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Michael Czekajlo

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Salivary biometrics and assessment of autonomous nervous system activation during emergency and mascal training

Michael S. Czekajlo, MD, PhD
Associate Professor
Hunter Holmes McGuire Center for Simulation and Healthcare Innovation
Medical Director
Conflict of Interest- None

Anthony J. Laporta¹, MD,FACS
Rocky Vista University
Alan Moloff, DO,MPH
Rocky Vista University
Reginald Franciose MD,FACS
Vail Valley Medical Center, CO
Roy Alson MD,PHD
Wake Forest University, NC
Tuan N. Hoang MD,FACS
Medical Readiness Division, San Diego Naval Surface Forces US Pacific Fleet, San Diego, CA
Douglas A. Granger PHD
Johns Hopkins University School of Nursing; Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland
Objectives

THIS PROJECT IS TO IDENTIFY THE CORRECT PHYSIOLOGIC MARKERS OF STRESS AND HABITUATION THOUGHT TO BE ASSOCIATED WITH IMPROVED COMPLEX EDUCATION.

LONG TERM OUR OBJECTIVE IS TO SHOW THAT REALISTIC IMMERSION SIMULATION TRAINING IS BETTER THAN CONVENTIONAL EDUCATION METHODS.
Immersion Training: Siddle, 1995

Catastrophic Effects of Stress:
- Visual
- Auditory
- Fine Motor
- Poor Recall

Firearm Hit Average:
- Range – 90%+
- Chicago – 18%
- Miami – 25%
- New York – 32%
Can we improve training by adding realism and objective markers
Physiology of Stress

Diagram A:
- Learning/Stress
- Perception Attention
- Consolidation
- Storage
- Facilitation
  - NA, CRH, CORT
- Suppression of (unrelated) information normalization
- Corticosterone

Diagram B:
- Stress
- Learning/Stress
- Perception Attention
- Consolidation
- Storage
- Suppression of information
- Corticosterone
SALIVARY CORTISOL HAS AN INHERENT TIME LAG CAUSING STATISTICAL EVALUATION PROBLEMS. HEART RATE-VARIABILITY IS NEARLY INSTANTANEOUS.
Conclusion

• INDICATES HOW THE INDIVIDUAL WILL RESPOND UNDER SIMILAR CONDITIONS

• THIS TECHNOLOGY ALLOW FOR THE EVALUATION OF WHETHER THE INDIVIDUAL IS READY TO LEARN VS BEING IN A ZONE THAT IS DETRIMENTAL TO LEARNING

• THERE IS EXCELLENT CORRELATION BETWEEN AVERAGE HEART RATE VARIATION STRESS LEVEL (SL) AND SALIVARY AMYLASE (SAA/HRV)

• TO REDUCE THE “10000 HOURS” NECESSARY TO MAKE AN EXPERT
Thank You