

# Psychological Skills to Improve Emergency Care Providers' Performance Under Stress

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Stress experienced by emergency medical providers during the resuscitation of critically ill or injured patients can cause cognitive and technical performance to deteriorate. Psychological skills training offers a reasonable and easily implemented solution to this problem. In this article, a specific set of 4 performance-enhancing psychological skills is introduced: breathe, talk, see, and focus. These skills comprise breathing techniques, positive self-talk, visualization or mental practice, and implementing a focus "trigger word." The evidence supporting these concepts in various domains is reviewed and specific methods for adapting them to the environment of resuscitation and emergency medicine are provided. [Ann Emerg Med. 2017;■:1-7.]

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## INTRODUCTION

Psychological skills training is the systematic acquisition and practice of different psychological techniques to improve cognitive and technical performance.<sup>1</sup>

Occupations including the performing arts, military, athletics, and astronautics have benefited from various forms of psychological skills training.<sup>2-4</sup>

This article describes 4 distinct, evidence-based performance-enhancing psychological skills (PEPS): breathe, talk, see, and focus.<sup>5</sup> These 4 skills can be used as a form of psychological skills training adapted to emergency medicine. In this article, the individual components of PEPS will be discussed and the evidence to support their effectiveness will be reviewed.

## STRESS, AROUSAL, AND PERFORMANCE IN EMERGENCY MEDICINE

Emergency care providers' jobs are stressful.<sup>6</sup> A variety of factors—including unpredictable patient volume and acuity, circadian rhythm disruptions, and lack of previous relationship with the patient—contributes to this stress. Management of critically ill or injured patients demonstrates characteristics of "crisis" situations: circumstances rife with uncertainty, potential threat to life, necessity to take immediate action, and at least partial inability to control aspects of the situation.<sup>7</sup> These are high-stress events with critical stakes; optimal performance in these situations is essential.

Two salient features in contemporary theories of stress apply to emergency medicine. First is the appraisal

mechanism: the idea that how one approaches a situation determines the thoughts, behaviors, and physical reactions that constitute the emotional response.<sup>8</sup> In the words of Whitelock and Asken,<sup>9</sup> stress is a result of "a perceived imbalance between the demands of the emergency situation and your ability to meet those demands where failure to do so has important consequences to you." Second is the concept of compensation.<sup>10</sup> Individuals apply various conscious and unconscious modalities to compensate for perceived inability to meet situational demands. The degree to which this compensation occurs, in turn, determines the nature and magnitude of one's stress response. In emergency medicine, then, the level of stress depends on the combination of how providers perceive their ability to control an emergency and their preexisting compensation mechanisms.

Excess stress is detrimental to task-performance cognitive faculties.<sup>11-20</sup> "Time pressure" or "time urgency," or the limited time available to think through different actions or potential outcomes, results in a decrease in quality and effectiveness of decisions.<sup>21,22</sup> Other aspects of emergency medical practice such as uncertainty, vagueness, or incompleteness of information increase stress and limit the capacity of decisionmakers.<sup>23</sup> Other cognitive problems as a result of stress include a decrease in the number of pieces of information a person can process and short-term memory deficits.<sup>24,25</sup> Although the research exploring the effects of acute stress on performance in the ED setting is limited,<sup>26</sup> the data we have demonstrate that performance suffers in acutely stressful conditions.<sup>27,28</sup>

## APPLICATIONS OF PSYCHOLOGICAL SKILLS TO MITIGATE STRESS AND IMPROVE RESUSCITATION PERFORMANCE

Recent studies show that certain psychological interventions, such as training in mindfulness (being aware of one's feelings, thoughts, and sensations in the moment) and meditation, can help individuals cope with stress and anxiety in different circumstances.<sup>29-33</sup> PEPS is distinct from these concepts because it encompasses a variety of techniques for regulating arousal and improving performance just before or in moments of high stress. It has its foundation in other evidence-based psychological skills used to train elite performers in high-stakes occupations, many of which have similarities to emergency medicine.<sup>2-4</sup>

PEPS are specifically designed to empower people to actively address their emotional state and take steps to mitigate their stress response in real time. Controlling and managing responses to acutely stressful medical emergencies may allow providers to maintain situational awareness, think clearly, recall important information quickly, act decisively, and perform skills efficiently.

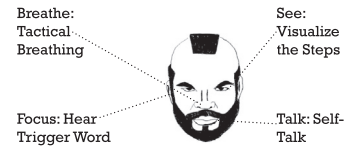
Successful performance is not solely contingent on the application of these psychological skills. In emergency medicine, therefore, extensive preparation, study, repetition of skills, and practice of the entire spectrum of emergency medicine procedures in part and whole are requisite. The application of PEPS is not designed as a replacement for traditional clinical training, but rather as a supplement to it. Just as we train on how to place a chest tube during trauma in discussion and then simulation so also PEPS can be incorporated into preparatory training and then actually used in high-fidelity simulation. The discussion and specifics of how to incorporate these psychological skills into existing emergency medicine training programs are beyond the scope of this introductory article.

The emergency medicine model for PEPS that the authors propose is represented by the initialism BTSF. It consists of 4 elements and can be remembered with the mnemonic "Beat the stress, fool" or a picture of the human face (Figure 1). The whimsical nature of these 2 mnemonics was intentional. If the mnemonics are capable of eliciting a smile, that facial expression alone may reduce stress.<sup>34</sup> These 4 PEPS were chosen because of their ease of use, the efficacy demonstrated in medicine or comparable high-stress fields, and their rapidity in actual situations.

### BREATHE: USING PERFORMANCE-ENHANCING BREATHING

The first element, *breathe*, is the ability of providers to learn to control and focus their attention on their breathing. Stress often causes an immediate spike in

# Beat the Stress Fool!



**B - Breathe**  
**T - Talk (Self)**  
**S - See (Mental Rehearsal)**  
**F - Focus with Trigger Word**

**Figure 1.** Two representations of the "Beat the stress, fool" mnemonic, auditory and visual, for recall of the PEPS. The whimsical nature of the mnemonic may induce smiling, which helps to break the stress escalation cycle.

physiologic arousal; the application of breathing techniques offers a quick and effective means through which to decrease that response. Different breathing techniques have been used and developed during thousands of years to improve performance in various martial arts, meditative practices, and yoga.<sup>35</sup>

Respiration is the only autonomic function that can be controlled and modified consciously. It can therefore be engaged as a means to control the effects of one's emotional response. There is a close, bidirectional relationship between respiration and emotional state.<sup>36,37</sup> Using a slow, deep, controlled respiratory effort results in a reduction in pulse rate, an important physiologic marker of stress.<sup>38</sup> Arch and Craske<sup>39</sup> found that controlled breathing increased the emotional regulatory capability of young, healthy individuals. Seppälä et al<sup>40</sup> recently conducted a randomized controlled trial and demonstrated that breathing techniques can be used to decrease stress response, anxiety, and hyperarousal in combat veterans with posttraumatic stress disorder. Although these studies do not directly examine crisis-situation arousal, they bolster anecdotal and published experience in high-stress situations.<sup>21</sup>

Breathing techniques have been an important tool used by performance psychologists to help elite athletes improve their performance.<sup>41,42</sup> In the setting of sports performance, these techniques have been used to reduce anxiety and control arousal.<sup>5</sup> Usually, psychologists recommend deep breathing used during a break in play action; for example, before serving a tennis ball, just before a penalty kick in soccer, or while getting ready for a free throw in basketball.<sup>5</sup> Similarly, conscious breathing techniques may be most effective just before procedures and during transition points in a resuscitation.

In emergency medicine, one method that can be used to control the respiratory cycle is the 4-second method of "tactical breathing," also known as *square* or *box*

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