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

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Conflict of Interest- None

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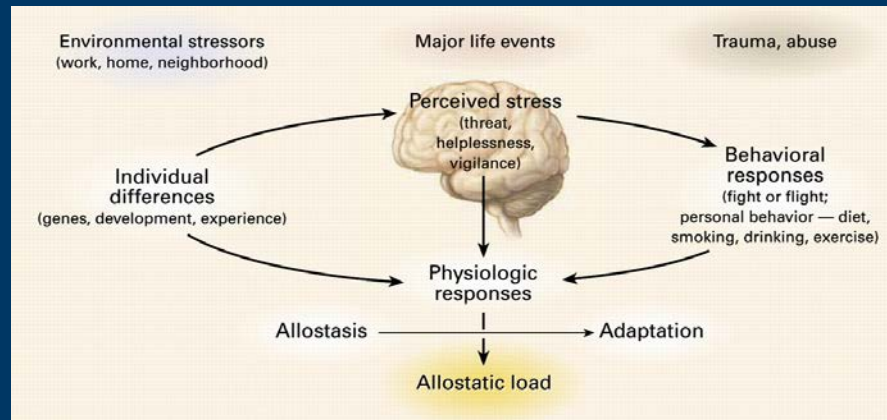
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Public Health, Baltimore, Maryland



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:

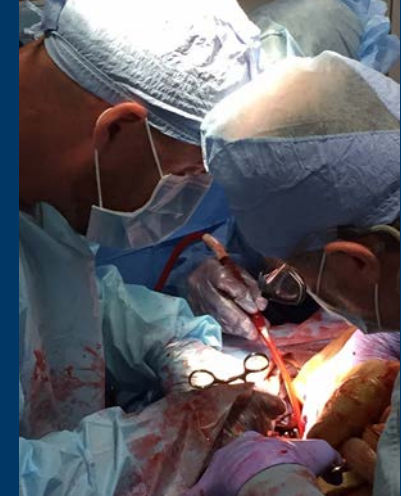
Visual
Auditory
Fine Motor
Poor Recall

Firearm Hit Average:

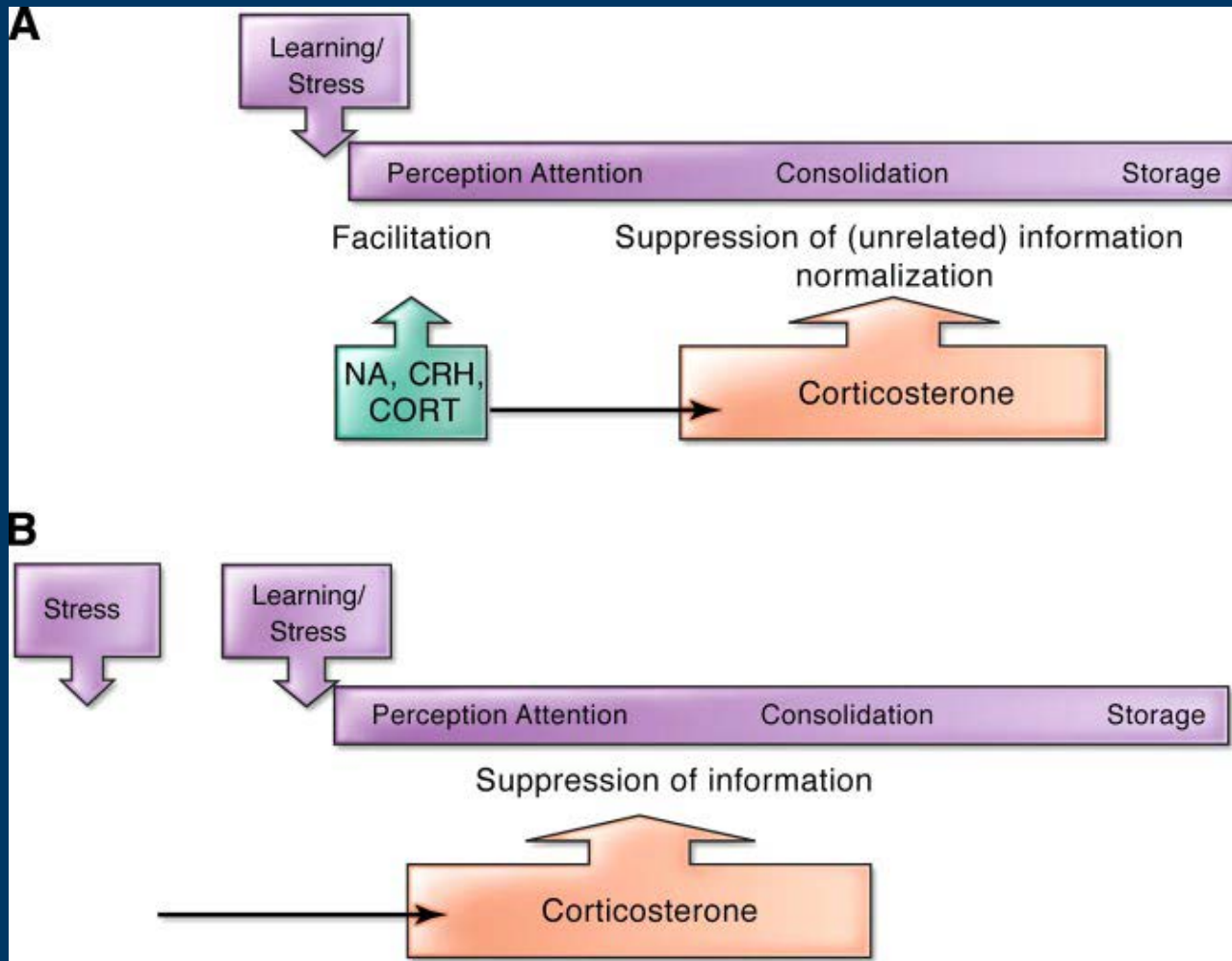
- Range – 90%+
- Chicago – 18%
- Miami – 25%
- New York – 32%



Can we improve training by adding realism and objective markers

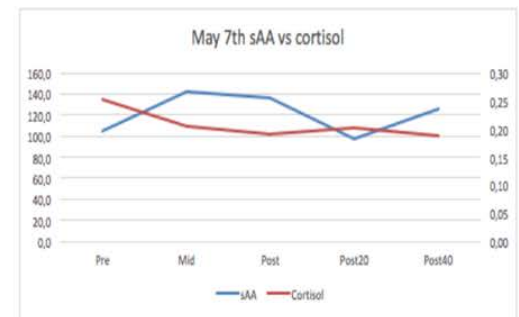
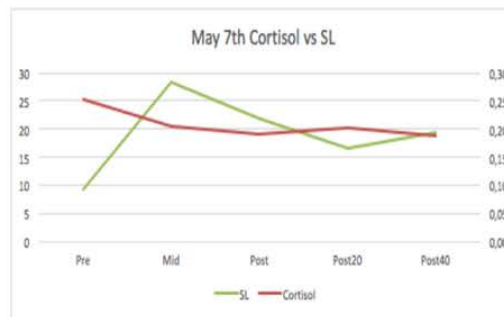
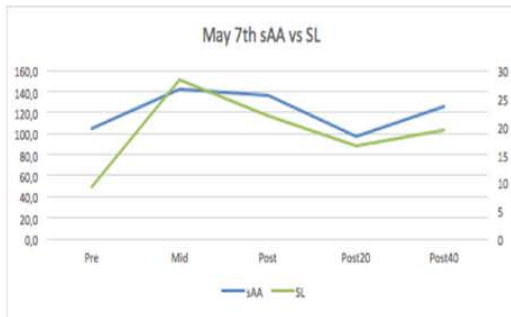
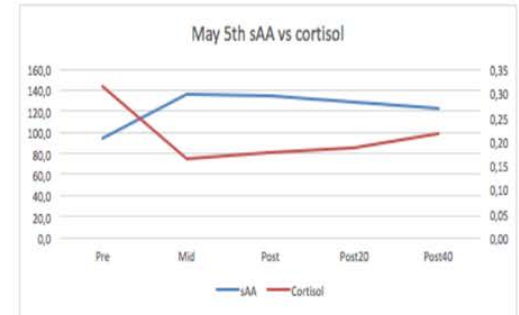
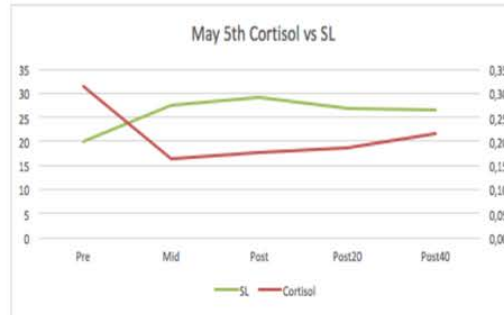
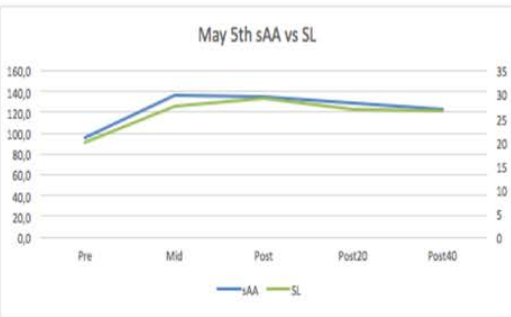
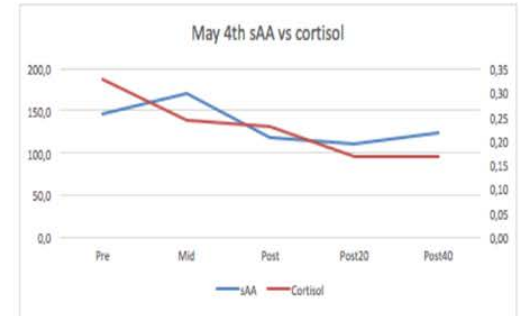
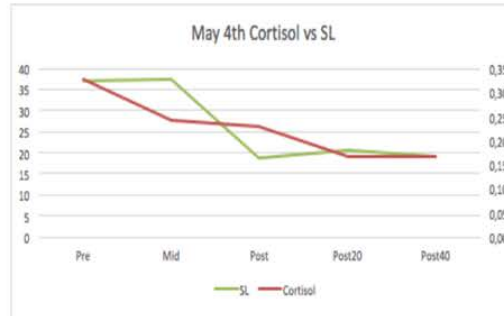
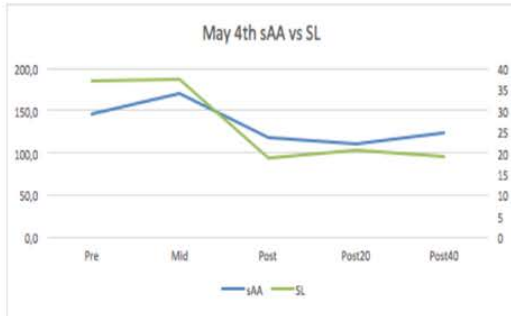


Physiology of Stress



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 ALLOWS 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

