrated Street Combatives

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