Trauma First Aide™ Associates
Restoring Resilience
Prevent More, Treat Less

Trauma First Aide™ - Our Scientific Rationale
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Trauma disrupts lives, families and communities. Decades of research demonstrate that acute stress symptoms, left untreated, can develop into post-traumatic stress disorder or PTSD. Despite years of scientific findings that PTSD clients are, at best, only partially helped by traditional mental-health therapies, trauma has largely been viewed as a "mental health" problem. It's time to consider something new. It's time to find ways to reduce and prevent long term effects costing our nation billions of dollars and immeasurable suffering.

Trauma First Aide™ or TFA is a new mind-body approach to working with acute traumatic stress. TFA's two-pronged skill set stabilizes trauma reactions and promotes resilience for caregivers and persons affected by trauma. It is a bottom-up approach that focuses on physiological response patterns rooted in the most primitive survival mechanisms of the human brain.

A short-term stabilization intervention, TFA offers:
--A bridge between physiology and psychology.
--Right here, right now skills.
--Proactive mind-body intervention for self and others.

TFA is easy to learn and field-ready. It has been deployed successfully by first-responders, military and medical personnel and civilian volunteers in disasters, war zones and other emergency environments. In health care, TFA has become a self-care tool easing caregiver stress and preventing burnout. In hospital and clinical settings, TFA has also been documented to be a fast calming and stabilization technique for lowering patients' physiological stress reactions, obviating the need for more invasive, expensive interventions. [1] Educators use TFA in classroom settings to calm and settle students for more effective learning. While not therapy, TFA can help stabilize therapeutic clients for more effective clinical interventions.

Trauma First Aide's skills-based model incorporates:

1. **An understanding that trauma has a physiological basis**
2. **Focused work with the peripheral nervous system**
3. **Intervention skills that facilitate re-establishing safety and connection with others, encouraging calm, promoting self-efficacy and restoring hope**
4. **Restoring social connection and internal locus of control**
5. **Early intervention**
6. **Strengthening resilience by normalizing**

7. **Prior training & active coping**

Trauma has a physiological basis

The neurophysiology of stress and effects of trauma exposure on the human nervous system are well established. Studies over the last two decades have documented that acute-stress exposure and PTSD alter cerebral blood flow patterns, pain processing and blood cortisol. Bessel A. van der Kolk and J. Saporta observed that traumatized people exhibit "significant conditioned reactions in response to stimuli reminiscent of the original trauma, as measured by heart rate, blood pressure and electromyogram." [2]

Acute trauma exposure has been associated with increased incidence of cardiac, vascular, neurological and gastrointestinal disease. U.S. Navy psychiatrist William P. Nash, combat/operational stress control coordinator for the U.S. Marine Corps, noted:

> "Elevated heart rate soon after a traumatic event has been found prospectively to be a predictor of who will go on to develop ASD (acute-stress disorder) or PTSD (Bryant et al, 2004; Kasem- Adams et al, "Heart rate and post traumatic stress in injured children," 2005, Shalev et al, 1998). Arousal is necessary to adapt to threats but arousal beyond a certain optimal point is toxic. Hyperarousal reduces the efficiency of cognition (van der Kolk, 1995; Yerkes & Dodson, 1908,) and may make it more difficult to make sense out of and master a given situation. Excessive arousal can also promote physical damage to certain neurons in the brain, a process known as "excitoxicity" (Stahl, 1996). Exitotoxicity from excessive arousal has been implicated in the degeneration of the brain in several mental disorders. ….Another implication of the connection between arousal and traumatic stress injury is that anything that reduces arousal level at the moment of stress impact may mitigate or even prevent the resulting injury." [3]

TFA works directly with the peripheral nervous system

TFA stabilization techniques are based on emerging scientific knowledge about physiological responses to trauma and effective interventions in the immediate aftermath of traumatic events.

We begin with the understanding that human responses to trauma are most easily and quickly observed in the peripheral nervous system. TFA-trained helpers recognize and work with physiological arousal symptoms of acute stress and trauma within the autonomic and somatic branches of the peripheral nervous system. A TFA-trained helper initially focuses on stabilizing his or her own physiological response. We call that "putting your own oxygen mask on first." We view self-care as the essential prerequisite for effective care of others and for prevention of secondary traumatic stress and burnout or compassion fatigue.

After self-care steps, a TFA-trained individual can help others regain a sense of safety and self control. A TFA helper supports an affected person's physiological shifts from stress reactions (increased heart rate and blood pressure, constricted breathing patterns, gastrointestinal reactions) to nervous-system stabilization (reduced heart rate, improved breathing, gastrointestinal change, release of stress through shaking, crying or laughing).

TFA techniques help restore nervous system equilibrium by:

1. Interrupting sympathetic nervous system response patterns and supporting parasympathetic system responses to re-stabilize and help calm.
2. Shifting a trauma-affected person's attention away from constriction patterns that feel frightening and can further destabilize.
3. Assisting a trauma-affected person in identifying internal strengths and resources and experiencing how those resources can help them re-stabilize their nervous system.
4. Shifting locus of control back to the trauma-affected person.
5. "Normalizing" by educating that an affected individual's emotional and physiological responses are predictable human reactions to trauma.

Intervention principles

TFA's core concepts are re-establishing safety and connection with others, encouraging calm, promoting self-efficacy and restoring hope after traumatic events.

In 2007, a world-renowned panel of 20 civilian and military trauma and disaster experts identified "five empirically supported intervention principles that should be used to guide and inform intervention and prevention efforts at the early to mid-term stages. These are promoting 1.) A sense of safety, 2.) calming, 3.) a sense of self- and community efficacy, 4) connectedness, and 5.) hope." [4]

In *Traumatic Stress*, Gordon Turnbull and Alexander McFarlane summarized a 1980 study on essential ingredients of effective, brief interventions after trauma. Those included beginning to restore a sense of power or control to survivors; reducing isolation through nurturing behavior; and diminishing feelings of helplessness and hopelessness by helping survivors build a coping plan for the present and future. [5]

In a landmark 1996 review of causes and treatment of traumatic stress disorders, Bessel A. van der Kolk and Alexander C. McFarlane identified "regaining a sense of safety in their bodies" as one of the two pillars of treatment for individuals with PTSD. [6] They observed: "Immediately after people have been traumatized, the emphasis needs to be on self-regulation. ...This means the establishment of security and predictability. It also means active involvement in adaptive action …and active engagement in the physical care of oneself and other survivors." [7]

In the 2007 international consensus report on principles of effective trauma interventions, Hobfill et al noted that a 2003 study of Israeli coping behaviors in the face of terrorism found that having or regaining a relative sense of safety in an ongoing traumatic event can lower the risk of developing PTSD.[8]

Early intervention is best

Immediacy of support is key to TFA's stabilization approach.

We understand that trauma isolates. In turn, isolation escalates fear, heightens sympathetic nervous system arousal and erodes an individual's ability to self regulate. The scientific literature supports our view that early intervention can reduce and prevent these traumatic reactions.

Trauma researchers Alexander McFarlane and Rachel Yehuda observed:

> "A person's immediate emotional reaction at the time of the trauma will influence the capacity to respond to the threat in an adaptive way. For example, a dissociative response or a panic reaction is likely to put the individual at particular risk. The person's state of mind in the midst of a traumatic experience will also have a profound impact on the way the memory of the trauma is laid down and subsequently processed.
> PTSD does not develop in the aftermath of a traumatic event. Rather, this disorder emerges out of the pattern of acute stress triggered by the event."[9]

McFarlane, Yehuda and other researchers have theorized that a person's arousal patterns may be destabilized by the initial trauma and spiral into a feedback loop of progressively more extreme arousal patterns. The looping pattern, in turn, destabilizes the ability to process thoughts and feelings. McFarlane and Yehuda observed that the dominant focus on cognitive processing in PTSD treatment may have had the unintended effect of hampering current understanding of how human arousal systems get stuck at extremes of arousal and dissociation after exposure to acute traumatic stress.[7]

They and other researchers observed that immediate intervention could prevent formation and consolidation or entrenchment of such "feedback loops." This supports TFA's premise that early intervention restores neurophysiological regulation and promotes resilience.

"Whether an individual's arousal normalizes once an acute traumatic reaction has been triggered is a critical process in the long-term adaptation to an event," Yehuda and McFarlane wrote. "What happens in the immediate aftermath of trauma is critical." They later observed that "with accident victims who sustain significant injuries, it is increasingly apparent that the experience of the rescue and acute treatment are as important predictors of the posttraumatic outcome as the trauma itself."[10]

Restoring social connection & internal locus of control

Research supports the core TFA concept that effective stabilization intervention quickly restores social connections and helps trauma-affected individuals regain internal locus of control.

Effective social connection restores a sense of safety for trauma-affected individuals. As Veterans Administration psychiatrist Jonathan Shay observed in *Odysseus in America,* "The human brain codes social recognition, support and attachment as physical safety." [11]

In *Trauma and Recovery,* psychiatrist Judith M. Herman noted that "a supportive response from other people may mitigate the impact of the event….In the immediate aftermath of the trauma rebuilding of some minimal form of trust is the primary task..."[12] She cited a personal interview with World War II military psychiatrist Herbert Spiegel, who stated, "The traumatic neurosis doesn't occur right away. In the initial stage, it's just confusion and despair. In that immediate period afterwards, if the environment encourages and supports the person, we can avoid the worst of it. [13]

In *Post-Traumatic Stress Disorder: Basic Science and Clinical Practice*, neuroscientists Priyattam J. Shiromani, Terence M. Keane, and Joseph LeDoux wrote that symptoms arising from acute and post-traumatic stress "may be moderated to some extent by coping skills and social support. In PTSD, evidence already exists that these variables play a prominent role in determining whether the disorder exists.[14]

A study of social workers who treated survivors, families of victims and first responders at the World Trade Center after 9/11 identified a lack of social support as the biggest risk factor for secondary trauma. [15]

A 2007 review of current concepts and research evidence on resiliency and PTSD cited three recent sets of research findings that "perceived social support and adjustment among firefighters were associated with resilience to developing symptoms of PTSD, depression, and other psychopathology." [16]

To stabilize trauma-affected individuals, social support must focus on restoring a sense of self-efficacy or self control. McFarlane and Van der Kolk cited research published in 1982 on the impact of social support for male heart-attack patients. In that study, a solid internal locus of control appeared to be more important than the level of social support available to a patient. McFarlane and Van der Kolk noted: "This suggests that social support in the absence of an internal locus of control may in fact impair healing processes. …The efficacy of social support depends, at least in part, on the amount of comfort that the individual victims derive from it and the extent to which it motivates them to take charge of their lives again." [17]

Strengthening resilience by normalizing

TFA emphasizes "educating and normalizing" to stabilize stress reactions.

Normalizing of stress reactions was identified by Hobfoll et al [18] as an intervention principle that helped calm the general population and individuals who develop severe reactions to traumatic events. In one 2003 study of Israeli combat soldiers, Hobfoll and co-authors noted, researchers found that the message that soldiers were "reacting in a normal way to an abnormal situation" lessened acute stress reactions.

In a recent personal interview, Bosccarino observed that effective interventions in the immediate aftermath of 9/11 included brief, focused education on stress responses and ways to reduce stress. "And it doesn't take a lot of information," he said**.**

Beverly Raphael et al summarized an evaluation of support offered to hospital staff and emergency workers after mass panic at an English soccer stadium set off a stampede that left 95 people dead. "In the evaluation of the support services, staff members indicated that both they themselves and their families could have benefited from a 'pre-incident' training in knowledge of stress responses to be expected after exposure to trauma.' " [19]

Prior training & active coping

TFA training enhances coping skills and encourages resilience.

A number of studies have cited prior training as key to successful coping with traumatic events. In a review of PTSD prevention strategies, Ursano and coauthors noted that one 1989 study of helicopter-crash survivors found that prior training was most important in helping survivors remain calm, assess alternate escape routes and appraise what was happening after they crashed into the North Sea. Prior training promoted the survivors' confidence in their ability to survive. Ursano et al noted that a 1992 study of firefighters involved in disasters found that their training and social support were key mediators of stress. [20]

In their review of the scientific literature on resilience and PTSD, Hoge and coauthors stated: "Training and preparedness may add to an individual's sense of self-efficacy and an internal locus of control, which have been implicated in prevention of and recovery from PTSD …Coping self-efficacy, in particular, has been implicated as a mediator between acute stress symptoms and PTSD symptoms." In addition, Hoge et al cited four separate studies between 1996 and 2004 suggesting that prior training and experience "contribute to the psychological health of emergency workers exposed to trauma." [21]

Israeli researcher Arieh Shalev cited successful coping as an important moderating factor for stress effects. “Effective coping results in relief of personal distress, maintenance of a sense of personal worth, conservation of one’s ability to form rewarding social contracts, and sustained capability to meet the requirements of the task.” In a study of survivors of a terrorist attack, Shalev found that even badly wounded people who engaged in coping skills during and immediately after a traumatic event “described that successfully achieving their individual coping goals increased their sense of control and reduced their distress.” [22]

Terence Keane, director of the National Center for PTSD’s behavioral science division, observed that animal studies show how active coping with fear may reduce fear. “This new learning paradigm is referred to as escape from fear. In escape from fear learning, an organism learns to perform active behaviors that eliminate a fearful stimulus and thus reduce fear.” Keane added that this concept was supported by a recent study in humans using an active coping task. “One implication of these findings is that therapies actively engaging patients may produce more enduring effects.” [23]

Neuroscientist Joseph Ledoux noted that neurological functions that initiate defensive freezing and related physiological reactions can be redirected with the introduction of active-coping skills or strategies – a process he called “learning by doing.” He explained:

> “The basic science experiments show that the introduction of an active coping response reroutes processing from a pathway controlling dysfunctional passivity to one controlling successful engagement with the environment.
> Like rats, people may learn to ‘get on with life” by taking active steps instead of remaining passive, overwhelmed with fear. Passive fear responses, we speculate, reinforce activity in the pathway that leads from the lateral to the central nucleus of the amygdala to the brainstem and thus to passive fear responses, rendering the individual seemingly helpless and ultimately despondent.” [24]

Positive psychology researcher Barbara Frederickson and colleagues offered the additional insight that coping skills can be developed, and internal emotional “reset buttons” can be programmed and strengthened. Relatively simple steps that encouraged human test subjects to shift from worrying to focusing on their ability to meet stressful challenges lowered their blood pressure and heart rate spikes and speeded their recovery from stress. Fredrickson’s studies established that such focused efforts can improve resiliency and lessen physiological stress reactions even for people who score low on measurements of resilient personality types. [25]

Restoring internal locus of control

A fundamental TFA principle is restoring locus of control to the trauma-affected individual as quickly as possible.

A TFA helper gently shifts a trauma-affected individual's attention from disorganized response and encourages a focus on physiological shifts toward stabilization and resiliency. TFA techniques help affected persons identify and draw on internal and external resources to help their nervous systems reset and re-stabilize.

Shalev noted that long-term outcomes for trauma survivors are strongly affected by the degree to which they experience a dissociated response to trauma, such as freezing, stupor or surrender, as well as by the perception of that they had no control or ability to predict the outcome of events. Shalev added that a 1993 study by Baum, Cohen and Hall concluded: "one of the possible reasons for chronic stress following traumatic events is the disorganizing effect of loss of control and violation of expectations for regulating aspects of one's life."[26]

In a 2009 overview of PTSD risk factors and prevalence, PTSD researchers Terance Keane, Brian Marx and Denise M. Sloan noted that M.L. Bowman and Rachel Yehuda found a common link in a number of studies between PTSD and negative cognitive beliefs about "trauma symptoms, low self-efficacy and external locus of control." [27]

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[1] Margit B. Gerardi et al, "Trauma First Aide: Treating Physiologic Symptoms Induced by Trauma," *The American Journal for Nurse Practitioners, 2010, 4 (9/10) ,pp.44-53.*
[2] Bessel A. Van der Kolk & J. Saporta, "The biological mechanisms and treatment of intrusion and numbing," *Anxiety Research*, 1991 (4) 199-211.
[3] William P. Nash, "Combat/Operational Stress Adaptations and Injuries," *in Combat Stress Injury: Theory Research, and Management*, Figley, et al, editors, New York, Routledge Taylor & Francis Group, 2007. p. 532.
[4] Hobfoll, et al, Five Essential Elements of Immediate and Mid-Term Mass Trauma Intervention: Empirical Evidence, *Psychiatry* 70 (4) Winter 2007, 283-315.
[5] Gordon Turnbull & Alexander McFarlane, *Traumatic Stress*, 1996, van der Kolk et al, Editors, Guilford Press, pp 484-485.
[6] Bessel A. van der Kolk, "The Black Hole of Trauma," *Traumatic Stress*, 1996, p. 17.
[7] Bessel A. van der Kolk, Alexander McFarlane & Onno van der Hart, "A general approach to treatment of post-traumatic stress disorder," *Traumatic Stress*, 1996, p. 425.
[8] Hobfoll, et al, pp. 283-315.
[9] Alexander McFarlane & Rachel Yehuda, "Resilience, Vulnerability and the Course of Post Traumatic Reactions," *Traumatic Stress*, 1996, p.156.
[7] Ibid.
[10] Ibid, pp. 172-175.
[11] Shay, *Odysseus in America, combat trauma and the trials of homecoming*, Scribner, 2003, p. 210.
[12] Judith Herman, *Trauma and Recovery, the aftermath of violence - from domestic abuse to political terror,* Basic Books, 1992, p. 61.
[13] Herman, 1992, p. 62.
[14] Priyattam J. Shiromani, Terence M. Keane, & JosephLeDoux, *Post-Traumatic Stress Disorder: Basic Science and Clinical Practice*, Humana Press, 2009, p. 7.
[15] Joseph A. Boscarino, et al, "Compassion Fatigue following the September 11 Terrorist Attacks: A Study of Secondary Trauma among New York City Social Workers, 2005, *IJEMH*, Vol. 6, No. 2, pp. 1- 9.

[16] Elizabeth Hoge, et al, "Resilience: Research Evidence and Conceptual Considerations for Post-Traumatic Stress Disorder," *Depression and Anxiety*, 24:139–152, 2007.
[17] McFarlane & van der Kolk, *Traumatic Stress,*1996, pp. 29-30.
[18] Hobfoll et al, 2007, p. 291.
[19] Beverley Raphael, John Wilson, Lenore Meldrum, Alexander McFarlane, "Acute Preventive Interventions," *Traumatic Stress*, 1996, p. 472.
[20] Robert J. Ursano, Thomas A. Greiger, James E. McCarroll, "Prevention of Posttraumatic Stress: consultation, training and early treatment," *Traumatic Stress,* 1996, pp.449-449.
[21] Hoge et al, 2007: 139–152.
[22] Arieh Shalev, "Stress Versus Traumatic Stress: From Acute Homeostatic Reactions to Chronic Psychopathology," *Traumatic Stress*, 1996, p, 89.
[23] Keane, *in Post Traumatic Stress Disorder: Basic Science and Clinical Practice*, 2009, Priyattam J. Shiromani, Terence M. Keane, and Joseph LeDoux, eds., Humana Press, p. 31.
[24] Joseph E. LeDoux et al, "A Call to Action: Overcoming Anxiety Through Active Coping," December 2001, *Am J Psychiatry* 158:1953-1955.
[25] Barbara L. Fredrickson, R.A. Mancuso et al, "The undoing effects of positive emotions," *Motivation and Emotion*, 24: 237-258; Barbara L. Fredrickson and R.W. Levenson, "Positive emotions speed recovery from the cardiovascular sequelae of negative emtions," *Cognition and Emotion*, 1998, 12, 191-200; C.E. Waugh, Barbara L. Fredrickson and S.F. Taylor, "Adapting to life's slings and arrows: Individual differences in resilience when recovering from an anticipated threat," *Journal of Research in Personality*, 2008, 42, 1031-1046; Barbara L. Fredrickson, *Positivity*, 2009, Crown Publishers, pp. 100-101 and 104-107.
[26] Arieh Shalev, "Stress versus Traumatic Stress," *Traumatic Stress*, 1996, p. 89.
[27] Terance Keane et al, *Post Traumatic Stress : Basic Science and Clinical Practice*, 2009, p. 12.