The FOG of War
Training the Resuscitationist Mind

Christopher Hicks, MD, MEd, FRCPC
Emergency Physician, Trauma Team Leader
St. Michael’s Hospital
@HumanFact0rz
Disclosures

SAEM Education Research Grant

SIM-one/IDEAS/CPSI Simulation for Safety and Quality Improvement

RCPS-C Medical Education Research Grant

AHSC/AFP Innovation Fund
The chocolates began coming out faster and faster! They sped by him so quickly they seemed to be running on legs of their own.

"Quick! Bring more boxes!" yelled a man with a tall white hat. "What happened?" asked another man. Nobody answered. Nobody knew what had happened and everyone was so busy that no one noticed George.

Situation Awareness Role Clarity

Task Delegation Cross-Monitoring

Leadership, Communication

Fixation, Premature Closure
Mental Practice
Stress Preparation
System Design
What to EXPECT
What to LOOK FOR
What to DO
What has HAPPENED
22M GSW L chest x 2

BP 60/P

Combative

Arrival: 4 minutes
Improved cystoscopy skills (vs. book learning)
(Am J Obst Gyne 2009, 201: 218e1-9)

Greater performance improvement with endoscopy skills (vs. training on a task trainer)

Additive effect on cricothyroidotomony vs. physical practice alone
(Med Ed 2008, 42: 607-12)
Teams
Mental practice: a simple tool to enhance team-based trauma resuscitation

Gianni R. Lorello, MD, MSc*; Christopher M. Hicks, MD, MEd†; Sana-Ara Ahmed, MD*; Zoe Unger, MD, MEd*; Deven Chandra, MD, MEd*; Megan A. Hayter, MD, MEd‡
78 Trainees Recruited
(Anes, EM, Sx)

REB Approval

Informed Consent

1 Anes + 1 (EM or Sx)

Randomization

MP Group
N = 20

20 Minutes Mental Rehearsal

Control Group
N = 19

Didactic lecture on team training, ATLS

Trauma Simulation

Individual Debriefing

2 Blinded Reviewers

Mayo High Performance Team Scale

ANTS

NOTSS

StudioCode™

SPSS
Figure 1. Box plot depicting the Mayo High Performance Teamwork Scale (MHPTS) results (minimum score = 0; maximum score = 24) for the control and mental practice groups. The central bar represents the median, the box represents the interquartile range, and the bars represent the data range.
Team Pre-Briefing
What to EXPECT
What to LOOK FOR
What to DO
What has HAPPENED
“... Sudden, novel, intense and of relatively short duration, disrupts goal oriented behaviour and requires a proximate response”

Salas, Driskell and Hughes, 1996
<table>
<thead>
<tr>
<th>Above 175 BPM</th>
<th>220</th>
<th>200</th>
<th>180</th>
<th>160</th>
<th>145</th>
<th>120</th>
<th>115</th>
<th>100</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Irrational fight or flee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Freezing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Submissive behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Voiding of bowel/bladder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Gross motor skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115-145 BPM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Complex motor skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Visual reaction time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Cognitive reaction time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Condition Black**

**Condition Grey**

**Condition Yellow**

**Condition Red**

**Condition White**
Arousal vs. Performance

- INTENDED: Improving Drone → Healthy Tension → Creative Calm → Fatigue → Panic
- ACTUAL: Performance Improving → Creative Calm → Fatigue → Panic

Exhaustion
INPUT
- Noise
- Time pressure
- Task load
- Threat

APPRAISAL
- Task demands
- Extent of resources

OUTPUT
- Physiologic
- Emotional
- Cognitive
- Behavioural

PERFORMANCE EXPECTATIONS
- Positive
- Negative

Lazarus, 1966; Driskel, Salas and Hughes, 1996
Resources > Demands = Challenge

Resources < Demands = Threat

Tomaka et al, 1993
The THREAT Appraisal

Harvey et al, 2012
Harvey et al, 2010
Harvey et al, 2010
Figure 2. Accuracy scores on the drug dosage problems, as a function of training and stress manipulation. ACP(F) = Advanced Care Flight Paramedic; CCP(F) = Critical Care Flight Paramedic.
Resources > Demands = Challenge

Resources < Demands = Threat

Tomaka et al, 1993
Teamwork
Shared Mental Models
Transactive Memory

Driskell, Salas, Johnson, 1999
<table>
<thead>
<tr>
<th>1. Education</th>
<th>Assist individuals in gaining a better understanding of the <strong>nature and effects of stress</strong> on performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Rehearsal</td>
<td><strong>Skill acquisition and rehearsal</strong>: decrease anxiety and increase coping skills</td>
</tr>
<tr>
<td>3. Application</td>
<td>Apply skills to <strong>increasingly stressful conditions</strong> that approximate real-world stressors</td>
</tr>
</tbody>
</table>

*Saunders et al, 1996*
Duration of training

Duration of effect

Generalizability

*Saunders, 1996*
> 26 Teams Recruited
(EM/Sx, RN, RT)

REB Approval
Informed Consent
Randomization

SIT Group
N ~ 13
Stress inoculation training
SIT-debriefing

Control Group
N ~ 13
CRM instruction and debriefing

Pre-Training Scenario (TS1)
Simulation Training
Post-Training Scenario (TS2)

2 Blinded Reviewers
NTS Performance
Critical Tasks
Task Checklist
Salivary Cortisol
HR Variability
STAI
Tactical Breathing

Cognitive Re-Framing

Mental Preparation

Skill Application

Skill Application

Skill Application
Stress Training Delphi
Tactical Breathing

1. Breathe In
2. Hold In
3. Breathe Out
4. Hold Out
5. Breathe In
6. Hold In
7. Breathe Out
8. Hold Out
Cognitive Reframing

Slow and steady ...
You’ve got this ...
This doesn’t have to be perfect ...
Here’s what needs to happen next ...
# Mental Preparation

<table>
<thead>
<tr>
<th>What do we <strong>KNOW</strong>?</th>
<th>Summary of preparatory information</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do we <strong>EXPECT</strong>?</td>
<td>Your Plan A for the first 5-10 minutes</td>
</tr>
<tr>
<td>What will we <strong>CHANGE</strong>?</td>
<td>Major contingencies if Plan A doesn’t work</td>
</tr>
<tr>
<td>Assigning <strong>Roles</strong></td>
<td>Who will do what Rally points</td>
</tr>
</tbody>
</table>
Breathe

See

Talk

Focus

Tactical breathing

Mental practice

Positive self-talk

On a word or phrase

-- Lauria
What to EXPECT
What to LOOK FOR
What to DO
What has HAPPENED

Hollangel, 2012
Resilience is **BUILT**, not born

Your **mind** is a powerful simulator

Stress will **EAT** your team