

A Follow up to the Anatomy of Fear:

As most on this forum are aware, back in 2002, I wrote an article called "The Anatomy of Fear and How It Relates to Survival Stress Training." This article can be located at: <http://www.personalprotectionsystems.ca/The%20Anatomy%20Of%20Fear%20and%20How%20It%20Relates%20To%20Survival%20Skills%20Training2.doc> should be read prior to reading this posting to fully understand all of its nuances.

As I stated in my article on the Anatomy of Fear, "The field of Neuroscience, specific to fear, is constantly evolving. Any true "Street" combative system or style, should keep abreast of these new discoveries, and integrate them into training to make their survival skills more street applicable." Since my article in 2002, new information, specific to motor skill enhancement training, has come to light. Recently, Survival Stress Training studies, specific to motor skill enhancement have taken some leaps and bounds that I would like to share in this posting.

Recently, a paper was released called "Survival Scores Research Project" that was a collaborative effort between the Department of Homeland Security, the Federal Law enforcement Training Centre (FLETEC), Centre for Research in Behavioral Medicine and Health Psychology (university of South Florida Psychology Department) and the Department of Neurochemistry and Neuroendocrinology (Walter Reid Army Institute of Research). The overall conclusions of this research paper has important implications for the training of "ANYONE" who must deal with violence and the effects that high level of stress will have on motor skill performance that I hope to summarize specific to "replication" or "scenario" based training.

Experiential training (aka replication or scenario based training) is predicated on the assumption that the students learns from the experience; the more realistic the training, the better the learning experience. Preparing students to make instant decisions and take specific action that may save their life, or the lives of others, or to prevent injury in the controlled environment of scenario based training is the goal. Many have believed, including myself, that in order to train students to respond effectively in stressful situations they must be exposed to simulated scenarios and practice appropriate responses under stress. The FLETEC report however has raised the fact that there is now scientific evidence that stress-inducing stimuli "MAY" reduce learning ability so therefore the way in which scenario based training is delivered is important.

According to the FLETEC report, numerous studies by those who specialize in the area of learning have uncovered the fact that stress impairs memory, specifically from the result of a naturally occurring drug that is produced in our body/brain during high stress incidents called CORTISOL. The production of cortisol diminishes the ability of the brain to form explicit memories (or motor skill pathways) and also causes bad decision making under stress and enhances the amygdala's contribution to fear (LeDoux). The FLETEC report further stated, "These hormones, then, reduce our ability to form memories, inhibit our ability to regulate fear by thinking and reasoning, and , via the

amygdale, amplify our reactions to fear as well our memories of the stressful situation.ö
Two key training implications stem out of this current research:

1. we can store memories about potentially harmful situations and how to react to them
2. Since we don't know what we learned from those memories due to the hormonal inhibitions of thinking and reasoning, we may only learn a fear response that triggers a reaction that had not been adapted to deal appropriately with the stimulus.

To put this information into perspective, one of the reports authors, Dr. Roney gave the following example:

ö an emotional arousal such as the sound of a large dog growling provides us with an emotional stimulus. This sound triggers the stimulus to the brain based upon our memories of that stimulus. We perhaps remember the fear of a large dog, a bad encounter with a large dog. These cause an emotional arousal to the amygdale. Our previous experience with dogs does not alone trigger any specific response. The fear response is initiated only when the amygdale is stimulated. This translates into the amygdale transferring the cognition of the stimulus (the dog growling) into an emotional event. At this point, we have no working memory of how to deal with the growling dog, just the memory of the noise as something to be feared. Thus, our previously learned fear tells us to react with fear but has not equipped us with an appropriate response to that fear. Hear again, our emotions monopolize our consciousness. The brain's focus becomes dominated by the fear stimulus, and reduces our ability to process other bits of information that are coming at us.ö

If our goal as teachers, instructors and coaches is to enhance our students fighting abilities, the use of stressful scenario based training need to be designed in such a way that memories of appropriate motor skill performance are enhanced rather than stunted. Remember that a key implication for training according to Dr Ledoux, is that once the brain learns a coping strategy for a specific threat, the amygdale drops out of the fear circuit. ö When you know how to cope successfully, you no longer need the amygdale as fear is no longer aroused.ö

Many who teach in our field say that they offer scenario based training, but really do not understand its true effects (both positive and negative) from a training perspective. Many believe that scenario based training means, throw two people into a ring, and let them duke it out (ie MMA's) or put on a training suit (Redman, Fist, Predator) and allow students to go all out, full speed, and full power. I have always believed that those who teach scenario training in the ways that I mention above, are actually doing more harm to the student than good, and the FLETEC research is beginning to explain why.

So what can we do as teachers, instructors, and coaches to ensure that motor skill performance memory is enhanced during scenario based training:

- 1) A recent motor skill learning research project conducted by John Hopkins University in 2002 found that within the first 5-6 hours of practicing a new motor skill, the brain shifts the new instruction from short term memory into long-term memory. The research conducted by John Hopkins was now found that a newly learned motor skill could be impaired, confused, or lost if a person tries to learn a different motor task during this critical 5-6 hour period. (Dr Ratey 2002). As a result of this research teachers, coaches, and instructors should be cautious about teaching new skills, as mixing skills during the initial learning phase "MAY" have a negative impact on skill retention. As the FLETEC report stated, "since trainers are essentially creating new memories (or more likely, modifying old memories), we must work to create learning experiences that bridge the gaps in student's experiences. We can do this by transferring learning in "SEQUENTIAL" steps through examples until students develop enough examples in memory to transfer learning on their own." IMO, this can be done very effectively with appropriate scenario based training.
- 2) Educate students about the issues discussed in my article the Anatomy of Fear and how the effects of SSR "MAY" be experienced. According to the FLETEC report by providing visual examples of SSR in our hands on training, "it can help the student wire the brain to have on hand a perception of what might happen in the stressful situation. While they will lack the emotional experience in memory, the visual memory should enhance their ability to cope with the stimulus. This IMO can be easily added into scenario based training. Creating visual images and identifying potential responses takes little time and may provide tremendous learning benefits for the student according to the FLETEC research.
- 3) When implementing scenario based (stress inoculation training) rather than throwing the student to the wolves right away, "graduate" the levels of stress, starting with mild levels of stress first, and then gradually increase the students exposure over time building to full speed full power under high stress simulations. This allows for "memories" to become hard wired. Also remember that students should not progress to higher levels of intensity until acceptable levels of motor skill performance are demonstrated at the next lower level.
- 4) Feedback (both verbal and video if possible) should be provided promptly to students after their scenarios, directing them towards the desired motor skill response. Once feedback has been given, students should be allowed to participate in similar stimulus response scenarios to ensure motor skill learning and memories are compounded.

Contrary to some experts who believe that Survival Stress Reaction can not be induced in a simulated environment, researcher Spielberg et al (1993) defined the stress reaction as: "the emotional reaction or response that is evoked when a person perceives a particular situation as personally dangerous or frightening to him, irrespective of the presence or absence of a real objective danger. The secret, however, according to the FLETEC research, is to ensure that the scenario training is as real as possible and conducted in a graduated process to ensure that motor skill performance is enhanced rather than stunted.

Knowledge, and the understanding and application of that knowledge, is power

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