SHOOTER NEUROMUSCULAR MEMORY ENHANCEMENT

PROJECT ACHILLES, SARK SECURITIES INC.

THE 3 PARTS OF MEMORY

Encoding

Without encoding there would be nothing to process

Storage

Without storage we would remain stuck in the present

Retrieval

Without retrieval memories would remain stuck in the brain without practical purpose

THE PROCESS OF ENCODING

Filtering Inputs

Effectively filtering sensory inputs in the developmental stages will allow the Cortex to process and Cerebellum to extrapolate data much faster.

Sense of sight is the most overly dominating sense in most shooters, which consumes roughly 30% of a student's active brain power and promotes distraction.

Chunking Skill-Sets

Build a common base for transitional skills that are NOT taught alongside or coupled with anything else involved with shooting.

ATTACK THE COMMONALITIES

THE PROCESS OF STORAGE

Identical Replication

Authentic neuromuscular conditioning is only created through the identical replication of movement.

Anything else only increases time required and disrupts natural point of reference.

Emotionally Charged

Emotionally charged learning tracks get a kick from the Amygdala. Critical for undisturbed retrieval of skills that must be replicated during high stress situations.

There is **NO** pre-established time table to acquire authentic muscle memory.

TIME MANAGEMENT IS ANOTHER STORY

THE PROCESS OF RETRIEVAL

Conscious

Memories called up by the conscious mind are Explicit or Declarative

Subconscious

Memories called up automatically are Implicit or Non-declarative

Recall - memories of previously digested material or information

Recognition - identification of learned items, skills, actions

THE 3 FORMS OF MEMORY

Short Term

Storage up to 30 seconds

Working

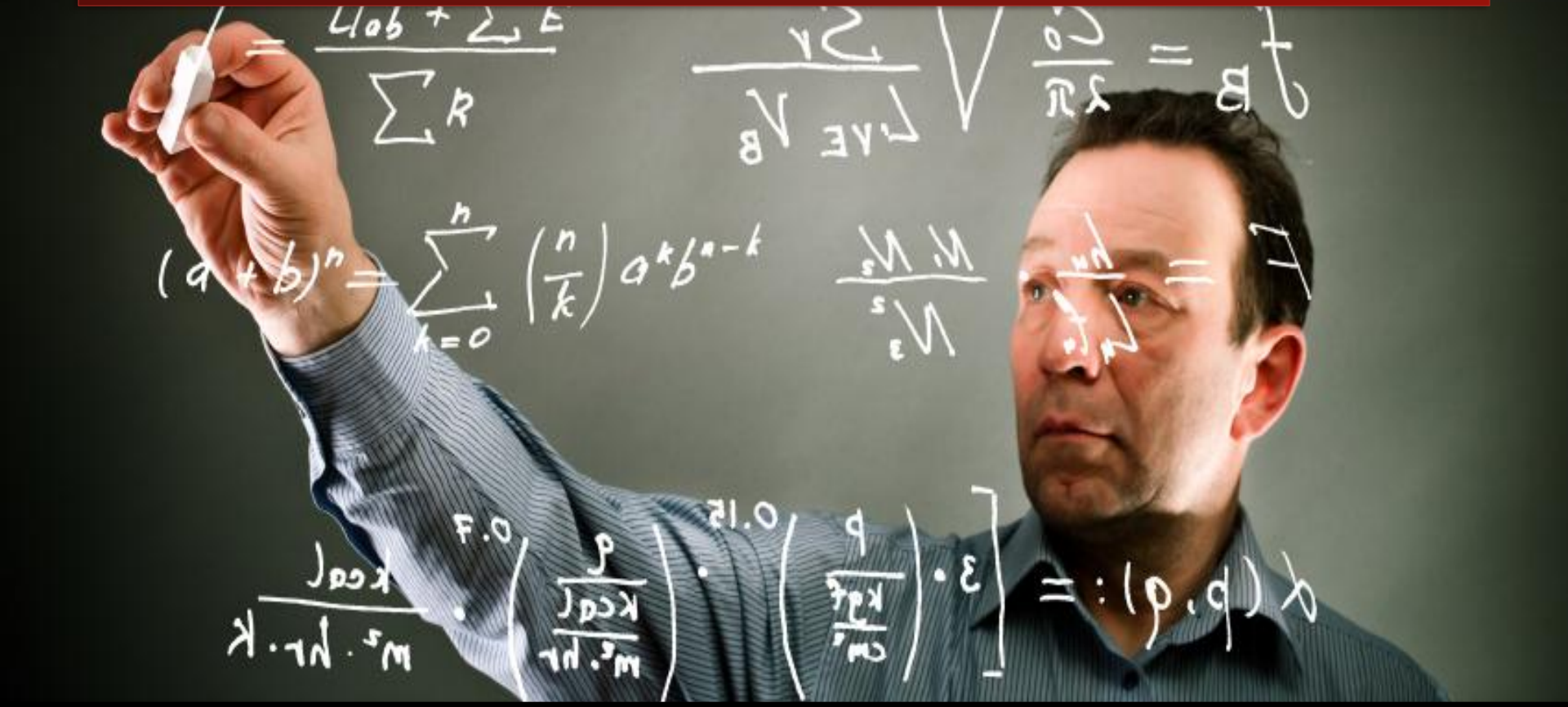
May manipulate Short-Term Memory through conscious effort

(Up to 24 hours for transition)

Long Term

Stable neural connection with strong activity, recall and recognition may be indefinite

THE PROBLEM



EVERYONE WANTS A SOLUTION FOR "X"

BREAKING THE MEMORY PROBLEM DOWN

INITIAL SKILL DEVELOPMENT	VS	IMPLEMENTING TTP'S
Long Term MEMORY	VS	WORKING MEMORY
TRAINING	VS	QUALIFYING

INITIAL SKILL DEVELOPMENT

VS

IMPLEMENTING TTP'S

PURPOSE:

To develop ALL Common Fine, Gross and Complex Motor skills.

Develop conscious sensitivity thresholds, psychomotor time intervals and develop strong neural connections.

Identical Replication of Movement.

Method of Memory Encoding:

Chunking, Filtering Sensory Inputs

PURPOSE:

Establish a framework to implement skill-sets acquired.

Individualized and team demonstrations of lessons learned.

Shooter identifies how individual skill complement the cumulative capability of the team.

Method of Memory Encoding:

Context-based and Emotionally Charged

Long Term MEMORY

VS

WORKING MEMORY

PURPOSE:

Skills transferred from Short Term and Working memory.

Developed through extended exposure to IDENTICAL replication. Variance in time is mitigated by inducing emotional triggers and sensory simplification.

Method of Memory Storage:

Extra neurons and significantly more axon-to-dendrite connections.

PURPOSE:

Rapid mental comparisons of recently trained skills.

Demonstration of newly learned skills interacting with one another.

Shooter receives immediate feedback on psychomotor progression.

Method of Memory Storage:

Short 30 second bursts of information.

TRAINING

VS

QUALIFYING

PURPOSE:

To place lessons learned into context for the shooter.

To allow for critical thinking and problem solving. Continuously coach through personal demonstration of skills learned.

Method of Memory Retrieval:

Recall and Recognition

?

PURPOSE:

Established method for measurement .

Individualized demonstration of lessons learned.

Shooter establishes a baseline for measuring future growth, establishes both short and long term goals.

Method of Memory Retrieval:

Recall and Recognition

TRANSITIONAL TRAINING

Pre-Deployment — TRANSITION THROUGH NEGATIVE 5

Deployment — STANDING, KNEELING AND PRONE

Smart Groove Technology — RAPID TRANSITION TO YOUR NATURAL POINT OF AIM

Engagement — RAPID ACQUISITION OF TARGET

Assess — CRITICAL EVALUATION OF PRIOR ACTION

TRANSITIONAL TRAINING

Pre-Deployment

TRANSITION THROUGH NEGATIVE 5

The Negative 5 principals in relation to high stress shooting proficiency

- ***Time*** *- being in the right place at the right time*
- ***Availability*** *- having the right weapon for the job*
- ***Mental State*** *- psychologically in the right frame of mind*
- ***Environment*** *- unknown environmental surrounding*
- ***Enemy*** *- unknown oppositional capability*

TRAINING WITH A PURPOSE

"Music occurs between the notes and learning occurs between the training."

- Ken Murray

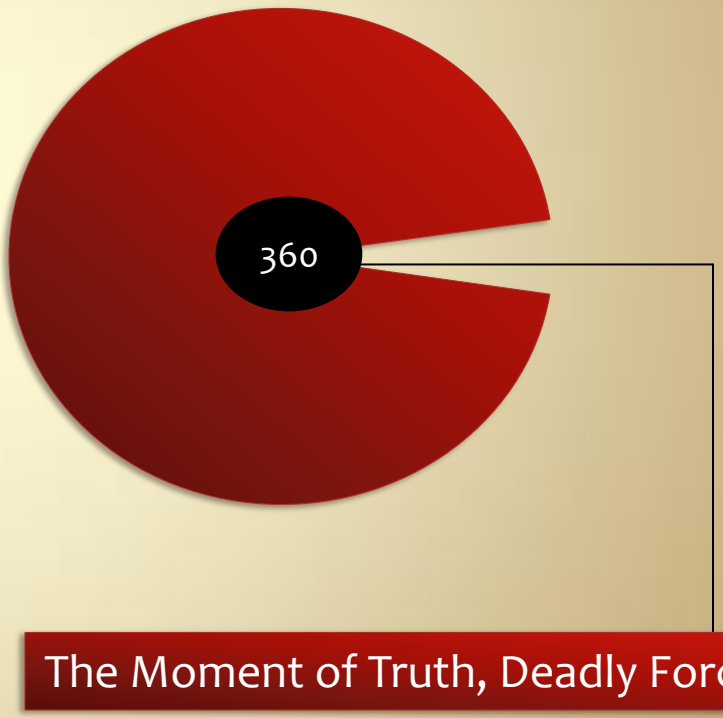
Transitioning

Short-Term Working Memory

Rapid Retrieval

Long-Term Memory

CHUDWIN'S PIE



TRAINING WITH A PURPOSE

- Posturing Reference
- Spontaneous Assault
- How your Field Interview Stance in training can build a false sense of security
- Psychomotor references built upon prefabricated postures in training.
- How the brain becomes stuck in recall and recognition mode.
- You **MUST** develop neural triggers to react properly for you moment of truth.

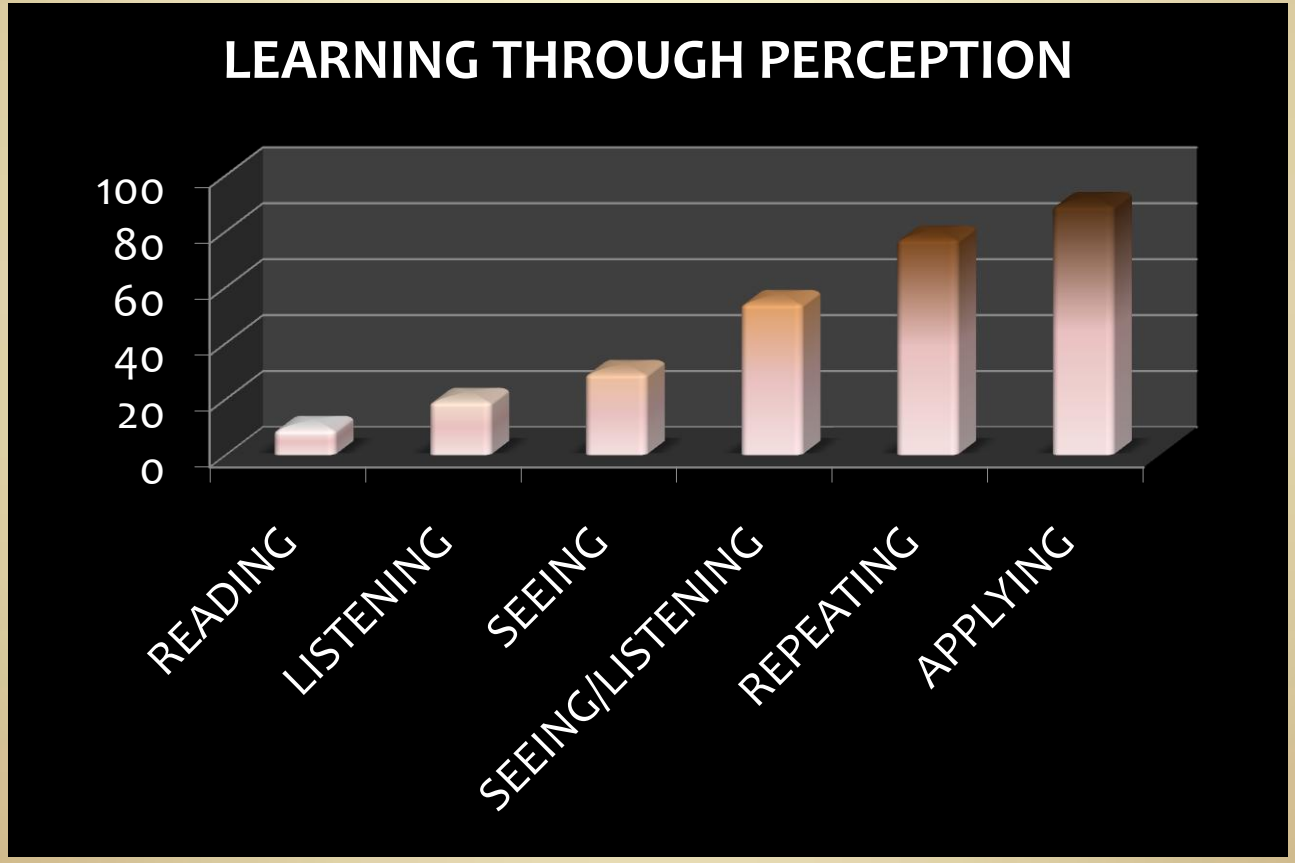
"The street is your only authentic testing ground you have"
- C. Ghannam

What is a neural trigger?

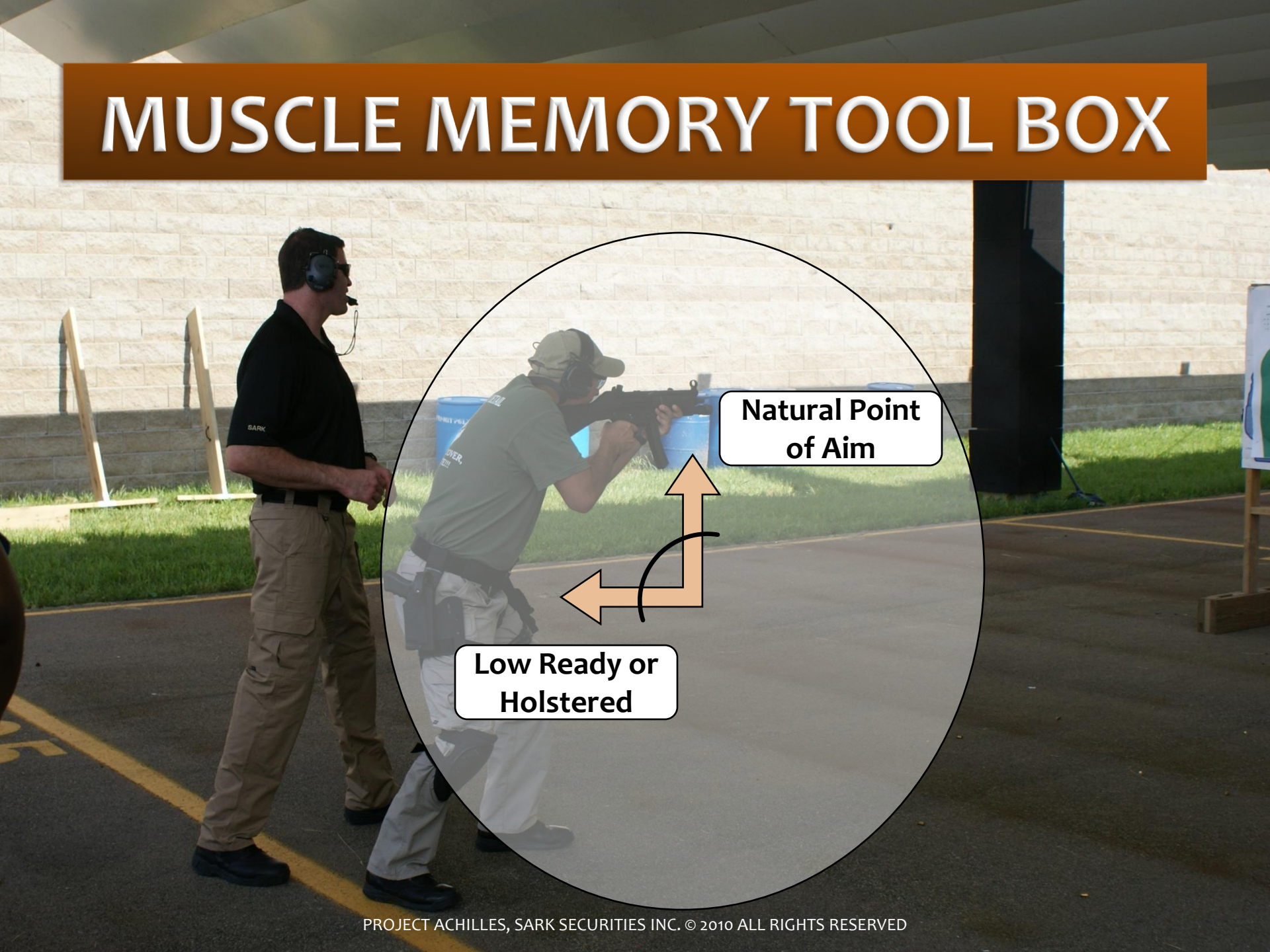
How do I develop one?

What are the dangers in building neural triggers?

TRAINING WITH A PURPOSE



MUSCLE MEMORY TOOL BOX



PSYCHOMOTOR ISOLATION TRANSITION TRAINING

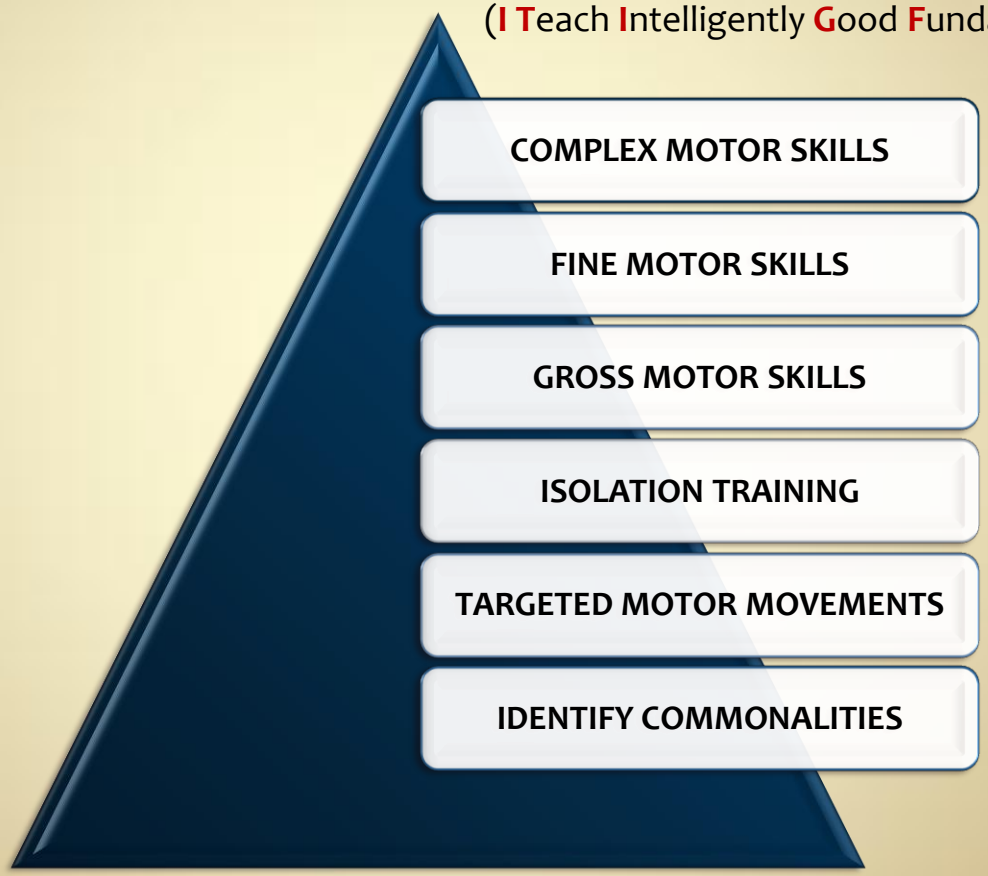
TIME MANAGEMENT

ITI - GFC

COMPLEX MOTOR 10%
FINE MOTOR 10%
GROSS MOTOR 20%
ISOLATION TRAINING 20%
TARGETED MOTOR MOVEMENTS 30%
IDENTIFY 10%

ITI – GFC

(I Teach Intelligently Good Fundamentals Consistently)



TIME MANAGEMENT

IDENTIFY COMMONALITIES 10%

IDENTIFY 10%

ITI – GFC

(**I** **T**each **I**ntelligently **G**ood **F**undamentals **C**onsistently)

- **Standing -** Footwork, Balance and Forward Physical Transition to Target. Refine Personal Deployment Arc for Natural-Point-of-Aim.

- **Kneeling –** Balance and Forward Physical Transition to Target. Replicate Personal Deployment Arc for Natural-Point-of-Aim.

- **Prone –** Develop Rapid Transition from Standing and Kneeling. Learn personal weight distribution for optimal control.

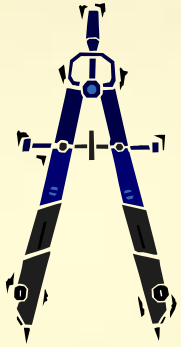
TIME MANAGEMENT

TARGETED MOTOR MOVEMENT 30%

TARGETED MOTOR MOVEMENTS 30%

IDENTIFY 10%

- **Holstered**



- **Low-Ready**

- **Establish Appropriate Deployment Angle for Holstered Weapon Conventional/Concealed**

- **Establish Your Natural Deployment Arc from the Low-Ready to Natural-Point-of-Aim**

Smart Groove Technology
isolates this variable without conscious thought required

TIME MANAGEMENT

ISOLATION TRAINING 20%

ISOLATION TRAINING 20%
TARGETED MOTOR MOVEMENTS 30%
IDENTIFY 10%

Side Profile Engagement

Center-Line

Center-Mass

Side Profile Engagement

- Natural-Point-of-Aim Centerline Target Acquisition
- Follow On Shots to be Sighted

TIME MANAGEMENT

GROSS MOTOR 20%
ISOLATION TRAINING 20%
TARGETED MOTOR MOVEMENTS 30%
IDENTIFY 10%

GROSS MOTOR SKILLS 10%

- **Footwork – Balance – Footwork – Balance – Footwork - Balance**

ZERO Weapon Movement -
Focus is on building strong neural connection for Natural-Point-of-Aim

Continuously Changing Terrain –
Develop simplified "Encoding" for implanting memory into cerebellum, the Natural-Point-of-Aim **should** be your point of reference **not** balance.

You never step in the same river twice, nor will you ever shoot in combat on identical footing.

TIME MANAGEMENT

FINE MOTOR SKILLS 10%

FINE MOTOR 10%
GROSS MOTOR 20%
ISOLATION TRAINING 20%
TARGETED MOTOR MOVEMENTS 30%
IDENTIFY 10%

- **Emotionally Charged – Fear of Failure – Fear of Death**

Trigger pull conditioning through both physical and psychological exertion. Real world retrieval of memory **will not** be possible without ample stress. Amygdala "low level trigger" will override any previous reference point if not built around the **fear for survival**.

Student's **generally fear only failure in training** not survival. Very delicate area that must be conducted **professionally**.

I have had students physically defecate during training even though they were never actually in physical danger. It all boils down to student perception.

TIME MANAGEMENT

COMPLEX MOTOR SKILLS 10%

- COMPLEX MOTOR 10%
- FINE MOTOR 10%
- GROSS MOTOR 20%
- ISOLATION TRAINING 20%
- TARGETED MOTOR MOVEMENTS 30%
- IDENTIFY 10%

➢ **The Merging of Fine and Gross Motor Skills coupled with TIME**

Smooth Replication of Movement Over Time Builds Speed.

Note – Most shooters lack replicable transition through deployment arc under stress because they extend their weapon out at the same speed but allow their weapon to transition back to the low ready or holstered position at continuously changing speeds.

The neural connection runs from transmitter to receptor, constant fluctuations in speed produce an inconsistent network.

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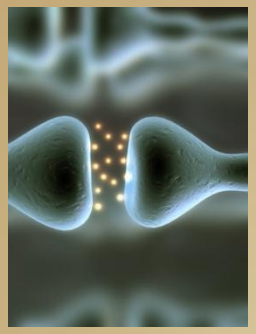
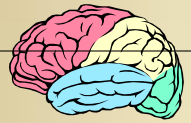
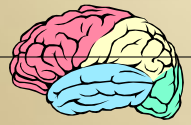


SHOOTER COGNITION





TO SCHEDULE A PRESENTATION

DETAILED PRESENTATIONS AVAILABLE

- **Senior Leadership**
- **Medical Review Board**
- **Operator Community**

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Project Achilles
Creator
Chris Ghannam

"It is not the strongest of species that survives, or the most intelligent; it is the one most adaptable to change."

- Charles Darwin

SARK SECURITIES

Christ Baptist Medical Center, IL. (2009)

JFKSWCC HQ (2009)

International Law Enforcement Educators and Trainers Annual Conference (Largest LE/Federal Instructor Conference in the U.S.) Wheeling IL. 2008,2009,2010

2009 Legacy of Excellence Conference Alberta, Canada

Air Force Advanced Research and Development Future Innovations Division (DRU Pentagon) San Antonio, TX. 2009

Florida High Liability Instructor Conference, Tallahassee, FL. 2009

PATOA Annual Conference, Pittsburgh, PA. 2009

SBIR Phase I (IARPA) Initiative 2010 2nd Quarter

FLETC Future Innovations / Training Transformation Division (2010 April)