

## Stress Management: Individual and Team Training

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Managers and other professionals in industry often have considerable difficulty with the term *stress*. They are likely to be no more comfortable with the phrase *stress management*. Given that managers, trainers, and other professionals in industry are the target audience for this chapter, we attempted to discover why this problem existed. This turned out to be a relatively easy task. First, we searched the PsycLIT database using the search term *stress management* and uncovered more than 1,900 articles related to stress management published since 1990. Second, we scanned the abstracts of these articles to identify what the authors meant by the term *stress management*. We found that stress management included interventions such as relaxation, aerobic conditioning, biofeedback, yoga, music therapy, hypnosis, play, humor, diet management, and transcendental meditation.

It is no surprise that those people who are concerned with worker performance and productivity, who may be responsible for designing training to enhance performance, and who may have to justify these training expenditures to others may be a bit concerned with this mixed bag of psychological treatments and interventions. It seems that the concept of stress management has been used so broadly as to mean almost anything.

Therefore, we attempt to simplify matters by summarizing our perspective on stress management in the following three points:

Driskell, J. E., Salas, E., & Johnston, J. (2001). Stress management: Individual and team training. In E. Salas, C. A. Bowers, & E. Edens (Eds.), *Improving teamwork in organizations: Applications of resource management training* (pp. 55-72). Mahwah, NJ: Erlbaum.

high stress. First, there were sudden and unexpected demands that disrupted normal procedures. Second, the pilots had to perform multiple tasks under distractions such as wind, noise, and time pressure. Third, the consequences of poor performance were severe. Finally, a successful outcome required considerable skill—quite likely, different skills than those required under normal operating conditions.

Now that we have an intuitive feel for what we mean by high stress, we can define stress more precisely. Salas, Driskell, and Hughes (1996) defined stress as a process by which certain environmental demands evoke an appraisal process in which perceived demand exceeds resources and that results in undesirable physiological, psychological, behavioral, or social outcomes.

Although considerable research has examined individual reactions to stress, comparatively little work has examined the effects of stress on team or crew performance (see Driskell & Salas, 1991). Some research has examined the effects of stress on social behavior. For example, Mathews and Canon (1975) found that individuals were less likely to help or assist others when exposed to loud ambient noise. Rotton, Olszewski, Charleton, and Soler (1978) found that loud noise reduced subjects' ability to discriminate among people occupying different roles. Wegner and Giuliano (1980) found that increased arousal led to greater self-focused attention. Some studies indicate that time pressure is likely to inhibit joint problem solving (Walton & McKersie, 1965). Yuki, Malone, Hayslip, and Pamin (1976) found that under high time pressure, team members reached agreements sooner, but they made fewer offers and reached poorer joint outcomes.

S. Cohen (1980) attempted to explain these results by arguing that the effect of stress on interpersonal behavior is a consequence of the narrowing of attention that occurs under stress. The classic arousal perspective argues that stress results in heightened arousal, and these increased demands lead to a narrowing of attention (Easterbrook, 1959). As attention narrows, peripheral (less relevant) task cues are first ignored, followed by restriction of more central or task-relevant cues. Team tasks require attention to both direct task-related activities and interpersonal or teamwork activities such as coordination and communication. Thus, the narrowing of attentional focus under stress may have both cognitive and social effects. As important social or interpersonal cues (such as attention to others' requests or actions) are neglected, team performance suffers. Thus, one effect of stress is a narrowing of attentional capacity, and this narrowing of attention may lead to a neglect of social or interpersonal cues and impaired social behavior. In fact, Driskell, Salas, and Johnston (1999) found that team members were less likely to maintain a broad team perspective under stress and were more likely to shift to a more individualistic self-focus, resulting in poorer overall team performance.

Many task environments involve, on occasion, high-stress or high-demand conditions. Personnel may be faced with multiple tasks that must be performed under extreme time pressure and under complex and often ambiguous conditions. Furthermore, these types of critical or emergency conditions, when events "heat up," are when effective performance is most needed.

- High-stress or high-demand conditions exact a price on performance. Stress can result in increased errors, reduced speed of response, and narrowed attention, all of which may lead to poor performance.
- Normal training procedures do not provide pre-exposure to the stress environment or the special skills training required to maintain effective performance under stress. The purpose of stress training is to prepare individuals and teams to maintain task performance under demanding operational conditions.

Simply stated, *stress training* is a type of training (or a modification of existing training) in which the training designer attempts to anticipate the events that the trainee is likely to face in the operational environment. Because the term *stress* evokes such varied responses, we could as easily call this type of intervention *emergency training* or *training for high-demand conditions*. In this chapter we discuss guidelines for designing and developing stress training that can be adapted for various occupational environments.

## WHAT IS STRESS, AND WHY DO WE WANT TO MANAGE IT?

To illustrate what we mean by the term *stress*, we offer the following example:

On April 28, 1988, an Aloha Airlines Boeing 737 was on a scheduled flight from Hilo to Honolulu, Hawaii. Suddenly, the pilots heard a loud "whooshing" sound, followed by wind noise. The captain looked up and "there was blue sky where the first-class ceiling had been." The fuselage had separated, and 18 feet of the cabin's exterior had peeled off of the airplane. The pilots donned oxygen masks because of the rapid decompression, and were forced to use hand signals to communicate because of the ambient noise. As they maneuvered for an emergency landing, the No. 1 engine failed. The pilots were able to land the airplane at Maui's Kahului Airport, making a normal touchdown and landing. (National Transportation Safety Board, 1989)

Most observers would define this as a high-stress event. Because we assume at least some agreement on this point, it may be useful to consider informally some of the characteristics of this event that lead us to label it as

In summary, what do we mean by *stress*? Stress is a high-demand, high-threat situation that results in degraded performance. It is time limited; stress conditions occur suddenly, and often unexpectedly; quick and effective task performance is critical, and consequences of poor performance are immediate and often catastrophic.

## STRESS TRAINING

Evidence indicates that the effects of stress are costly in terms of individual performance and organizational productivity, and considerable effort has been devoted to developing stress training interventions to overcome these effects. It is important that we distinguish between *training* and *stress training*. The primary goal of training is skill acquisition and retention. Therefore, most training takes place under conditions designed to maximize learning, such as a quiet classroom and the practice of task procedures under predictable and uniform conditions. In this manner, the traditional "classroom" training format typically does a good job of promoting initial skill acquisition.

However, some tasks must be performed in conditions quite unlike those encountered in the training classroom. For example, high-stress environments include specific task conditions (such as time pressure, increased task load, distractions) and require specific responses (such as the flexibility to adapt to novel and often-changing environmental contingencies) that differ from those found in a normal or more benign environment. The primary purpose of *stress training* is to prepare the individual to maintain effective performance in a high-stress environment.

There have been numerous attempts to implement different types of stress training techniques, and these approaches have met with various degrees of success (see Lipsey & Wilson, 1993, for an overview of the effectiveness of various psychological interventions). However, most studies have examined the effectiveness of isolated training techniques, such as training attentional-focusing skills (Singer, Cauraugh, Murphey, Chen, & Lidor, 1991) or overlearning (Driskell, Willis, & Copper, 1992). What has been missing is an integrated approach to developing stress training. This approach provides a structure for developing stress training programs rather than implementing individual techniques. An integrated model of stress training must incorporate two critical components of stress training.

- It must provide a means to provide pre-exposure to the high-stress or emergency conditions that may be faced by the trainee. This pre-exposure can both be informational (e.g., providing information regarding the stress environment) and behavioral (e.g., providing the trainee the opportunity to practice under simulated stress conditions).

- Training must incorporate specialized skills training (such as training decision-making skills) to impart those skills required to maintain effective performance in high-stress environments.

Driskell and Johnston (1998) developed an integrated stress training approach, termed *stress exposure training* (SET), that provides a structure for designing, developing, and implementing stress training. The SET approach is defined by a three-stage training intervention:

1. *Information Provision*: An initial stage in which information is provided regarding stress and stress effects. The purpose of this phase of training is to provide trainees with basic information on stress, stress symptoms, and the likely stress effects in the performance setting.
2. *Skills Acquisition*: A skills training phase in which specific cognitive and behavioral skills are taught and practiced. These are called *high performance* skills, because they represent the skills required to maintain effective performance in the stress environment.
3. *Application and Practice*: This stage involves the application and practice of these skills in a graduated manner in a simulated stress environment. Allowing a trainee to practice skills in a graduated manner across increasing levels of stress (from moderate-stress scenarios or exercises to higher stress exercises) ensures successful task performance.

Note that SET is a model for stress training rather than a specific training technique. The SET model describes three stages of training, each with a specific overall objective. However, the specific content of each stage will vary according to the specific training requirements. For example, in the Information Provision stage the trainer will provide information on the specific stressors that are likely to be faced in a particular environment. Likewise, any number of stress training techniques—such as attentional training, overlearning, or physiological control—can be implemented in the Skills Acquisition phase of the SET approach. In other words, SET does not prescribe one type of training that must be applied in all settings but provides a model to guide the design of stress training for any given task.

There are special considerations regarding stress training for team tasks. For team tasks, stress training should take place in the team setting. Team members must develop not only confidence in their own capability to perform under stress conditions but also confidence in the team. Furthermore, many stressors, such as time pressure, may affect team processes such as coordination and communication. Therefore, stress training for team tasks should be conducted with intact teams and should address those team processes that may be degraded under stress (see Driskell & Salas, 1991; Kanki, 1996).

## DESIGNING STRESS TRAINING

In the following sections we present specific guidelines for designing and implementing stress training. Note that this is not intended as a general overview of training design. Basic principles of training design and implementation are provided in more general texts (see I. L. Goldstein, 1986; Quinones & Ehrenstein, 1997; Wexley & Latham, 1991).

**Needs Analysis.** The primary goal of stress training is transfer to the real-world operational environment. Therefore, training is context specific and is designed to provide pre-exposure to the anticipated stress conditions that are likely to be encountered in the operational environment. Accordingly, Johnston and Cannon-Bowers (1996) noted the importance of designing stress training on the basis of an analysis of the task environment. This analysis becomes the basis for the development of training content, including the specific tasks to be trained and the types of stress to which trainees are exposed in training. A needs analysis is an important initial step in designing any type of training program. The end result of a needs analysis is the development of specific training objectives. General guidelines for conducting a needs analysis are readily available (I. L. Goldstein, 1986).

A second type of needs analysis is often called a *person analysis* and addresses the question of who is to be trained. Generally speaking, any individual or team that may be called on to perform under operational conditions (such as time pressure, increased threat, and high workload) that differ from those normally encountered in training should receive specialized stress training.

**Training Development.** One question that should be addressed in the early stages of training design is: Who will develop the training? One effective means to develop stress training is through the team approach. Because stress training is an instructional procedure designed to prepare individuals to perform in a specific real world environment, the development team should include not only experts in instructional development but also subject-matter experts who are familiar with the operational setting.

**Sequencing of Training.** When should stress training be implemented? The first issue to be considered is where stress training should be placed in the training schedule. Ideally, stress training should be integrated into the overall training curriculum. In the integrated approach, trainees would first receive initial skills training in the classroom and then practice these skills in a simulated operational setting incorporating the stressors that are likely to be found in that environment. In this case, stress training would be implemented as a component of normal technical training.

A second, related question is the timing or manner in which stress exposure is to be introduced during training. Exposure to stressors too early in training may interfere with initial skill acquisition. Thus, the high demand, ambiguity, and complexity of the stress environment may not be conducive to the early stages of learning. There is some evidence to support the effectiveness of *phased training*, in which skills training and exposure to stressors occur in two separate phases of training, with the stress training introduced after initial skill acquisition (Friedland & Keinan, 1986). Therefore, if stress training is presented as an integrated component of technical training, it should be introduced following initial skills acquisition. The introduction of stress training too early in the training curriculum may interfere with initial skill acquisition.

**Fidelity.** One dilemma facing the training designer is how to introduce realistic stressors in training. High-fidelity stressors are those that are just like the ones encountered in the operational environment. Some researchers argue for high-fidelity simulation of stress in training (Terris & Rahhal, 1969), whereas others suggest that a low-fidelity approach is more effective, arguing that intense stress during training may intensify fears or interfere with skill acquisition (Lazarus, 1966).

Given the complexity and high stresses inherent in real-world environments, one can never reproduce these stressors in the training setting. However, real-world stressors can be simulated in a training environment at a lower or moderate level of fidelity. Although fidelity is important in stress training, attempting to achieve too high a level of fidelity may be counterproductive; both for safety reasons and because if stressors are presented at too high a level of fidelity, little actual skills training or practice may take place. Furthermore, research suggests that stressors such as time pressure and task load can be effectively simulated in a moderate-fidelity training setting (Johnston, Driskell, & Salas, 1997). The training designer must balance the desire for high fidelity with requirements for safety and training effectiveness.

**Feedback.** Feedback or knowledge of results is critical for both learning and motivation (Wexley & Latham, 1991). Positive performance feedback is especially critical for stress training. When trainees practice a task during training in a simulated stress environment, by the end of the training session they must receive feedback that they are performing the task effectively. Because the stress environment is an extremely high-demand performance environment, individuals will develop either positive or negative expectations regarding their capacity to perform in that environment. It is important that training supports the development of positive performance expectations, for one critical reason: Individuals who develop positive expectations will have more confidence in their ability to perform their duties and will be

more resistant to negative stress effects. On the other hand, individuals who are exposed to the stress environment during training and receive feedback that leads them to conclude that they are likely to fail in the operational setting are perhaps worse off than those who are not trained at all. This again suggests a graduated approach to stress training, which promotes the development of positive trainee expectations by proceeding from simple exercises to more complex and realistic training scenarios.

**Evaluation and Follow-Up.** A well-designed training evaluation is required to assess trainees' reactions to training, to assess whether training is achieving the desired objectives, and to gather other data that are critical to training success. Moreover, in designing stress training it is essential that continuing or recurrent training be considered. Stress training, by definition, is training that incorporates features of the stress environment. In most cases this environment is one that is rarely encountered in everyday situations. Therefore, unless continuing stress training is provided, trainees will not have the opportunity to practice and apply the skills learned, and these skills will decay over time. Follow-up training should be implemented at appropriate intervals following initial training.

## IMPLEMENTING STRESS TRAINING

The specific events that take place in any given stress training intervention will be specific to the requirements and characteristics of that operational setting. For example, the types of stress that are relevant, and whether the focus of skills training should be on decision making, team coordination, or other skills are questions that are unique to the specific task environment. Therefore, what is most important is that we are able to establish a structure for stress training, a framework that describes how stress training should be implemented.

In the following sections we adopt the three stages of the SET approach (Driskell & Johnston, 1988) as a means to structure stress training. Our intent is to outline the three-stage stress training approach that has been shown to be overall an effective stress training intervention (Saunders, Driskell, Johnston, & Salas, 1996) and to describe the types of content that may compose each stage.

### Phase 1: Information Provision

The first component of Phase 1 is trainee indoctrination. Trainees need to know why they are there, the objectives of training, and why stress training is important. This type of indoctrination is standard procedure but is partic-

ularly relevant for stress training because stress training is training "above and beyond" basic technical training, and thus its value must be clearly established for the trainee. Indoctrination may be provided by discussing operational incidents or case histories in which stressors such as extreme time pressure and task load had a significant impact on performance.

The second and primary component of Phase 1 is the provision of preparatory information. Performing under high-demand, high-stress conditions results in several negative consequences. One effect of stress is physiological. Physiological reactions include increased heart rate, sweating, shallow breathing, muscle tension, and other reactions. A second category of stress effects are performance effects, including distraction, narrowing of attention, tunnel vision, decreased search activity, and so on. These effects are well documented and typically result in degraded overall performance. However, the typical task performer is relatively naive and knowledgeable regarding both performance and physiological effects of stress.

Research suggests that providing trainees with preparatory information about the stress environment may have several beneficial consequences. Preparatory information may increase a sense of controllability and increase a person's confidence in his or her ability to perform. Preparatory information enables the individual to form accurate expectations regarding stress reactions and events that are likely to occur in the stress performance environment. Finally, preparatory information decreases the distraction involved in attending to novel sensations and activities in real time in the stress environment, thus increasing attention devoted to task-relevant stimuli.

A recent study conducted by Inzana, Driskell, Salas, and Johnston (1996) demonstrated the value of providing preparatory information as a part of stress training. In this study, trainees were given preparatory information before engaging in a stressful military task simulation. The information included knowledge of the stressors inherent in the task environment (i.e., increased task load, auditory distraction, and time pressure), information on how these stressors might make the participants feel (e.g., physical sensations, such as a pounding heart and sweating palms) and, finally, information on how these stressors may affect task performance. The results indicated that task performers who were given preparatory information prior to task performance made fewer errors under stress, were less likely to report feeling stressed, and were more confident in their ability to perform the task.

### Phase 2: Skills Acquisition

The effects of stress on the task performer are well documented. Stress may result in physiological changes, such as increased heartbeats, labored breathing, and trembling (Rachman, 1983); emotional reactions, such as fear, anxiety, frustration (Driskell & Salas, 1991), and motivational losses (Innes &

Allnutt, 1967); cognitive effects, such as narrowed attention (Easterbrook, 1959), decreased search behavior (Streufert & Streufert, 1981), longer reaction time to peripheral cues and decreased vigilance (Wachtel, 1968), and performance rigidity (Staw, Sandelands, & Dutton, 1981); and changes in social behavior, such as a loss of team perspective (Driskell et al., 1999) and a decrease in prosocial behaviors, such as helping (Mathews & Canon, 1975).

The second phase of stress training focuses on the acquisition of skills required to counter these negative stress effects. Driskell and Johnston (1998) described two types of stress training techniques. First, one can attempt to make the task performer less reactive to stress. For example, if the trainee overlearns the task so that responses are automated, then performance is less likely to be disrupted by increased demands. A second approach is to train the individual to compensate for or overcome the expected decrements imposed by stress. For example, decision-making training approaches attempt to train effective decision-making strategies that are appropriate to high-demand environments.

Therefore, the goal of training at this stage is to build high performance skills that are resistant to degradation under stress. Although the training content (the specific training techniques) implemented in this phase of training will depend on the requirements of the task, we describe in the following several candidate training techniques.

**Cognitive Control Techniques.** *Cognitive restructuring* is an elaborate term for a relatively simple but useful training technique. In a stress environment, performance suffers as attention is divided between task-relevant and task-irrelevant cognitions. The focus of this training approach is to train the individual to regulate emotions (e.g., worry and frustration), regulate distracting thoughts (self-oriented cognitions), and maintain task orientation (Wine, 1980). Although applied research is relatively sparse, cognitive control techniques may be effective in enhancing task performance under stress. However, note that other cognitive techniques, such as self-talk or imagery, in which trainees are taught to invoke a positive thought, phrase, or image in response to stress, may be distracting and detrimental to task performance in a high-demand, time-limited task setting.

**Physiological Control Techniques.** Some training techniques attempt to provide the trainee with control over negative physiological reactions to stress. Relaxation training has proven to be a successful stress reduction technique, although it may be difficult to implement in many applied settings because of the connotations associated with the term (no one wants personnel "relaxed" in a critical task situation). Nevertheless, the value of this training is that it attempts to train the responses characteristic of effective or high performers: being calm, relaxed, and under control. Training that

enhances physiological control (awareness and control of muscle tension, breathing, etc.) may promote effective task performance under stress.

**Modeling.** A number of studies have also examined observational practice, or behavioral modeling techniques (see A. P. Goldstein & Sorcher, 1974), and proponents argue the value of this approach for stress training. The opportunity to observe or model a team responding effectively in a realistic stress simulation (live or on videotape) may increase trainee familiarity with the performance setting and allow trainees to observe key behaviors that characterize effective performance in that setting.

**Overlearning.** *Overlearning* refers to deliberate overtraining of a performer beyond the level of initial proficiency (Driskell et al., 1992). Overlearning can provide trainees with a set of well-learned responses that are less vulnerable to stress decrement. However, the training designer must ensure that the task that is overlearned is the task called for in the actual performance setting; thus, overlearning of skills that will be performed in a high-stress criterion setting should take place in a simulated stress environment.

**Attentional Training.** Singer et al. (1991) examined whether attention-focusing skills could be directly trained and found that attentional training resulted in improved task performance when participants worked under conditions of noise stress. This approach included awareness training to describe when, why, and how attention may be distracted during task performance. This was followed by practice in performing the task under high-demand conditions, focusing attention, and refocusing attention after distraction. Training that concentrates directly on enhancing attentional focus may overcome the distraction and perceptual narrowing that occur in stress environments.

**Training Time-Sharing Skills.** In an emergency situation a person may have to perform a primary task, deal with a second unexpected task, delegate a third task, monitor a fourth, and so on. Research suggests that multiple tasks can be performed effectively if they are practiced concurrently (Hirst, Spelke, Reaves, Caharack, & Neisser, 1980). Therefore, time sharing is a task-specific skill, and tasks that are likely to be performed concurrently in the operational environment must be practiced concurrently in training.

A second concern is training prioritization skills in multiple-task environments. An example of a commercial aviation emergency illustrates the problem: A commercial jet was on an approach for landing, a period of very high workload, when a landing gear light failed to illuminate. Over the next 4 minutes of flight, the crew was so preoccupied with this malfunction that they

failed to monitor other critical flight activities and literally flew the plane into the ground (National Transportation Safety Board, 1973). In high-workload conditions, individuals, often by necessity, focus on some tasks to the exclusion of others, and often attention is devoted to low-priority or irrelevant tasks. Training that addresses the prioritization of tasks in high-workload environments may ensure that the most critical tasks are not neglected.

**Decision-Making Training.** Formal, analytic decision-making approaches require the decision maker to carry out an elaborate and exhaustive procedure characterized by a systematic, organized information search, thorough consideration of all available alternatives, evaluation of each alternative, and re-examination and review of data before making a decision. Although this procedure is often taught as the decision-making ideal, some researchers have argued that under high task demands, decision makers do not have the luxury of adopting a time-consuming analytic strategy. Moreover, encouraging the decision maker to adopt an analytic model could undermine behavior that may more adequately fit the requirements of the task situation (see Cannon-Bowers & Salas, 1998). Johnston et al. (1997) found that on a time-pressured, naturalistic task, individuals who had been trained to use a less analytic strategy performed more effectively than those who used a formal, analytic decision strategy. These results emphasize the importance of adaptability and flexibility in decision making and suggest that one goal for training is to enhance flexibility in adapting decision-making strategies to task demands. Specialized training on decision-making skills in a stressful environment should ensure that strategies appropriate to high-demand task conditions are trained.

**Enhancing Flexibility.** Research indicates that stress leads to greater problem-solving rigidity (Cohen, 1952). *Rigidity* refers to the tendency to approach a problem with a restricted attentional focus on a given set of cues and an expectancy that there is a single solution that does not vary. Flexible behavior includes attention to many task cues and the expectation that the correct problem solution may differ from situation to situation. Flexibility leads to more efficient performance under complex conditions in which more than one solution is possible or in novel task conditions in which solutions must be made under varied task contingencies.

Certain training procedures can enhance flexible behavior. Practice of a narrow range of examples in training can lead to response rigidity and poor transfer to more complex, real world environments. Gick and Holyoak (1987) found that positive transfer was more likely when a variety of different examples were provided during training. Schmidt and Bjork (1992) referred to this as *practice variability*, noting that intentional variation during skills practice can enhance the transfer of training. Thus, presenting training material or

training activities in various contexts, from different perspectives, and with diverse examples can result in more flexible use of a skill under novel task conditions.

### Phase 3: Application and Practice

Effective performance requires not only that skills are learned in training but also that they are transferred to the operational setting. The novelty of performing even a well-learned task in a high-stress environment can cause severe degradation in performance. Research has shown that, for some tasks, normal training procedures (training conducted under normal, non-stress conditions) often do not improve task performance when that task has to be performed under stress conditions (Zakay & Wooler, 1984). Therefore, the final phase of stress training requires the application and practice of skills learned under conditions that approximate the operational environment. Allowing skills practice to proceed in a graduated manner across increasing levels of stress (from moderate stress scenarios or exercises to higher stress exercises) allows pre-exposure to the conditions that are likely to be faced in a high-stress or emergency situation.

Graduated exposure to stress events in training serves several purposes. First, it serves as an adjunct to the preparatory information provided in Phase 1 of training, allowing the trainee to experience likely real world operational conditions. This reduces uncertainty and anxiety regarding these events and increases confidence in the ability to perform in this setting. Second, allowing trainees to perform tasks in a simulated stress environment increases familiarity with the type of performance problems inherent in this setting. Trainees can then be allowed the opportunity to bring performance back to baseline levels using skills learned in Phase 2. Finally, events that have been experienced during training will be less distracting when faced in the operational environment.

Pre-exposure to the stress environment can be accomplished in Phase 3 in a number of ways. Normal training exercises can be adapted by incorporating stressors such as increased time pressure, noise, or other distractors; trainees can role play emergency conditions; or more advanced simulations, incorporating realistic scenarios, can be used. In one training exercise, Johnston et al. (1997) incorporated stress into decision-making training by playing multitask recordings of task-related chatter over trainees' headphones, increasing the pace of training events, and having exhortations and interruptions occur at regular intervals (all of these events were relevant to the operational task environment).

One concern that inevitably arises among training professionals is the question of intensity or fidelity of stress training. *Fidelity* refers to the degree to which characteristics of the training environment are similar to

- Stress conditions can impose negative physiological, cognitive, emotional, and social effects, all of which may contribute to impaired task performance.
- Technical skill is a necessary but not sufficient condition to support effective performance in the stress environment. Normal training procedures do not provide pre-exposure to the stress environment or the special skills training required to maintain effective performance under stress.
- The key goals of stress training include providing pre-exposure to the high-demand conditions that may be faced by the trainee in the operational environment and providing the specialized skills training required to maintain effective performance under stress conditions.

#### **Guideline 2: Stress Training Must Be Based On a Comprehensive Needs Analysis**

A careful needs analysis is required to develop training content, defining the specific tasks to be trained and the types of stress to which trainees are exposed in training. The training development team should include experts in instructional development and subject matter experts who are familiar with the operational setting.

#### **Guideline 3: Stress Training Should Address Both Individual and Team Tasks**

Because stress may degrade team processes such as coordination and communication, stress training for team tasks should be conducted with intact teams.

#### **Guideline 4: Stress Training Should Be Implemented After Initial Skills Training**

Stress training should be introduced into the training curriculum after initial skills are developed. The introduction of stress training too early may interfere with initial skill acquisition.

#### **Guideline 5: Although Stress Training Must Approximate the Operational Setting, Absolute Fidelity Is Not Necessary**

Given the complexities inherent in the real-world environment, absolute fidelity in training is neither possible nor necessarily desirable. The training designer may provide exposure to the stress environment in a graduated manner, from moderate to higher stress exercises.

those of the criterion setting. Some argue that if a training setting is not realistic—it does not look and feel just like the real setting—then it is not useful. The tendency for those who share this view is to “turn up all the knobs” in training, to create an environment that is just as complex and stressful as the real thing. However, the danger in this approach is that the increased complexity will overload the trainee and prove detrimental to training. Regian, Shebilske, and Monk (1992) claimed that it is not necessarily true that higher fidelity always leads to better training and that many training strategies reduce fidelity early in training to reduce complexity. Keinan and Friedland (1996) noted that allowing skills practice in a graduated manner across increasing levels of stress satisfies three important requirements: it allows the individual to become more familiar with relevant stressors without being overwhelmed, it enhances a sense of individual control and builds confidence, and gradual exposure to stress is less likely to interfere with the acquisition and practice of task skills than would exposure to intense stress.

#### **SUMMARY: GUIDELINES FOR STRESS TRAINING**

Those interested in the topic of stress and performance are faced with a field of study that includes both fact and fads, interests that range from crew performance to surgery, and a bewildering array of stress interventions (see Driskell & Salas, 1996). No doubt stress is a difficult topic, but for those concerned with how people perform in demanding, real-world situations, it is a topic that is of utmost importance. Based on our own research and the work of others, we are able to derive some general principles for stress training. Although modest, the following guidelines are intended to assist those developing stress management training for individuals and teams.

#### **Guideline 1: Make Sure Everyone Is On the Same Page**

When you mention “stress training” to 10 different people, you are likely to get 10 different interpretations of what you mean. It is critical that those in upper management positions and the trainees themselves clearly understand the goals of stress training. We offer the following four points:

- Stress is a high-demand, high-threat situation that results in degraded performance. It is time limited, stress conditions occur suddenly and often unexpectedly, quick and effective task performance is critical, and consequences of poor performance are immediate and severe.



### Guideline 6: Stress Training Must Be Provided On a Continuing Basis

Emergency or high-demand conditions occur relatively rarely. Unless continuing training is provided, trainees may not have the opportunity to practice and apply the skills learned in stress training. Follow-up training should be planned at appropriate intervals.

### Guideline 7: The Three-Stage SET Approach Has Been Shown to Be An Effective Training Procedure, Incorporating Information Provision, Skills Acquisition, and Application and Practice

The primary goal of the information-provision phase of training is to provide trainees with basic information on stress, stress symptoms, and likely stress effects in the performance setting. The second phase of training, skills acquisition, focuses on building the skills that are required to counter the negative effects of stress on performance. The third stage of training, application and practice, provides the trainee the opportunity to practice skills learned under simulated stress conditions. Stress should be introduced in a graduated manner, from moderate to higher stress training exercises.

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