

Stress Control for Military, Law Enforcement, and First Responders

A Systematic Review

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Preface

Over the past two decades, the U.S. Department of Defense has invested unparalleled resources into developing effective treatments for military-related psychological health conditions. Systematic reviews are a key component in the knowledge translation process and function to translate the available research into evidence-based health care guidelines that promote optimal clinical care. Although a few government agencies, including the U.S. Department of Veterans Affairs and the Agency for Healthcare Research and Quality, have established evidence synthesis centers, there is no similar center within the Department of Defense that focuses exclusively on psychological health issues. Thus, the Southern California Evidence-based Practice Center, housed at the RAND Corporation, has been awarded a multiyear contract to synthesize research on psychological health interventions important to military populations. This document reports on the efficacy of Combat and Operational Stress Control and should be of interest to those implementing programs to address stress in active duty military personnel.

The research reported here was completed in December 2020 and underwent security review with the sponsor and the Defense Office of Prepublication and Security Review before public release.

This research was sponsored by the Psychological Health Center of Excellence and conducted within the Forces and Resources Policy Center of the RAND National Security Research Division (NSRD), which operates the National Defense Research Institute (NDRI), a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence enterprise.

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Summary

Background

Military personnel, police officers, firefighters, and other first responders must prepare for and respond to life-threatening crises on a daily basis. This lifestyle places stress on personnel, particularly so on military troops who may be isolated from support systems and other resources. Combat stressors include traumas, such as injury, attempted attack on one's unit or camp, killing, witnessing death, and death of a unit member. Operational stressors include being away from family, close quarters, difficulty acclimating to weather, and other environmental changes. Such stress can result in physical, behavioral, and psychological sequelae, such as posttraumatic stress disorder (PTSD).

Combat and operational stress control (COSC) is the U.S. military's multifaceted approach that consists of all programs developed and actions taken by military leadership to prevent, identify, and manage stress reactions in active duty troops in all branches of service. COSC programs target entire units, specific areas of operation, and individuals identified as exhibiting stress-related behaviors. COSC works across the deployment cycle to prepare service members for combat and deployment stressors, provide support in-theater, and assist reintegration upon the return home.

This report describes preliminary results of a systematic review investigating the efficacy and comparative effectiveness of interventions designed to prevent, identify, and manage stress reactions in military, law enforcement, and first responders, including those evaluated as part of COSC and similar programs for nonmilitary populations.

The following questions guided the systematic review:

1. What are the effects of interventions on physiological, psychological, behavioral, occupational, and acceptability outcomes?
 - a. Do these effects vary by intervention components, intensity, and modality?
 - b. Do these effects vary by setting?
 - c. Do these effects vary by population?

Methods

We searched the electronic databases PsycINFO, PubMed, PTSDpubs, Cochrane Central Register of Controlled Trials, and the U.S. Defense Technical Information Center, as well as bibliographies of existing systematic reviews, to identify English-language studies evaluating the efficacy or comparative effectiveness of interventions, including stress inoculation, resilience training, traumatic event management, and psychological first aid, among others. For applicability to the modern context, studies published in 1990 or later were included. Controlled

trials and cohort comparisons of interventions with military, law enforcement, and first responders were included. In addition, the Psychological Health Center of Excellence requested that we include case studies (with no comparison group) for military populations. Two independent reviewers screened literature using predetermined eligibility criteria. Researchers individually abstracted study-level information and outcome data and assessed the quality and risk of bias of each included study; data were reviewed for accuracy by the project leader.

Continuous outcomes, such as PTSD symptom scores, were converted to standardized mean differences for comparison across studies. Risk ratios were calculated for dichotomous outcomes, such as percentage of personnel diagnosed with PTSD postdeployment. When several studies that compared an intervention group with a control group or active comparator reported the same outcome category (i.e., depression) and measure type (e.g., categorical or continuous outcome), we conducted meta-analysis. We conducted two types of meta-analyses, comparing (1) the effects of COSC interventions versus no intervention and (2) the effects of COSC interventions versus another active stress control intervention (usually standard training or education). To assess whether certain settings or populations were associated with an outcome, we reported direct and indirect comparisons. In the absence of head-to-head trials, we conducted meta-regression by adding a categorical variable, representing setting (i.e., in theater) or population (military versus law enforcement or first responders) to the meta-analysis model to assess whether this variable was associated with the outcome across studies. (Because of insufficient data, we were unable to conduct meta-regressions for intervention type or components.) The quality of the body of evidence was assessed using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach, which considers study limitations (risk of bias), directness, consistency, precision, and publication bias.

Results

Key Question 1: What Are the Effects of Interventions on Physiological, Psychological, Behavioral, Occupational, and Acceptability Outcomes?

An extensive search for studies of stress control interventions for active duty military, law enforcement, and first responders identified 4,742 potentially relevant publications. After a review of abstracts, we obtained 566 full texts published from 1990 to 2020. One hundred and fifteen studies reported in 136 publications met the inclusion criteria. The body of evidence consisted of 38 controlled trials, 35 cohort comparisons, and 42 case studies or case series with no comparison group. In addition, we identified 14 relevant systematic reviews. Interventions studied included resilience training, stress inoculation with biofeedback, mindfulness, psychological first aid, frontline mental health centers, embedded mental health staff, two- to seven-day restoration programs, debriefing (including critical incident stress debriefing), third-

location decompression, postdeployment mental health screening, reintegration programs, and family-centered programs.

Meta-analyses found that COSC programs, on the whole, showed no significant difference in effect on sleep, alcohol misuse, anxiety, depression, PTSD symptoms (usually measured by PTSD Checklist score), or help-seeking stigma, compared with active interventions, such as a standard stress-management class. Meta-analyses comparing COSC programs with no intervention showed no significant effect on alcohol misuse, depression, PTSD symptoms, PTSD case rate, stress level, or help-seeking stigma. Against active comparators, the quality of evidence of no difference in effect was moderate for sleep, depression, and PTSD symptoms and low for alcohol misuse, anxiety, and help-seeking stigma. Quality of evidence was moderate for no effect on PTSD symptoms and PTSD case rate and low for no effect on alcohol misuse, depression, stress level, and help-seeking stigma versus no intervention.

Quality of evidence was insufficient to form conclusions regarding the effect on stress and distress levels versus active comparators and the effect on heart rate, marriage or family outcomes, and occupational performance versus any comparison group.

Positive outcomes were found in several areas. The COSC programs we studied, on the whole, had positive effects on return to duty (moderate quality of evidence), absenteeism (low quality of evidence), and distress (moderate quality of evidence versus no intervention). In general, these outcomes are important targets of COSC programs. However, although COSC programs may reduce distress enough for active duty troops to function, in studies that include control or comparison groups, COSC appears to have no significant impact on psychological outcomes, such as symptoms of PTSD and depression.

Most COSC programs reported high levels of acceptability and satisfaction.

Results for specific approaches and intervention types are summarized in the section for key question 1a. Results for specific settings and populations are summarized under key question 1b and 1c, respectively. These sections summarize evaluations of efficacy or effectiveness; focus group studies and case studies that reported only acceptability or usability are discussed in the main report, with findings displayed in tables.

Key Question 1a: Do the Effects Vary by Intervention Components, Intensity, or Modality?

Because of insufficient data, it was not possible to conduct meta-regression analysis for intervention types or components. No intervention types or components have high or moderate strength evidence of efficacy for any outcome. There is low-strength evidence that trauma risk management (TRiM), a psychological first aid program developed by the UK Royal Navy, decreases help-seeking stigma; two- to seven-day restoration programs have a significant positive effect on distress, PTSD symptoms, homefront issues and return to duty; eye movement desensitization and reprocessing for subclinical stress reduces stress and PTSD symptoms and improves marital adjustment; group psychological debriefing (not incident-specific) at the end of

deployment has a positive effect on alcohol misuse and depression; decompression at a location other than the area of operations or home (third-location decompression) has a positive effect on depression but a possible negative effect on alcohol use; end-of-deployment screening has a positive effect on alcohol and substance misuse; and family interventions have positive effects on marriage and parenting outcomes. There is insufficient evidence to conclude that any type of predeployment stress-control training is effective in preventing or reducing psychological symptoms.

Key Question 1b: Do These Effects Differ by Setting?

Meta-regression analyses to assess possible effects of setting (in theater versus not in theater) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. The quality of evidence was insufficient to determine the effect of in-theater setting on those outcomes. Meta-regression analyses found no significant effect of in-theater setting on results for depression, distress, or PTSD symptoms; quality of evidence was rated low. Two studies compared locations head-to-head; a small-cohort study comparing frontline reintegration in Iraq at the end of deployment with standard reintegration postdeployment found no differences in outcomes, whereas a 20-year follow-up of Israeli Defense Forces found that frontline mental health treatment had a moderate-size effect on PTSD intensity compared with a rear-echelon treatment that bordered on statistical significance.

Key Question 1c: Do These Effects Differ by Population?

Meta-regression analyses to assess possible effects of population (military versus law enforcement or other first responders) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. The quality of evidence is insufficient to draw conclusions about any possible population differences in effects on those outcomes. Meta-regression analyses found no effect of study population on results for depression, distress, or PTSD symptoms; the quality of evidence is low. Although there is some evidence from two cohort studies that COSC programs are more useful for junior-ranked personnel, the quality of evidence is insufficient to formulate conclusions.

Discussion and Conclusions

Most COSC programs reported high levels of acceptability and satisfaction. On the whole, in-theater and postdeployment programs had significant positive effects on return to duty, absenteeism, and distress. However, COSC programs, in general, appear to have little significant impact on symptoms of psychological disorders, such as PTSD.

Because of study limitations, inconsistency of results, indirectness, and possible publication bias, there was insufficient evidence to form conclusions about the efficacy of many specific intervention types and components. We found low-strength evidence for positive effects on some

outcome areas for the UK's TRiM program, eye movement desensitization and reprocessing for subclinical stress, group psychological debriefing (not incident-specific) at the end of deployment, third-location decompression, end-of-deployment screening, and marriage and family interventions. Additional studies of these interventions are suggested to increase the quality of evidence.

Regarding setting, the quality of evidence was either insufficient to formulate conclusions or low for no effect of setting (in theater versus not in theater), depending on the outcome area. Although there is some evidence from two cohort studies that COSC programs are more useful for junior-ranked personnel, the quality of evidence is insufficient to formulate conclusions. Future studies of COSC should report stratified results by rank and military occupation.

Only case studies with no comparison group reported on return to duty. These were large government reports on in-theater mental health intervention during Operation Iraqi Freedom and Operation Enduring Freedom. Such evaluations rarely reported psychological outcomes or the effect of specific components. If possible, retrospective cohort studies should use official individual service member records to assess the effect of the amount and type of mental health services used during deployment on psychological measures. Ideally, these evaluations should report longitudinal postdeployment data on service use and mental health outcomes.

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Abbreviations

ADAPT	After Deployment: Adaptive Parenting Tools
AUDIT	Alcohol Use Disorder Identification Test
AUDIT-C	Alcohol Use Disorder Identification Test–Concise
CAPS	Clinician-Administered PTSD Scale
CBT	cognitive behavioral therapy
CI	confidence interval
CISD	critical incident stress debriefing
CISM	critical incident stress management
COSC	combat and operational stress control
COSR	combat and operational stress reaction
DASS	Depression Anxiety Stress Scales
DUI	driving under the influence
FOCUS	Families OverComing Under Stress
GAD	General Anxiety Disorder
GHQ	12-item General Health Questionnaire
GRADE	Grades of Recommendation, Assessment, Development and Evaluation
ITT	intention to treat
MRT	Master Resilience Training
NCO	noncommissioned officer
NR	not reported
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OR	odds ratio
OSCAR	Operational Stress Control and Readiness
PCL	PTSD Checklist
PDHRA	Post-Deployment Health Reassessment
PHQ	Patient Health Questionnaire
PIES	proximity, immediacy, expectancy, and simplicity
PRESIT	predeployment stress inoculation training
PSS	PTSD Symptom Scale
PTSD	posttraumatic stress disorder
RCT	randomized controlled trial
RR	risk ratio
RSA	respiratory sinus arrhythmia
RTHS	Resilience Training for Healthcare Staff

SD	standard deviation
SMD	standardized mean difference
SPRINT	Special Psychiatric Rapid Intervention Team
STAI	State-Trait Anxiety Inventory
SUDS	Subjective Units of Distress Scale
TEAM	Troop Education for Army Morale
TRiM	trauma risk management
VA	U.S. Department of Veterans Affairs

1. Introduction

Military personnel, police officers, firefighters, and other first responders must prepare for and respond to life-threatening crises on a daily basis. This lifestyle places stress on personnel, particularly so on deployed military personnel who are isolated from support systems and other resources. Such stress can result in physical, behavioral, and psychological sequelae, such as posttraumatic stress disorder (PTSD). Research has shown that, since World War II, “psychiatric casualties have outnumbered the combined total of American service members both wounded and killed-in-action” (Russell and Figley, 2017a). A meta-analysis of studies on PTSD prevalence revealed variability but reported PTSD prevalence among Iraq-deployed personnel to be 12.9 percent (confidence interval [CI] = 11.3 percent to 14.4 percent) and Afghanistan-deployed personnel to be 7.1 percent (CI = 4.6 percent to 9.6 percent) (Hines et al., 2014). A literature review reported a higher prevalence of PTSD among personnel in the U.S. Army and Marine Corp than in the Navy and Air Force (Ramchand et al., 2015). Both of these publications found increased PTSD rates in those who served in combat roles (Ramchand et al., 2015; Hines et al., 2014), with some studies indicating that serving in a combat role doubles the likelihood of developing PTSD (Hines et al., 2014).

Combat and operational stress reactions (COSRs) may occur in active duty troops regardless of deployment status. Operational stressors include being away from family, living in close quarters, difficulty acclimating to weather, and other environmental changes. Combat stressors include traumas, such as injury, attempted attack on one’s unit or camp, killing, witnessing death, and death of a unit member. Feelings of guilt, terror, anger, and hopelessness would be natural in a civilian environment; in a deployed environment, these stresses are layered on top of underlying operational stressors of deployment (Hathaway, Boals, and Banks, 2010). Being deployed in a harsh climate where there is a lack of resources leads to problems, such as malnutrition and dehydration, physical fatigue, and being cut off from family and social supports (King et al., 1995). The nature of combat work and combat service support work also contributes to cognitive stresses—for instance, such factors as sensory overload or sensory deprivation, unpredictability, and work expectation beyond one’s capabilities (Bruscher, 2011).

As time passes and COSRs develop and build, psychological changes become increasingly fixed and irreversible and can manifest as PTSD or other behavioral health disorders (Solomon, Shklar, and Mikulincer, 2005). Stress responses can be delayed and can manifest after deployed personnel return home (Huseman, 2008). In addition to affecting the individual, COSR also affects unit functioning and contributes significantly to battlefield casualties (Jones, 1995).

Combat and operational stress control (COSC) is the military’s multifaceted approach that consists of all programs developed and actions taken by military leadership to prevent, identify, and manage COSRs. COSC programs target at-risk individuals or units (or both), specific areas

of operation, and individuals identified as exhibiting behaviors that align with COSR (Bruscher, 2011). COSC works across the deployment cycle to prepare service members for combat and deployment stressors, assist reintegration upon the return home, and prepare service members for the potential of redeployment (Castro, Hoge, and Cox, 2006). The U.S. military also sees unit cohesion and morale as a key element in COSC, and training for supportive leadership can help to improve these factors (National Defense Research Institute, 2010). Emphasis is placed on increasing personnel awareness of signs and symptoms of COSR, PTSD, and suicide risk; swift intervention; and regard toward those affected as *service members* rather than *patients*.

Various interventions aimed to target military stress have been developed over the past century. The U.S. military implemented “frontline psychiatry” during World War I, with the goal of reducing service member evacuation from war zones because of stress reactions (Russell and Figley, 2017a). Since then, military programs—including Battlemind, resilience training, and Comprehensive Soldier Fitness—have been developed to focus on a fuller picture of an individual’s well-being. The military has also used biofeedback initiatives, which serve to train participants on how to regulate their physical response to stress (i.e., heart rate and breathing) (Oded, 2011). The Marine Corps Operational Stress Control and Readiness (OSCAR) program used the approach of inserting mental health personnel within units, emphasizing early detection of signs of stress (Vaughan et al., 2015). Canadian forces implemented captivity survival training, which increased participants’ stress in a controlled environment to analyze their response (Ralph et al., 2017). Other attempts to prevent and manage stress include traumatic event management, stress inoculation, stress management, coping skills training, and critical incident stress debriefing (Feldner, Monson, and Friedman, 2007; Jones, Hammond, and Platoni, 2013; Freedy and Hobfoll, 1994; Mino et al., 2006; Smith, 1989; Maddi, 2007; Bryant and Harvey, 2000; Campfield and Hills, 2001).

Outside the military, physiological first aid has been used with emergency medical services, firefighters, and law enforcement, with the core strategy of “check, coordinate, cover, calm, connect, competence, confidence” (National Fallen Firefighters Foundation, 2013). One psychological first aid intervention is critical incident stress debriefing (CISD) (Mitchell et al., 1999), which has been adapted by many local and state law enforcement agencies over the past two decades (Malcolm et al., 2005). This seven-step small group intervention takes place after a major traumatic event; it is designed to reduce stress, restore group cohesion, and prevent decline in occupational performance. Resilience training, another approach used in the military, was implemented with law enforcement and emergency personnel after the September 11, 2001, terrorist attacks, and the training is increasing, given the number of wildfires in North America and Australia (Deppa and Saltzberg, 2016). Relaxation training, physical education, imagery guidance, writing programs, and cognitive behavioral therapy have all been used by law enforcement for stress reduction after traumatic incidents, with varying degrees of success (Patterson, Chung, and Swan, 2014).

This report describes preliminary results of a systematic review investigating the efficacy and comparative effectiveness of interventions designed to prevent, identify, and manage stress reactions in military, law enforcement, and first responders.

The following questions guided the systematic review:

1. What are the effects of interventions on physiological, psychological, behavioral, occupational, and acceptability outcomes?
 - 1a. Do these effects vary by intervention components, intensity, and modality?
 - 1b. Do these effects vary by setting?
 - 1c. Do these effects vary by population?

2. Methods

The systematic review protocol was submitted to PROSPERO, an international registry for systematic reviews, in February 2020.

Sources

We searched the databases PsycINFO (psychological research), PubMed (biomedical research), PTSDpubs (traumatic stress literature), Cochrane Central Register of Controlled Trials, and the U.S. Defense Technical Information Center for English-language studies. References of included studies and systematic reviews were mined for additional studies.

Search Strategy

The search strategy was developed by a librarian specializing in systematic reviews, informed by search results of prior feasibility scans conducted for this project and existing systematic reviews on the topic. For applicability to current U.S. military strategies, databases were searched from 1990 forward. Studies of interventions from Operation Desert Shield through the current day are included. Search strings are included as Appendix A. We retrieved and screened full texts of all trials, cohort comparisons, and case studies of relevant interventions to determine whether relevant outcomes were reported.

Eligibility Criteria

Inclusion and exclusion criteria are summarized in the following PICOTSS (participants, interventions, comparators, outcomes, timing, setting, and study design) framework:

- Participants
 - Active military personnel, law enforcement (police, sheriff, etc.), and first responders (firefighters, emergency medical technicians, search and rescue, etc.) were included.
 - Studies of veterans were excluded.
 - Studies of interventions solely for children or partners of military personnel were excluded; family interventions that included the active duty service member were included.
 - For applicability reasons, studies of personnel from developing nations were excluded.
 - Studies of patients with PTSD or traumatic brain injury were excluded.
- Interventions

- Interventions to prevent, identify, and manage acute occupational stress, such as COSRs, were included. Examples include resilience training, stress inoculation, coping-skills training, traumatic-event management, psychological first aid (check, coordinate, cover, calm, connect, competence, confidence), biofeedback, CISD, Comprehensive Soldier Fitness, Battlemind, captivity survival training, and frontline psychiatry. Interventions may be offered pre–military deployment, in theater, posttraumatic incident, or postdeployment.
- Reintegration interventions, including third-location decompression, were included.
- Interventions that were purely medical (e.g., medication) or conducted in out-of-theater hospitals where patients were evacuated were excluded.
- Comparators
 - Randomized controlled trials (RCTs) and cohorts comparing an active intervention with another active intervention, passive intervention, attention control, wait list, or no intervention were included.
 - Case series, pre-post comparisons and program evaluations without a comparison group were included if military populations were involved, per our discussion with the Psychological Health Center of Excellence.
- Outcomes
 - Physiological stress indicators (e.g., heartbeat, blood pressure, insomnia, cortisol); psychological stress indicators (e.g., University of California at Los Angeles PTSD Reaction Index, Patient Stress Questionnaire, combat stress reaction, acute stress disorder, adjustment disorder); PTSD symptoms (e.g., Clinician-Administered PTSD Scale [CAPS], PTSD Symptom Scale [PSS]); anxiety (e.g., Hamilton Anxiety Scale, State-Trait Anxiety Inventory); depression (e.g., Beck Depression Inventory, Montgomery-Asberg Depression Rating Scale); alcohol and drug use (e.g., frequency, amount, Alcohol Use Disorders Identification Test, CAGE questionnaire, Drug Abuse Screening Test); marital indicators (e.g., ENRICH [evaluation and nurturing relationship issues, communication, and happiness] Marital Satisfaction Scale, Married Life Scale); social indicators (e.g., aggression, family function); occupational indicators (e.g., deployability, service-connected disability, mission performance, return to duty, absenteeism); help-seeking (e.g., mental health service utilization, stigma); and acceptability indicators (e.g., participant satisfaction, usability, feedback questionnaires) were included.
 - Studies reporting only costs or uptake of interventions were excluded.
- Timing
 - Studies of any duration and any follow-up period were included.
 - Interventions could take place before, after, or during stressful events.
 - Interventions designed to prevent, manage, or treat combat or operational stress reactions (up to three days post–traumatic event) and acute stress disorder (from three to 30 days postevent) were included.
 - Interventions to prevent PTSD were included, while studies of treatment of chronic PTSD were excluded.

- Setting
 - Interventions conducted in out-of-theater hospitals were excluded.
- Study design
 - Cluster randomized trials, trials randomized by individual, prospective cohort comparisons (i.e., controlled but not randomized), and retrospective cohort comparisons were included.
 - Case studies were included for military populations only.
 - Dissertations were excluded.
 - Conference abstracts were excluded, as they lack sufficient information to assess quality.

Inclusion Screening Procedure

Following pilot sessions to ensure similar interpretation of the inclusion and exclusion criteria, two reviewers independently screened titles and abstracts of retrieved citations. Citations judged as potentially eligible by one or both reviewers were obtained as full text.

Full-text publications were screened against inclusion and exclusion criteria by two independent reviewers; disagreements were resolved through discussion within the review team, with the project lead making the final decision. Reasons for exclusion at each stage were recorded using online software for systematic reviews. Publications reporting on the same study population were consolidated so individual studies enter each analysis only once.

Data Extraction

Data collection forms were designed by the project lead. Reviewers piloted the data collection forms on five randomly selected studies; the forms were then modified for increased reliability, and a final pilot was conducted on another random selection of studies to ensure agreement of interpretation. Study details were then abstracted by one reviewer and checked by the project lead. A statistician abstracted all outcome data to ensure quality; data extraction accuracy was checked by the project lead on a random sample of studies.

Information extracted from individual studies included

- study ID, author, and year
- participants: occupation (military, law enforcement, or first responder), military branch (if applicable), and country of origin
- interventions: type, components, intensity (number and frequency of sessions), and modality (i.e., group versus individual)
- comparators: type and description of the comparator (e.g., the other active intervention, passive intervention, attention control, wait list, no intervention)
- analysis method for identifying differences by group (e.g., chi-square, analysis of variance, t-test)

- outcomes: measures (instrument and version) and metric of data expression (e.g., means, proportions) and corresponding results (e.g., effect estimate, precision)
- timing: time points of outcome assessment and duration of intervention
- setting: country and setting (e.g., military base, theater)
- study design: design (e.g., cluster randomized trial, controlled trial with individuals randomized, prospective cohort comparison, case study), inclusion and exclusion criteria, and sample size.

Risk of Bias

Randomized Trials

The Cochrane risk-of-bias tool, version 2 (Sterne et al., 2019), was used to assess the quality of each trial. The following five domains were assessed: randomization process, deviations from intended intervention implementation, missing data, outcome measurement, and selection of reported outcome. These domains cover methodology issues, such as random sequence generation, allocation concealment, baseline group differences, blinding of participants and study personnel, attrition, and any changes or variations in protocol during the conduct of the study. The instrument has a separate form for cluster randomized studies. Each of the five domains was rated as having “low risk,” “some concerns,” or “high risk” of bias. A study has low risk of bias when the risk of bias for all five domains is rated low. If any of the five domains is rated as high risk of bias, the study is rated as having high risk of bias. All other studies are rated as having some concerns.

Prospective and Retrospective Cohort Comparisons

We used the U.S. Preventative Services Task Force methods (U.S. Preventive Services Task Force, 2017) to assess the risk of bias of cohort comparisons. This method is used by the U.S. Agency for Healthcare Research and Quality, as well as the U.S. Department of Veterans Affairs (VA) Evidence Synthesis Program. We considered any differences in group characteristics (especially those that might be associated with outcome) at baseline and follow-up, attrition rate, method of outcome assessment, and appropriateness of statistical analyses. Studies were rated as “good,” “fair,” or “poor quality.” Studies that met all criteria were rated good. Studies that did not meet one or more criteria but had no known limitation that could invalidate the results were rated fair. Studies that had a fatal flaw that could invalidate the results, such as extremely high attrition or response to follow-up, were rated poor quality.

Case Series and Case Studies

We used the Case Series Quality Appraisal Checklist from the Institute for Health Economics at the University of Alberta (Guo et al., 2016) to assess quality. The instrument assesses study design (retrospective versus prospective), participant eligibility and recruitment, outcome

assessment, attrition, and potential conflict of interest. Individual domains are rated; however, no overall study rating is assigned.

Qualitative case studies were not formally assessed for risk of bias. Because of their design limitations (e.g., no control or comparison group, few validated outcome measures, no baseline measurements), they are considered insufficient evidence of efficacy. However, they may indicate promising approaches that should be assessed in stronger study designs in future studies.

Synthesis

Outcomes were converted to standardized effect sizes for comparison across studies. Continuous outcomes, such as anxiety scores, were converted to standardized mean differences (SMDs); risk ratios (RRs) were calculated for dichotomous outcomes, such as percentage of personnel diagnosed with PTSD postdeployment. When several studies that compared an intervention group with a control group or other intervention reported the same outcome category (e.g., depression) and measure type (e.g., categorical or continuous outcome), we conducted a meta-analysis to determine the overall effect of COSC interventions on an outcome (e.g., alcohol misuse, depression symptoms, PTSD). We conducted two sets of meta-analyses, comparing (1) the effects of COSC interventions versus no intervention and (2) the effects of COSC interventions versus another active stress control intervention (usually standard training or education). Studies that could not contribute to a meta-analysis were described narratively.

We used the Hartung-Knapp-Sidik-Jonkman method for random-effects meta-analysis (Hartung and Knapp, 2001; Hartung, 1999; Sidik and Jonkman, 2006; IntHout, Ioannidis, and Borm, 2014). To assess whether certain populations, settings, or study designs were associated with an outcome, we reported direct and indirect comparisons. In the absence of head-to-head trials, we conducted meta-regression by adding a categorical variable to represent setting (in theater), study design (cluster randomized trial, individually randomized trial, or cohort comparison), follow-up time, or population (military versus law enforcement or first responders) to the meta-analysis model; this helped us assess whether the variable was associated with the outcome across studies. Because of insufficient data, we were unable to conduct meta-regressions for intervention types or components.

Meta-analysis results are presented in forest plots, in Chapter 3, that display the following information for each contributing study: author name, year of publication, timing of the outcome measurement, study results, and 95 percent CIs. Pooled results are indicated with a diamond-shaped symbol. When meta-analysis was not possible for an outcome area, data for individual studies are presented in comprehensive tables in Chapter 3.

Data from case studies without a comparator are presented in tables when results of controlled trials or cohort comparisons are not available for a particular outcome area of interest (e.g., return to duty).

Quality-of-Evidence Assessment

The quality of the body of evidence was assessed using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach (Balshem et al., 2011). A body of RCT evidence begins with a high-quality rating and is downgraded according to the following domains: study limitations (risk of bias), directness, consistency, precision, and publication bias. Other issues that may be considered are effect size, dose response, and residual confounding. The rating may be increased if the effect size is large. Observational evidence begins with a low-quality rating and may be upgraded for large effect, dose response, or adjustment for important potential confounders.

Regarding risk of bias, the quality rating is downgraded when results are primarily based on studies with substantial limitations per the assessment tools mentioned above.

When individual study results conflict regarding the direction of findings (i.e., positive versus negative, regardless of statistical significance) or when substantial heterogeneity is detected in pooled analysis, the body of evidence is downgraded for inconsistency. Heterogeneity was assessed using the I-squared statistic (Higgins et al., 2003). I-squared describes the percentage of total variation across studies that is due to heterogeneity rather than chance, ranging from 0 to 100 percent. A value of zero indicates no observed heterogeneity, and larger values show increasing heterogeneity (Higgins et al., 2003). The evidence is downgraded for precision when CIs overlap conflicting conclusions (i.e., when meta-analysis results are wide or when pooled results are not statistically significant). Publication bias was assessed using Egger's test (Egger et al., 1997) and Begg's test (Begg and Mazumdar, 1994); publication bias is considered significant when p is less than 0.05. Publication bias in case studies without a comparison group is difficult to detect quantitatively; formal publication bias tests were not conducted on those studies. According to the GRADE working group (Guyatt et al., 2011), a body of evidence consisting only of studies that did not include a comparison group should be rated as having high risk of publication bias. Most studies included in systematic reviews have a comparison group—for example, studies that randomized participants to either a medication or placebo. Finally, evidence is not direct when a study's population or outcome is not exactly representative. Any body of evidence consisting only of nonmilitary populations was downgraded as indirect.

The quality of evidence was graded on a four-item scale:

1. **High** indicates that the review authors are very confident that the effect estimate lies close to the true effect for a given outcome.
2. **Moderate** indicates that the review authors are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
3. **Low** indicates that the review authors' confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of the effect.

4. **Insufficient** indicates that the review authors have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

The quality-of-evidence domain ratings are presented in Chapter 4.

3. Results

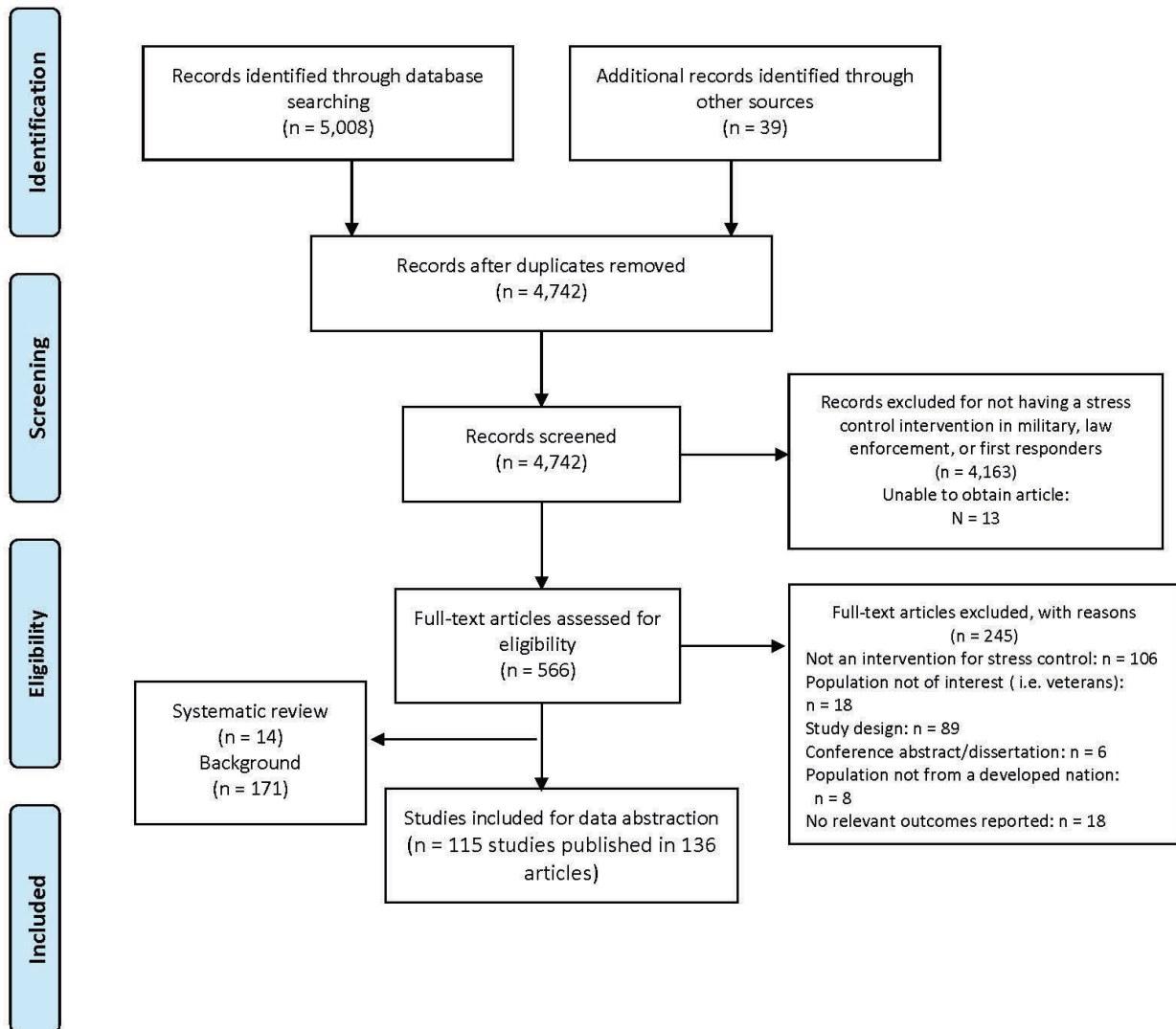
Results of the Search

The results of the literature search are displayed graphically in Figure 3.1. Electronic database searches identified 5,008 potentially relevant titles. Reference mining of systematic reviews and relevant articles identified an additional 39 titles. After exact duplicates were removed, 4,742 abstracts remained for review. Of these, 4,163 were excluded at abstract review because they were not about stress control interventions among active duty military, law enforcement, or first responders.

Full texts were retrieved for 566 publications; we were unable to obtain 13 others. Fourteen systematic reviews and 171 background articles about stress in the target populations were identified. Full-text publications were excluded either because they did not report on a stress control intervention ($n = 106$), did not report on the target population (i.e., reported only on family members or veterans; $n = 18$), reported on target populations from less developed countries ($n = 8$), did not report relevant outcomes ($n = 18$), or used an unacceptable study design (for example, a case study of law enforcement or first responders; $n = 89$). Six others were rejected because they were dissertations or conference abstracts.

In total, 115 studies reported in 136 publications are included in this review.

Figure 3.1. Literature Flow Diagram



Description of Included Studies

Here, we describe the body of evidence. An evidence table displaying detailed information for each included study is included as Appendix B. A list of excluded studies with reasons is included as Appendix C.

Study Designs

Thirty-eight controlled trials, 35 cohort comparisons, and 42 case studies or case series with no comparator met our inclusion criteria. Case studies were included only for military populations. Fourteen of the controlled trials were cluster randomized, while 24 randomized individuals. Twenty case studies did not conduct quantitative analysis; most of these employed

focus groups to test usability or acceptability. Some of those interventions were later studied in trials or prospective cohort studies.

Participants

The 115 studies ranged in size from eight participants to more than 45,000. The majority of studies ($n = 103$) included active duty military, while 12 included law enforcement and 12 included first responders.

In 75 studies, the participants were from the United States, five studies included troops from Canada, 29 studies included participants from Europe, six included participants from Australia or New Zealand, and one included participants from Asia. (Populations were not mutually exclusive; some studies included participants from more than one region.) Four others were studies of the Israeli Defense Forces.

For military populations, we abstracted the service branch where reported. Studies often included participants from multiple branches. The majority ($n = 66$) studied Army soldiers. Thirteen studies included Air Force participants, 18 included Marines, and 17 included Navy sailors. A few studies were unclear regarding branch; they used such terms as *military chaplains* and *military physicians*.

Most study participants were male and under age 40.

Interventions

Table 3.1 displays the number of studies for each broad intervention category. We used our best judgment to categorize interventions according to their primary approach described by study authors. The numbers do not add to 115, as some studies incorporated approaches not listed, such as changed work schedules, occupational therapy, or mental health screening.

Coping-skills training was the most studied intervention (19 studies), followed by resiliency training and debriefing (including CISM), with 12 studies each. Eleven studies of frontline mental health treatment or embedded mental health providers were included; only two had a comparison group.

Family and marriage interventions, which address “home front” issues while a service member is deployed or family issues during reintegration, were reported in 11 studies.

Studies on biofeedback, meditation, mindfulness, and other complementary and alternative approaches tended to have more-recent publication dates.

Table 3.1. Intervention Approaches

Intervention Approach	RCT or Cohort Comparison	Case Studies with No Comparator	Total Number of Studies
Resiliency training	6	6	12
Stress inoculation (with or without biofeedback)	10	0	10
Debriefing (including CISM)	10	2	12
Coping skills	15	4	19
Embedded mental health staff/ frontline psychiatry	2	9	11
Psychological first aid	7	1	8
Battlemind	4	0	4
Restoration	0	5	5
Reintegration	2	1	3
Third-location decompression	2	3	5
Captivity survival training	0	1	1
Family/marriage interventions	5	6	11
Meditation, mindfulness, and other complementary and alternative medicine	5	1	6

Modalities varied. For example, coping skills could be taught through in-person group training at military bases, online webinars, mobile phone apps, and written materials. One team developed and piloted two graphic novels.

Comparators

Twenty-eight studies compared a group that received a COSC intervention with a group that received no intervention; two others used a wait-list control for comparison. Nine studies compared a COSC training with “training as usual”; these studies typically involved law enforcement rookies or new military recruits attending basic training. Fourteen studies compared a COSC intervention with standard stress control; these were coded as having “active control” arms. (When reporting results, we describe standard stress control whenever information was provided by the authors.) Other studies include *passive* comparators, such as cultural awareness training or a military history class. Several studies had more than two arms: Four studies had three arms, and two studies had four arms.

As noted, 42 case studies without a comparison group also met our inclusion criteria.

Outcomes

Of 115 included studies, 86 reported psychological or behavior outcomes, 28 reported physiological outcomes, 29 reported occupational outcomes (such as return to duty), 23 reported help-seeking outcomes, and 46 reported acceptability, satisfaction, or usability.

Few studies reported the race/ethnicity of participants or compared results by age group, gender, or race/ethnicity. Few reported the effects of specific components or modality.

Settings

Table 3.2 displays the regions where interventions were conducted. Some studies compared interventions conducted in different regions, so the numbers do not add to 111.

Table 3.2. Intervention Locations

Region	Number of Studies
United States	55
Canada	3
Europe	30
Middle East	27
Asia	1
Australia/New Zealand	6
Unclear	2

The majority of interventions took place predeployment at military bases. Thirty-six studies reported on interventions where at least one component took place in theater. Most in-theater interventions took place during Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF), while a few took place during peacekeeping missions in Bosnia from 1996 to 2004. Of the 38 controlled trials, only eight included an in-theater component.

Risk of Bias

Risk of bias was rated as either low, some concerns, or high for controlled trials, using the new version (2.0) of the Cochrane risk-of-bias tool (Sterne et al., 2019). Half of the controlled trials had a high risk of bias. Typical reasons were high program attrition, low response at follow-up, no intention-to-treat analysis, no description of the randomization process, and baseline differences between groups (likely due to randomization by unit rather than individual). Summary details are presented in Table 3.3; full details for each domain are presented in Appendix D.

Table 3.3. Risk of Bias, Controlled Trials

Study	Overall	Comment
Adler et al., 2008	High	Outcome assessors were probably aware of the intervention received; the assessment probably could have been and probably was influenced by knowledge of the intervention
Adler et al., 2009; Castro et al., 2012	Some concerns	High attrition but good attempts to adjust for it in analyses
Adler et al., 2015	Some concerns	Method of randomization not reported

Study	Overall	Comment
Arnetz et al., 2009	Some concerns	Very small <i>N</i> ; no information on method of randomization or allocation
Baddeley and Pennebaker, 2011	High	Outcome data were not available for all participants; missingness could probably depend on the true value; no information about whether outcome assessors were aware of the intervention received; no information about whether the assessment could have been influenced or likely was influenced by knowledge of the intervention.
Biggs et al., 2016	High	Control group members aware that they had no intervention
Bouchard et al., 2012	Low	Outcome not likely affected by missing data or knowledge of assignment; intention-to-treat analysis used
Cacioppo et al., 2015	Some concerns	Baseline imbalances; the assessment might have been influenced by knowledge of the intervention
Cigrang, Todd, and Carbone, 2000	Low	No issues
Crane et al., 2019	Low	No issues
Garner, 2008	High	No information about missing values and how they were addressed
Greenberg et al., 2009; Greenberg et al., 2010; Greenberg et al., 2011	High	Potential bias resulting from missing data was not addressed; no intention-to-treat analysis; cluster randomized trial with no comparison of baseline characteristics of groups
Haase et al., 2016	High	Outcome assessors were aware of the intervention received; assessment probably could have been influenced by knowledge of the intervention
Hourani et al., 2011	High	Baseline differences between groups; outcome assessors were probably aware of the intervention received; assessment could probably have been and probably likely was influenced by knowledge of the intervention
Hourani et al., 2016	High	No intention-to-treat analysis; the analysis was possibly biased
Hourani et al., 2018	High	High attrition (follow-up rate of 32 percent for intervention group and 28 percent for control group)
Ireland, Malouff, and Byrne, 2007	High	Outcome assessors were probably aware of the intervention received; the assessment probably could have been and probably likely was influenced by knowledge of the intervention
Johnson et al., 2014	High	Both participants and personnel were probably aware of the intervention; deviations probably arose because of the trial context; deviations probably affect the outcome and probably were not balanced between groups; outcome data were not available for all participants
Joyce et al., 2019	Low	No issues
Kritikos, DeVoe, and Emmert-Aronson, 2019	Some concerns	Outcome assessors aware of the intervention
Lewis et al., 2015	High	The measurement or ascertainment of the outcome probably differed between the two groups
McCraty et al., 1999; McCraty and Atkinson, 2012;	High	Outcome data were not available for all participants; missingness could depend on the true value

Study	Overall	Comment
Mulligan et al., 2012	Some concerns	Deviation from trial context
Pinna et al., 2017; Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018; Snyder et al., 2016	High	Missing outcome data
Pyne et al., 2019	High	Low response at follow-up; no-intention-to treat analysis
Rona et al., 2017	Some concerns	Participants' knowledge of intervention could have affected outcome assessment
Roy, Highland, and Costanzo, 2015	Some concerns	Small sample size; baseline PCL significantly higher in the intervention group
Shipherd, Salters-Pedneault, and Fordiani, 2016	Some concerns	Both participants and personnel probably were aware of the intervention; outcome data were not available for all participants; missingness probably could depend on the true value; result was probably selected from multiple outcome measurements
Stetz et al., 2009	Some concerns	Baseline characteristics were not reported by group, so we were unable to assess possible bias
Stetz et al., 2011	High	Outcome assessors were probably aware of the intervention received; the intervention probably could have been and probably likely was influenced by the outcome of the intervention; the trial was probably not analyzed fully in accordance with a prespecified plan
Stoller et al., 2012	High	Knowledge of intervention could have biased self-reported outcome assessment
Trousselard et al., 2015	High	Outcome data were not available for all participants; missingness could depend on the true value
Tuckey and Scott, 2014	High	No intention-to-treat analysis despite 25 percent lost to follow-up
Wald et al., 2016	Low	No issues
Wald et al., 2017	Low	No issues
Wesemann et al., 2016	Some concerns	No intention-to-treat analysis despite 21 percent without follow-up data
Wilson et al., 2001	Low	No apparent issues in randomization, assessment, and analysis

Table 3.4 displays the risk-of-bias ratings for cohort comparison studies. Per the U.S. Preventative Services Task Force quality-rating system (U.S. Preventive Services Task Force, 2017), ten studies were rated poor, 18 fair, and seven good quality. Reasons for downgrade include poor, differential, or unknown response rate at follow-up; important differences among groups at baseline; and poor outcome measurement.

Table 3.4. Risk of Bias, Cohort Comparisons

Study	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by restriction or matching)?	Did the Study Maintain Comparable Groups Through the Study Period?	Did the Publication Report Attrition?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders?	Was There Important Differential Loss to Follow-Up, Overall High Loss to Follow-Up, or Missing Data?	Were Outcomes Prespecified, Defined, and Ascertained Using Accurate Methods?	Overall Rating	Comments
Carlier, Voerman, and Gersons, 2000	No	Not applicable	Unclear	No	Unclear	Yes	Poor	Unclear follow-up rate; important baseline differences among groups
Deahl et al., 1994	Unclear	Not applicable	Yes	No	Unclear	Yes	Fair	No data comparing baseline characteristics
Eid, Johnsen, and Weisaeth, 2001	Not applicable	Not applicable	Not applicable	Yes	No	Yes	Fair	Small sample size
Fertout, Jones, and Greenberg, 2012	No	Not applicable	Unclear	Unclear	Unclear	Yes	Fair	Unclear response rate (estimated at least 85% from prior research)
Foran et al., 2013	No	Not applicable	Yes	No	No	Yes	Fair	Groups differ in baseline characteristics
Fornette et al., 2012	Yes	Yes	Not applicable	Yes	No	Yes	Fair	Small sample size ($N = 21$)
Frappell-Cooke et al., 2010	Yes	Not applicable	Yes	Yes	Yes	Yes	Fair	One group had higher loss to follow-up

Study	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by restriction or matching)?	Did the Study Maintain Comparable Groups Through the Study Period?	Did the Publication Report Attrition?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders?	Was There Important Differential Loss to Follow-Up, Overall High Loss to Follow-Up, or Missing Data?	Were Outcomes Prespecified, Defined, and Ascertained Using Accurate Methods?	Overall Rating	Comments
Gould, Greenberg, and Hetherton, 2007	No	Not applicable	Yes	Yes	No	Yes	Fair	Group differences in baseline characteristics
Haney and Gray, 2007	Unclear	Not applicable	Yes	No	Yes	Unclear	Poor	No comparison of baseline characteristics by group; 60% loss to follow-up
Hunt et al., 2013	Unclear	Unclear	Yes	Yes	Unclear	Unclear	Poor	Authors categorized exposure to stress as "low" or "high" and sickness absence as "low to middle" or "high," with no definitions of these categories; no comparison of baseline characteristics between groups.
Ilnicki et al., 2012	Unclear	Not applicable	Yes	No	Unclear	Yes	Poor	No comparison of baseline characteristics between groups; statistical methods not described; reasons for attrition not described
Jones et al., 2012	Unclear	Not applicable	Not applicable	No	No	Yes	Fair	No comparison of baseline characteristics by group
Jones, Hammond, and Platoni, 2013	No	Not applicable	Yes	Yes	Yes	Yes	Fair	Baseline-characteristic differences by group; 44% loss to follow-up

Study	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by restriction or matching)?	Did the Study Maintain Comparable Groups Through the Study Period?	Did the Publication Report Attrition?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders?	Was There Important Differential Loss to Follow-Up, Overall High Loss to Follow-Up, or Missing Data?	Were Outcomes Prespecified, Defined, and Ascertained Using Accurate Methods?	Overall Rating	Comments
Jones et al., 2014; Twardzicki and Jones, 2017	No	Not applicable	Yes	No	Yes	Yes	Poor	81% loss to follow-up
Jones et al., 2017	No	Not applicable	Not applicable	Yes	No	Yes	Good	No issues
Julian et al., 2018a; Julian et al., 2018b; Dodge et al., 2018	Yes	Yes	Yes	Yes	Yes	Yes	Fair	Differential loss to follow-up
Larsson, Michel, and Lundin, 2000	No	Not applicable	Yes	Yes	Unclear	Yes	Fair	Groups differed on baseline characteristics
Leonard and Alison, 1999	No	Not applicable	Not applicable	Yes	No	Yes	Fair	CISD group differed from the "no intervention" group on important factors
McKibben et al., 2009	No	Not applicable	Yes	Yes	Unclear	Unclear	Poor	Groups differed by rank; response rate not reported
O'Hare and Beer, 2018	No	Not applicable	Not applicable	No	No	Yes	Poor	No information on follow-up survey response rate; no comparison of baseline characteristics respondents and nonrespondents; no author conflict-of-interest disclosures.

Study	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by restriction or matching)?	Did the Study Maintain Comparable Groups Through the Study Period?	Did the Publication Report Attrition?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders?	Was There Important Differential Loss to Follow-Up, Overall High Loss to Follow-Up, or Missing Data?	Were Outcomes Prespecified, Defined, and Ascertained Using Accurate Methods?	Overall Rating	Comments
Posard, Hultquist, and Segal, 2013	No	Not applicable	No	Not applicable	Unclear	Unclear	Poor	Unclear follow-up response rate
Roger and Hudson, 1995	Yes	Yes	Not applicable	No	No	Yes	Fair	No adjustment for potential confounders
Russell et al., 2014	No	Not applicable	Not applicable	Yes	No	Yes	Good	No issues
Schneider et al., 2016	No	Not applicable	Not applicable	Yes	No	Yes	Good	No issues
Sharpley et al., 2008	No	Not applicable	Yes	Yes	No	Yes	Fair	38% loss to follow-up
Sipos et al., 2012	Yes	Yes	Yes	Yes	Yes	Yes	Fair	57% loss to follow-up
Sipos et al., 2013	No	Not applicable	Yes	Yes	Yes	Yes	Good	No issues
Six and Delahaij, 2011	Unclear	Unclear	Yes	No	Yes	Yes	Poor	57.3% responded to follow-up survey
Solomon, Shklar, and Mikulincer, 2005	Yes	Yes	Yes	Yes	No	Yes	Good	No issues
Stetz et al., 2007	Yes	Yes	Not applicable	Yes	No	Yes	Good	No issues
Vaughan et al., 2015	No	Not applicable	Yes	Yes	Yes	Yes	Fair	Low response rate (51.8%) to “time 2” survey

Study	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by restriction or matching)?	Did the Study Maintain Comparable Groups Through the Study Period?	Did the Publication Report Attrition?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders?	Was There Important Differential Loss to Follow-Up, Overall High Loss to Follow-Up, or Missing Data?	Were Outcomes Prespecified, Defined, and Ascertained Using Accurate Methods?	Overall Rating	Comments
Watson and Andrews, 2018	Yes	Yes	Unclear	Yes	Unclear	Yes	Fair	Response rate not reported
Wee, Mills, and Koehler, 1999	Unclear	Not applicable	Yes	No	Yes	Yes	Poor	Low response rate (50%) to survey
Young, 2012	Yes	Yes	Yes	Yes	No	Yes	Good	No issues
Zimmermann et al., 2015	No	Not applicable	Yes	Yes	Yes	Yes	Fair	Low response rate (40%)

Table 3.5 displays the risk-of-bias assessments for the 42 studies without a comparison arm. Twenty studies were classified as “qualitative” studies; most pilot-tested the acceptability and usability of interventions. As noted in Chapter 2, qualitative case studies were not evaluated for bias. They are typically excluded from systematic reviews and are considered insufficient evidence of efficacy.

Half of the remaining case studies reported pre- and postintervention measurements; the others reported only outcomes postintervention. Several had low or unreported response rates.

Table 3.5. Risk of Bias, Case Studies (no comparison arm)

Study	Prospective Study?	Population Characteristics Reported	Assessors Blinded	Outcomes Measured Appropriately	Pre-Post Data	Comment
Bobrow et al., 2013	Yes	Yes	No	No	Yes	Response rate not reported
Bryan and Morrow, 2011						Qualitative
Bush, Ouellette, and Kinn, 2014						Qualitative
Carr et al., 2013	Yes	Yes	No	Yes	Yes	48% response rate
Ellsworth et al., 1993						Qualitative
Fertout, Jones, and Greenberg, 2012	Yes	Yes	No	Can't tell	No	Response rate not reported
Gahm et al., 2009	Yes	Yes	No	Can't tell	No	Response rate not reported.
Gambardella, 2008						Qualitative
Garber and Zamorski, 2012	Yes	Yes	No	Can't tell	No	53% responded to postdeployment survey
Griffith and West, 2013	Yes	Yes	No	Can't tell	No	72% response rate
Hassan et al., 2010						Qualitative
Hourani et al., 2017						Qualitative
Hoyt et al., 2015						Qualitative
Hung, 2008						Qualitative

Study	Prospective Study?	Population Characteristics Reported	Assessors Blinded	Outcomes Measured Appropriately	Pre-Post Data	Comment
Jarrett, 2013						Qualitative
Jones et al., 2010	No	Yes	No	Yes	No	Returned-to-duty outcome; official records used so no response needed
Jones et al., 2011; Burdett et al., 2011	Yes	Yes	No	Can't tell	No	87% response rate
Judkins and Bradley, 2017	No	Yes	No	Yes	Yes	Response rate not reported; respondents differed from nonrespondents
Kizakevich et al., 2018						Qualitative
McCaslin et al., 2018						Qualitative
Millegan, Delaney, and Klam, 2016						Qualitative
Milstein, Robinson, and Espinosa, 2015						Qualitative
Mishkind et al., 2012	Yes	Yes	No	Yes	No	Unclear participation rate
Moldjord and Hybertsen, 2015						Qualitative
Moore and Krakow, 2007	Yes	No	No	Yes	Yes	Case series of 11 patients; author has financial interest in the intervention
Parrish, 2008						Qualitative
Parsloe et al., 2014	No	Yes	No	Yes	No	66% response rate
Pincus and Benedek, 1998						Qualitative
Piver-Renna, 2009	Yes	No	No	Yes	No	
Potter et al., 2009	Yes	Yes	Yes	No	Yes	Small sample size
Pruitt, Bernheim, and Tomlinson, 1991	Yes	No	No	Yes	Yes	No report of program dropout
Rabb, Baumer, and Wieseler, 1993						Qualitative

Study	Prospective Study?	Population Characteristics Reported	Assessors Blinded	Outcomes Measured Appropriately	Pre-Post Data	Comment
Ralph et al., 2017	Yes	Yes	No	Yes	Yes	78% program completion
Rapley et al., 2017	Yes	Yes	No	Yes	Yes	No other issues
Saltzman et al., 2011; Lester et al., 2012; Saltzman, et al., 2016	Yes	Yes	No	Yes	Yes	Response rate not reported
Shalev et al., 1998	Yes	No	Can't tell	Yes	Yes	Unclear outcome measurement
Start, Allard, and Toblin, 2017 U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003	Yes	Yes	No	Yes	No	46% response rate Qualitative
Warner et al., 2007	Yes	No	No	Can't tell	No	Analysis of military records, so response not needed
Williams et al., 2010 Williams et al., 2013	Yes	Yes	No	Can't tell	Yes	Response rate <50% Qualitative
Wright State University, 2015	Yes	No	No	Yes	Yes	Limited information provided by ClinicalTrials.gov record
Zimmerman and Weber, 2000						Qualitative

NOTE: Qualitative studies were not evaluated for bias.

Key Question 1: What Are the Effects of Interventions on Physiological, Psychological, Behavioral, Occupational, and Acceptability Outcomes?

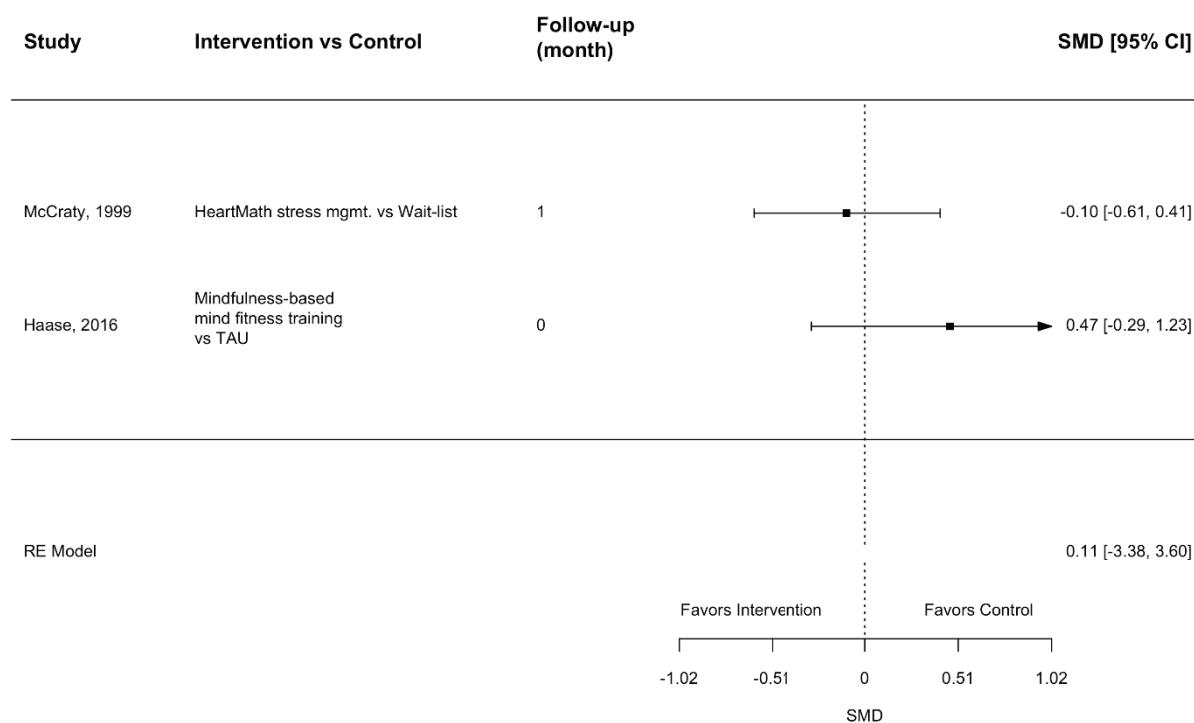
Physiological Outcomes

Sleep

Two studies that compared stress control interventions with no intervention or treatment as usual measured sleep problems at baseline and postintervention. One study (Haase et al., 2016) used the Pittsburgh Sleep Quality Index, while the other (McCraty, 1999) used the Personal and

Organizational Quality Assessment. Neither HeartMath stress-management skills nor mindfulness training had a statistically significant effect, compared with the control group. Meta-analyses of standardized effect sizes revealed that, overall, subjects in the control arms showed slightly more improvement in sleep, but SMD was not statistically significant, and CIs were extremely wide (SMD = 0.11; CI = -3.38, 3.60). Little heterogeneity was detected ($I^2 = 32$ percent). No publication bias was detected. Results are displayed in Figure 3.2.

Figure 3.2. Intervention Effect for Sleep Problems (no intervention or treatment as usual)



NOTE: TAU = treatment as usual; RE = random effects.

Four studies that compared stress control interventions with a group that received a different intervention measured sleep problems at baseline and postintervention. Meta-analysis was not possible, as results were adjusted for different potential confounders. Two studies of resilience training found no difference in sleep improvement compared with trainings of similar intensity that did not address stress (i.e., military history, cultural awareness) (Adler et al., 2015; Cacioppo et al., 2015). Two studies of postdeployment Battlemind training (Adler et al., 2009; Mulligan et al., 2012) found no difference in sleep problems compared with a standard postdeployment briefing.

Two case studies without a comparison group reported sleep outcomes (Moore and Krakow, 2007; Posard, Hultquist, and Segal, 2013). One study found that nightmares reduced by 44

percent and insomnia severity by 34 percent after one month of imagery rehearsal (Moore and Krakow, 2007). The other study reported that quality of sleep improved significantly after changing daily scheduled on-duty activities at a military base in the United States (Posard, Hultquist, and Segal, 2013). Results are displayed in Appendix B.

Other Physiological Outcomes

Seven studies with a comparison group measured other physiological outcomes. Results are displayed in Table 3.6. Five reported heart rate data, while two reported cortisol levels. Some studies measured heart rate but did not report complete data, only stating whether differences between groups were significant. Pooling was not possible due to heterogeneity of timing. For example, some studies measured heart rate during a simulated traumatic event (Bouchard et al., 2012; Arnetz et al., 2009; Johnson et al., 2014), and some measured it after a real or simulated event (Arnetz et al., 2009; Adler et al., 2008; Johnson et al., 2014).

One study (Adler et al., 2008) found that CISM significantly decreased heart rate compared with no intervention but found a single, standard stress-management education class superior regarding change in heart rate. Imagery-skills training led to a large and statistically significant reduction in heart rate during a simulation (Arnetz et al., 2009) compared with standard training, but the difference was not significant postsimulation. The effect of biofeedback was not statistically significant during a simulation in one study (Bouchard et al., 2012) but had a significant effect on low-frequency heart rate variability postsimulation in another study (Lewis et al., 2015). Mindfulness training had a large and significant effect on postsimulation heart rate in one study (Johnson et al., 2014). Other interventions had mixed results, as displayed in Table 3.6.

Table 3.6. Other Physiological Outcomes (controlled trials and cohort comparisons)

Study	Intervention	Control/ Comparison	Outcome
Adler et al., 2008	CISM	Survey only	Heart rate, postintervention, CISM versus survey only: SMD = -0.53 (CI = -0.69, -0.36).
Adler et al., 2008	CISM	Standard stress-management class	Heart rate, postintervention, CISM versus stress-management class: SMD = 0.18 (0.02, 0.33)
Arnetz et al., 2009	Imagery and skills training	Police training as usual	- Cortisol, postsimulation: SMD = 1.13 (0.1, 2.16) - Heart rate, during simulation: SMD = -6.97 (-9.74, -4.2) - Heart rate, postsimulation: SMD = 0.18 (-0.76, 1.13)

Study	Intervention	Control/ Comparison	Outcome
Bouchard et al., 2012	Biofeedback-assisted stress management	No intervention	- Salivary cortisol, postsimulation: SMD = -0.35 ($-0.97, 0.27$) - Heart rate, during simulation: SMD = 0.09 ($-0.53, 0.70$)
Hourani et al., 2011	Stress inoculation training, predeployment	Current best practices (not described)	The difference between experimental and control groups was nearly significant, with the control group showing greater overall relaxation after training
Johnson et al., 2014	Mindfulness-based mind fitness training (plus training as usual)	Infantry training as usual	- Heart rate reduction after recovery, postsimulation: SMD = -0.53 ($-0.93, -0.13$) - Breathing rate reduction after recovery, postsimulation: SMD = -4.63 ($-5.39, -3.87$) - Plasma concentrations of neuropeptide Y (stress modulator), postsimulation: SMD = -1.57 ($-1.91, -1.23$) - Heart rate, during simulation: groups significantly different only during anticipation - Breathing rate, postsimulation: groups significantly different only during recovery - Plasma concentrations of neuropeptide Y (stress modulator): no significant difference between the intervention and control groups.
Lewis et al., 2015	Stress inoculation training (relaxation breathing + biofeedback)	Didactic presentation on stress management	- Low-frequency heart rate variability (LF-HRV), postintervention: SMD = 0.15 ($0.02, 0.29$) - Heart period, postintervention: no significant difference in baseline-to-baseline changes - Respiratory sinus arrhythmia (RSA), postintervention: no significant difference in baseline-to-baseline changes for RSA
McCraty et al., 1999	HeartMath stress and emotional self-management training	Wait list	The authors write, "There was little difference in the physiological measures between the trained participants and the control group"

Two case studies without a comparison group reported physiological outcomes. Captivity training for Canadian armed forces resulted in decreased fatigue and salivary cortisol (Ralph et al., 2017), while the U.S. Army's Fit to Win program reduced mean blood pressure among participants on duty at the Pentagon (Pruitt, Bernheim, and Tomlinson, 1991). Details are provided in Appendix B.

Psychological and Behavioral Outcomes

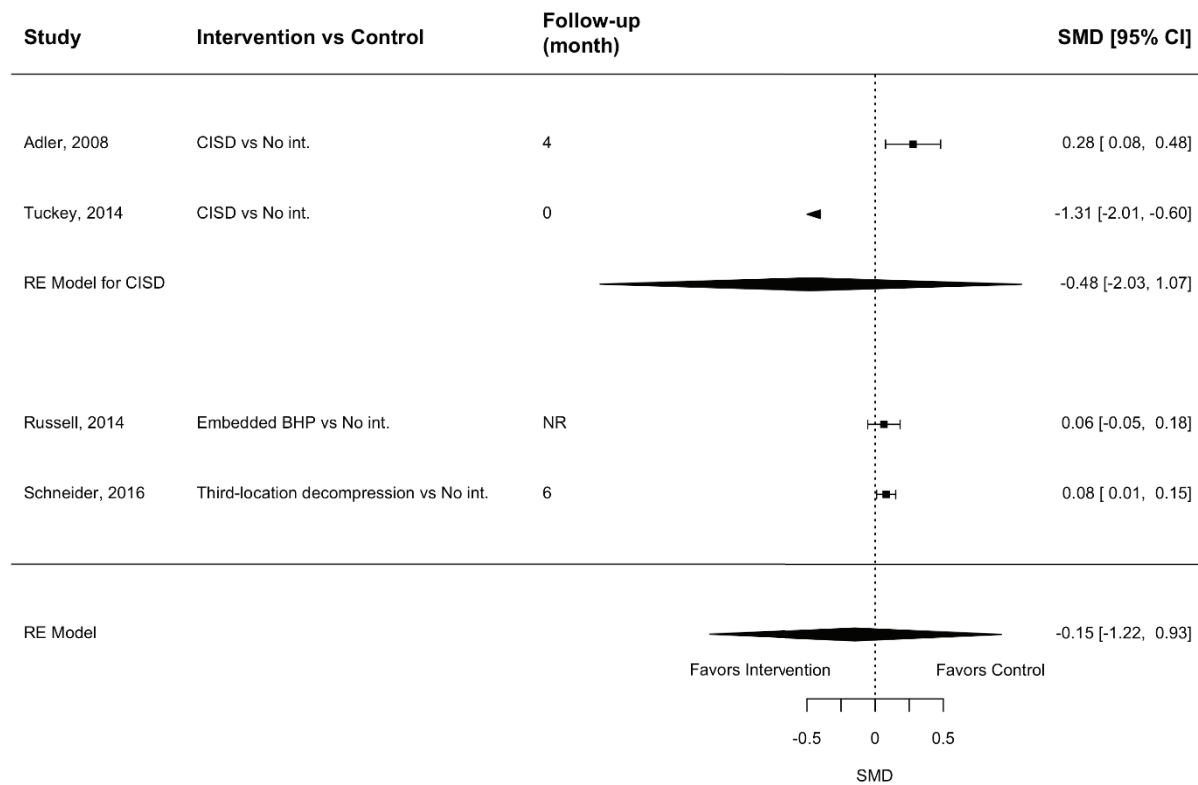
Alcohol Misuse

Four studies comparing a stress-control intervention group with an untreated group reported continuous measures of alcohol use or misuse at baseline and postintervention. Measures consisted of the Alcohol Use Disorder Identification Test (AUDIT), the Post-Deployment Health Reassessment (PDHRA), and the number of drinks per week. Meta-analyses of standardized effect sizes favored the intervention, but SMD was not statistically significant (SMD = -0.15 ; CI = $-1.22, 0.93$). Extreme heterogeneity was detected ($I^2 = 99$ percent). Publication bias was not detected (Begg's test $p = 0.75$). Results are displayed in Figure 3.3.

Meta-regression analyses to assess possible effects of study design and follow-up timing were not possible. The two studies of CISM reported conflicting significant results. Tuckey and Scott (2014) reported a significant reduction in alcohol use, compared with untreated controls, while Adler et al. (2008) reported that the control group had greater improvement. Adler et al. studied active duty military and collected data four months after a one-time debriefing; Tuckey and Scott studied first responders, and the postbriefing follow-up timing was unclear. (Both studies included a group that attended a standard stress-management session; results are described below.) Of note, Schneider et al. (2016) used propensity score weighting to compare third-location decompression with a weighted control group of service members in the same job specialties who returned from deployment during the same period and did not attend. Military service members attending third-location decompression had worse alcohol outcomes at six months than personnel who did not attend.

In addition to the studies displayed in Figure 3.3, a large cohort study (Vaughan et al., 2015) found no significant differences between U.S. Marines trained in OSCAR and those in untrained battalions in the percentage reporting high-risk drinking, as measured by the AUDIT-Concise (AUDIT-C), six months postdeployment, after adjusting for baseline characteristics and deployment experience ($p = 0.87$).

Figure 3.3. Intervention Effect for Alcohol Use (versus no intervention)



NOTE: RE = random effects; BHP = behavioral health provider.

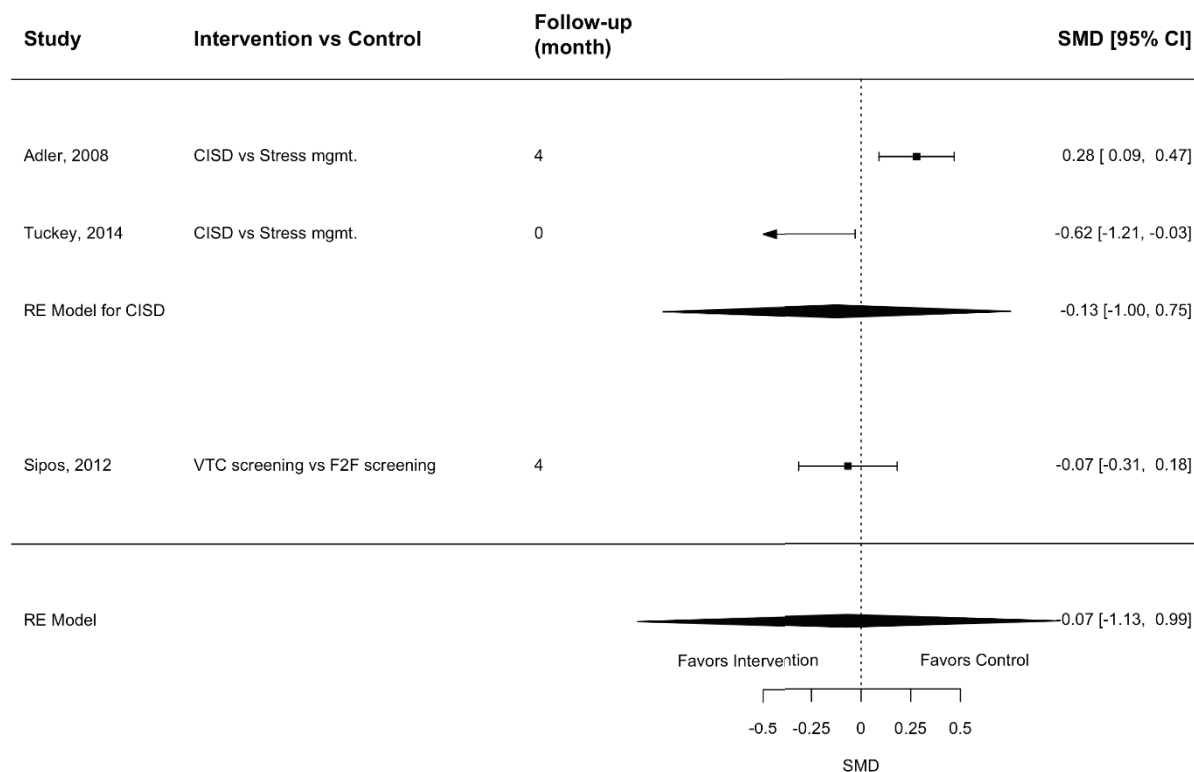
Three studies comparing a stress control intervention group to an alternatively treated group reported level of alcohol use or misuse at baseline and postintervention. Two studies used a version of the AUDIT; the other used the number of drinks in the past week. Meta-analyses of standardized effect sizes slightly favored the COSC interventions, but standardized mean difference was not statistically significant ($SMD = -0.07$; $CI = -1.13, 0.99$). Considerable heterogeneity was detected ($I^2 = 87$ percent). Publication bias was not detected (Begg's test $p = 0.33$). Results are displayed in Figure 3.4.

Another study reported that postdeployment Battlemind training decreased problem drinking compared with a standard postdeployment training class in a multivariate model, adjusting for potential confounders (Mulligan et al., 2012).

Meta-regression analyses to assess possible effects of study design and follow up timing were not possible. The two studies of CISD versus a single stress-management class reported conflicting significant results. Tuckey and Scott (2014) reported a significant reduction in alcohol use compared with controls who attended the stress-management class, while Adler et al. (2008) reported that the stress-management class group had greater improvement. As mentioned above, Adler et al. studied active duty military and reported four-month data; Tuckey and Scott

studied first responders, and the postbriefing follow-up timing was unclear. Sipos et al. (2012) found that military service members who received a behavioral health screening via video teleconference immediately postdeployment had no statistical difference in alcohol outcomes at four months from personnel who received the screening face-to-face.

Figure 3.4. Intervention Effect for Alcohol Use (active control)



NOTE: VTC = video teleconference; F2F = face-to-face.

Anxiety

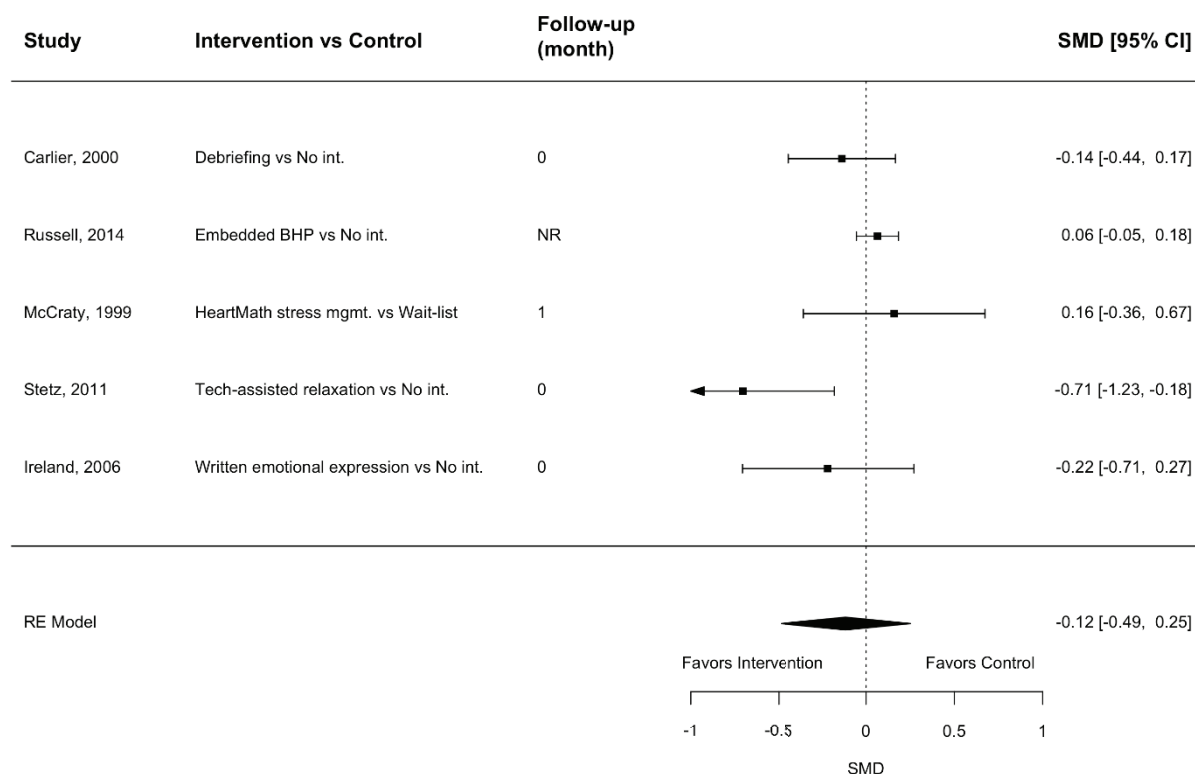
Five studies comparing stress-control intervention with no treatment reported anxiety scores (continuous measures, as opposed to percentage with diagnosed anxiety) at baseline and postintervention. Anxiety was measured by the General Anxiety Disorder (GAD) instrument, State-Trait Anxiety Inventory (STAI), Depression Anxiety Stress Scales (DASS), and Personal and Organizational Quality Assessment.

Interventions consisted of debriefing, embedding mental health providers in theater, HeartMath stress management (coping-skills training), virtual reality–assisted breathing and muscle relaxation, and written emotional expression. Meta-analyses of standardized effect sizes revealed that, overall, subjects in the intervention arms had a greater decrease in anxiety, but SMD from control groups was not statistically significant (SMD = -0.12; CI = -0.49, 0.25).

Moderate heterogeneity was detected ($I^2 = 61$ percent). Publication bias was not detected (Begg's test $p = 0.48$). Results are displayed in Figure 3.5.

Meta-regression analyses to assess the possible effects of study design and follow-up timing were not possible. Regarding specific components or interventions, only the study of technology-assisted relaxation (Stetz et al., 2011) had a statistically significant standardized effect size compared with no intervention. Importantly, this study was conducted predeployment in a simulated situation rather than in theater. That may explain the better results; other interventions, such as debriefing and utilization of in-theater mental health treatment, take place during and after real-life traumatic events.

Figure 3.5. Intervention Effect for Anxiety (versus no intervention)

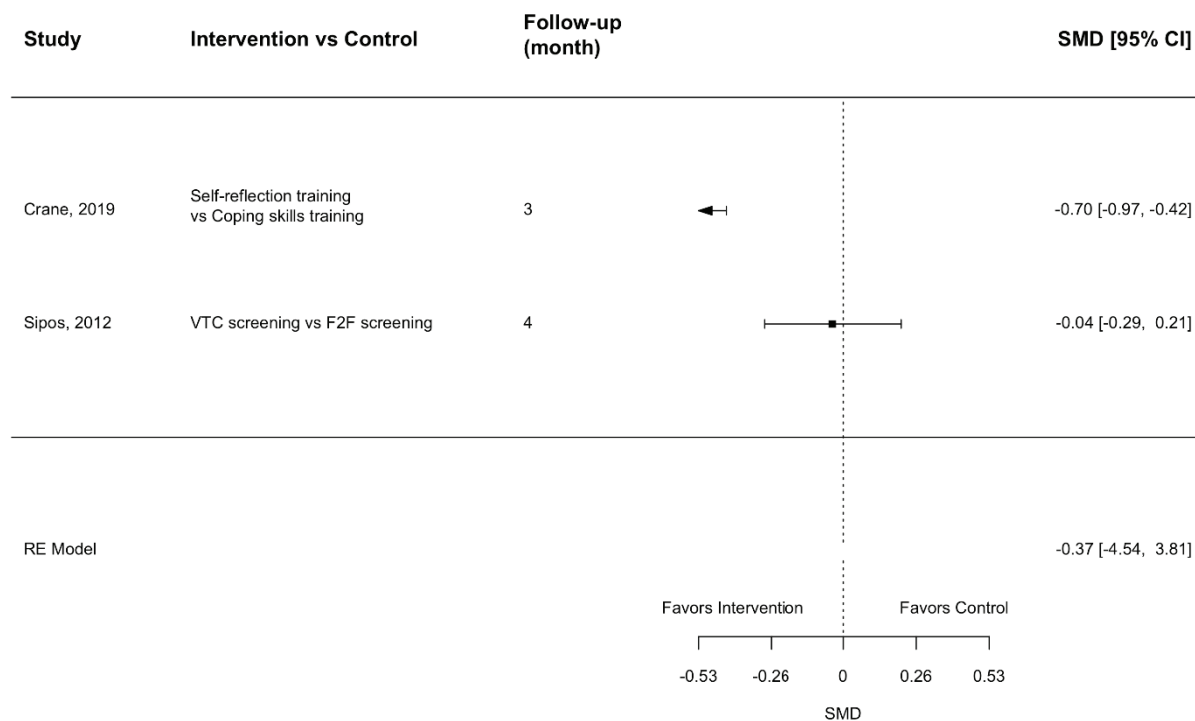


NOTE: RE = random effects; BHP = behavioral health provider.

Only two studies comparing a stress-control intervention group with an alternatively treated group reported anxiety scores at baseline and postintervention. One found a significantly greater improvement in anxiety with self-reflection training compared with coping-skills training (Crane et al., 2019). The other found no difference in effect between face-to-face or video screening for mental health problems at the end of deployment (Sipos et al., 2012).

Meta-analyses of standardized effect sizes favored the interventions, but SMD was not statistically significant, and CIs were wide (SMD = -0.37 ; CI = $-4.54, 3.81$). Considerable heterogeneity was detected ($I^2 = 92$ percent). Begg's test for publication bias was not calculable. Results are displayed in Figure 3.6.

Figure 3.6. Intervention Effect for Anxiety (active control)



NOTE: VTC = video teleconference; F2F = face-to-face.

Depression

Six studies comparing stress-control intervention with no treatment reported depression scores (continuous measures, as opposed to percentage with diagnosed depression) at baseline and postintervention. Depression symptoms were measured by the Beck Depression Inventory, Center for Epidemiologic Studies Depression Scale (CES-D), and several versions of the Patient Health Questionnaire (PHQ).

Interventions consisted of attention bias modification training, CISD, embedded mental health providers, HeartMath stress management (coping-skills training), postdeployment third-location decompression, and written emotional expression. Meta-analyses of standardized effect sizes revealed that, overall, subjects in the intervention arms had a greater decrease in depression scores, but the pooled difference from control groups was not statistically significant (SMD = $-$

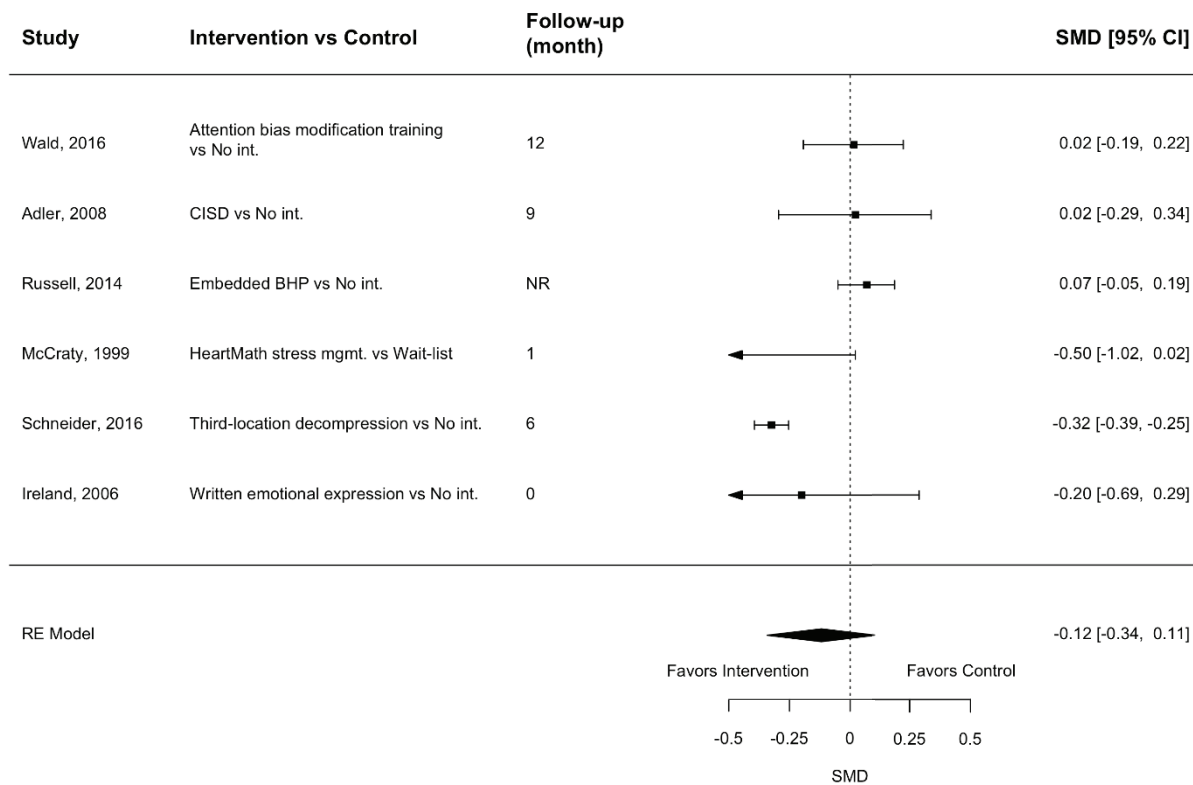
0.12; CI = -0.34, 0.11). Considerable heterogeneity was detected ($I^2 = 80$ percent). Publication bias was not detected (Begg's test $p = 0.47$). Results are displayed in Figure 3.7.

Meta-regression analysis found no significant effect of study design when comparing cluster randomized trials (0.19; CI = -0.82, 1.21) and cohort comparisons (0.04; CI -0.71, 0.79) with trials randomizing individuals. We were unable to conduct a meta-regression for follow-up timing.

Regarding specific interventions, only third-location decompression had a statistically significant standardized effect size compared with no intervention (SMD = -0.32; CI = -0.39, -0.25). Importantly, this program took place immediately following deployment; depression was measured at six months postdeployment. HeartMath (McCraty et al., 1999) had a large effect that bordered statistical significance (SMD = -0.50; CI = -1.02, 0.02); this study was conducted with police officers with a simulated stressful event rather than in the field. The remaining interventions took place in theater or in the field.

In addition to the studies in Figure 3.7, a large cohort study found no difference in the rate of probable major depressive disorder five months postdeployment between OSCAR-trained battalions and untrained battalions ($p = 0.09$), after adjusting for baseline characteristics and deployment experiences (Vaughan et al., 2015).

Figure 3.7. Intervention Effect for Depression (versus no intervention)



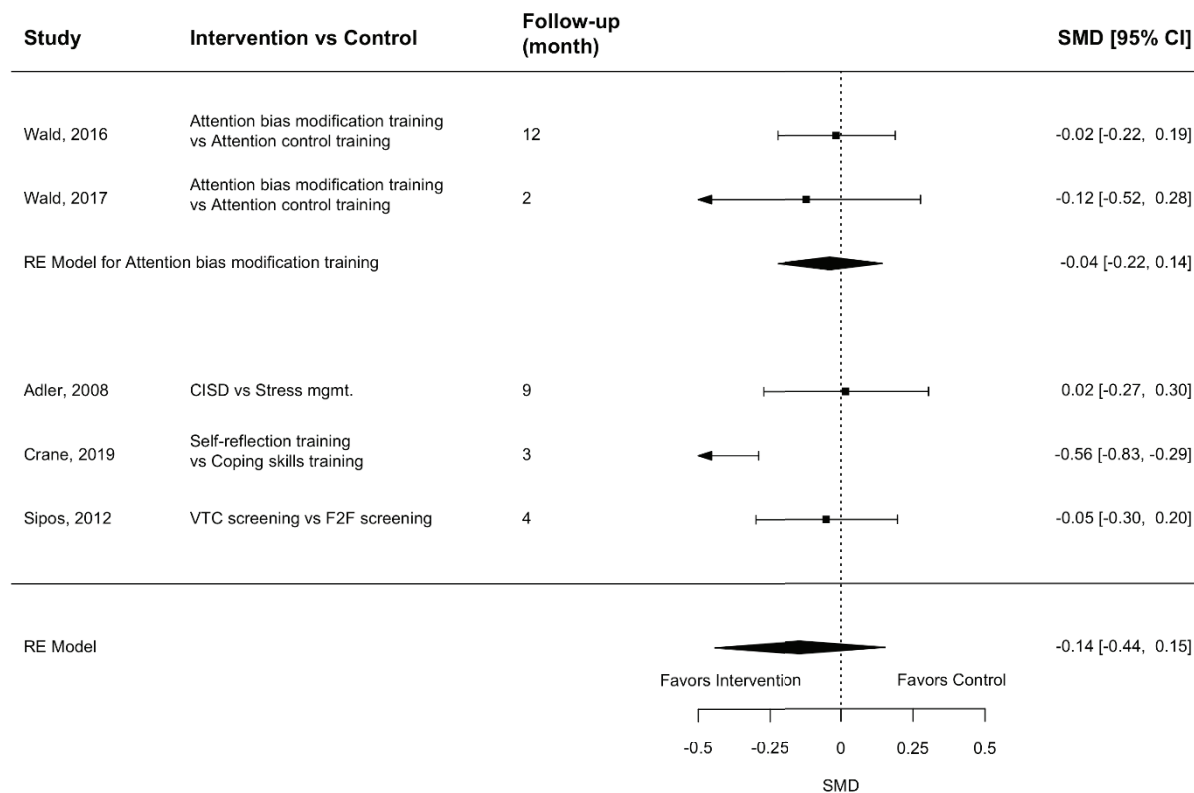
NOTE: RE = random effects; BHP = behavioral health providers.

Five studies comparing a stress-control intervention group with an alternatively treated group measured depression scores at baseline and postintervention. All were conducted with active duty military personnel. Meta-analyses of standardized effect sizes favored the interventions, but the SMD was not statistically significant (SMD = -0.14 ; CI = $-0.44, 0.15$). Considerable heterogeneity was detected ($I^2 = 68$ percent). Publication bias was not detected (Begg's test, $p = 0.48$). Results are displayed in Figure 3.8.

Meta-regression analyses to assess possible effects of study design, follow-up timing, population, and setting were not possible. The two studies of attention bias modification by the same authors were pooled; results were not statistically significant (SMD = -0.04 ; CI = $-0.22, 0.14$). One used eight ten-minute sessions, while the other used one longer session. Adler et al. (2008) reported no statistical difference in improvement in depression scores for a CISD intervention group compared with controls who attended a standard stress-management class. Sipos et al. (2012) reported no statistical difference in depression for behavioral health screening via video teleconference compared with face-to-face screening. Of note, Crane et al. (2019) reported a significantly larger reduction in depression scores for self-reflection training compared with coping-skills training.

The results of an additional study (Mulligan et al., 2012) could not be pooled; the authors reported no difference in effect on depression between postdeployment Battlemind training and standard training in a multivariate model adjusted for potential confounders.

Figure 3.8. Intervention Effect for Depression (active control)



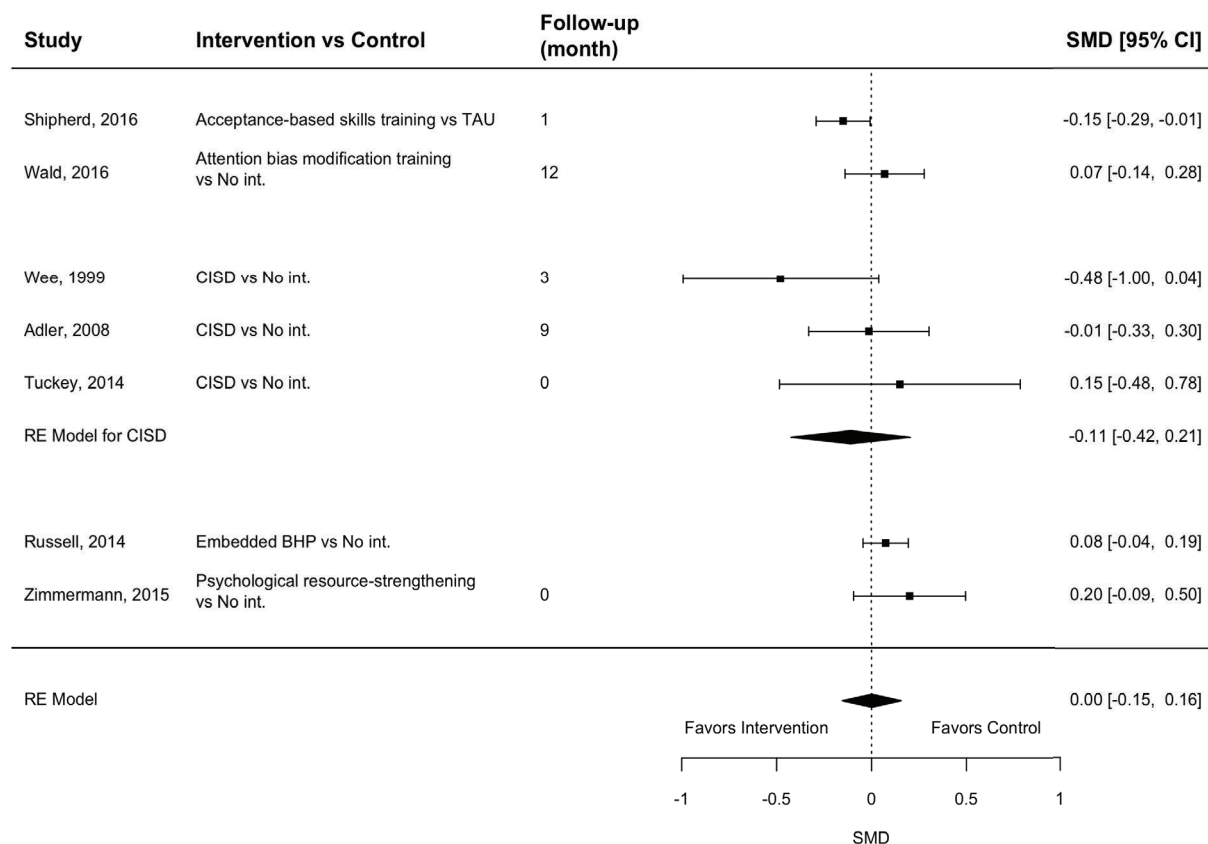
NOTE: RE = random effects; VTC = video teleconference; F2F = face-to-face.

PTSD Symptoms

Seven studies comparing a stress-control intervention with no treatment or usual training reported PTSD symptom scores (continuous measures—e.g., PTSD Checklist [PCL], Impact of Events Scale) at baseline and postintervention. Interventions consisted of acceptance-based skills training, attention bias modification training, CISD, embedded mental health providers, and a three-week residential program (psychological resource strengthening). Meta-analyses of standardized effect sizes revealed no difference in effect on PTSD score (SMD = 0.00; CI = -0.15, 0.16). Moderate heterogeneity was detected ($I^2 = 44$ percent). Publication bias was not detected (Begg's test, $p = 0.56$; Egger's test, $p = 0.76$). Results are displayed in Figure 3.9.

Meta-regression analysis showed the effects of follow-up timing (SMD = 0.01; CI = -0.02, 0.04), study design (cluster randomized = 0.08; CI = -0.49, 0.65; cohort comparison = 0.01; CI = -0.49, 0.51), setting (in theater = -0.01; CI = -0.63, 0.60), and military population (0.24; CI = -0.42, 0.90) were not statistically significant. Three studies of CISTD were included; pooled results were not statistically significant (SMD = -0.11; CI = -0.42, 0.21; I^2 = 28 percent).

Figure 3.9. Intervention Effect for PTSD Symptoms (versus no intervention or treatment as usual)

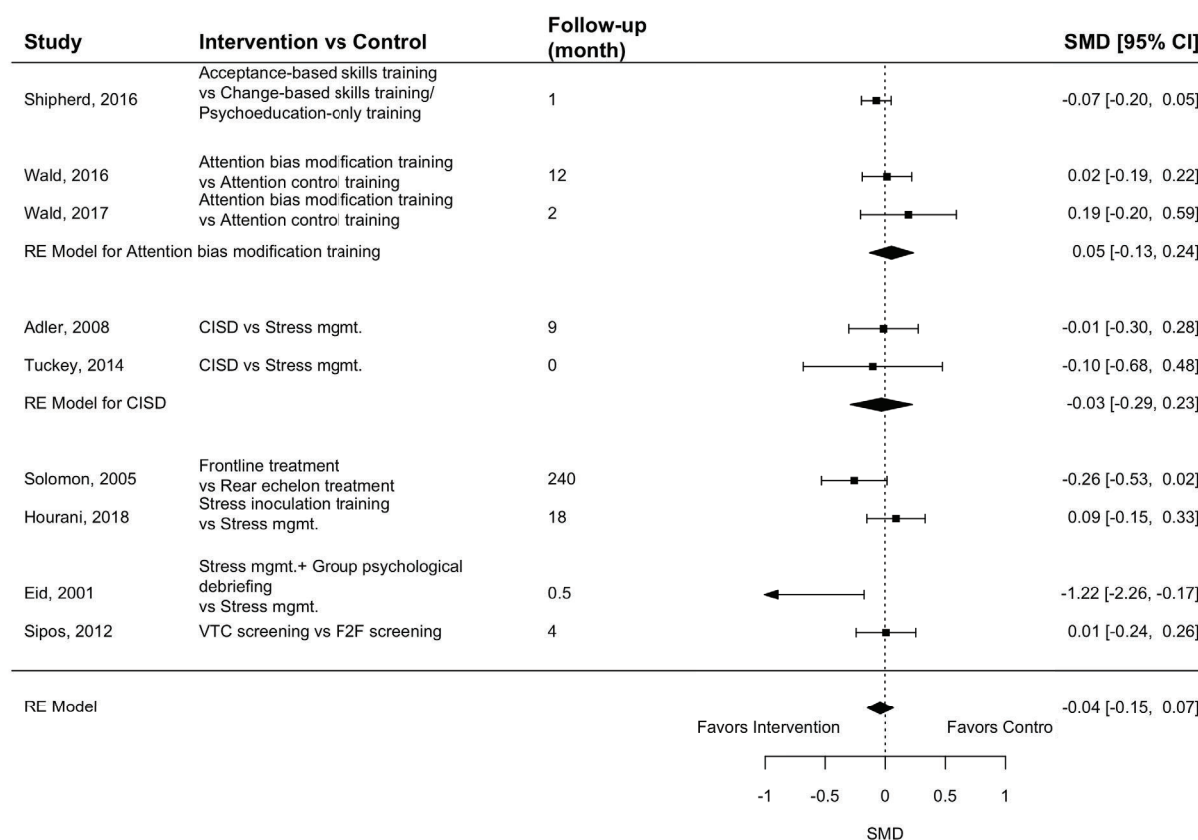


NOTE: RE = random effects; BHP = behavioral health provider; TAU = treatment as usual.

Nine studies comparing a stress-control intervention group with an alternatively treated group reported level of PTSD at baseline and postintervention. All but one (Tuckey and Scott, 2014) involved active duty military. Meta-analyses of standardized effect sizes revealed a very small effect of the interventions that was not statistically significant (SMD = -0.04; CI = -0.15, 0.07). Surprisingly, no heterogeneity was detected (I^2 = 0 percent). Publication bias was not detected (Begg's test, p = 0.48; Egger's test, p = 0.37). Results are displayed in Figure 3.10.

Meta-regression analyses to assess possible effects of study design, follow-up timing, population, and setting were not possible. The two studies of attention bias modification were pooled; the difference in reduction in PTSD scores compared with attention control training was not statistically significant ($SMD = 0.05$; $CI = -0.13, 0.24$). The two studies of CIST versus a standard stress-management class were also pooled; results were not statistically significant ($SMD = -0.03$; $CI = -0.29, 0.23$). Shipherd, Salters-Pedneault, and Fordiani (2016) reported no statistical difference in PTSD outcomes for the acceptance-based skills training intervention group compared with change-based skills training or psychoeducation-only training. (The active comparison groups were lumped together for purposes of the meta-analysis, to avoid double-counting the acceptance-based skills participants. There was no significant difference in effect on PTSD symptoms between the acceptance-based skills group and either comparison group.) Sipos et al. (2012) found no statistical difference in PTSD-symptom reduction between those who attended a face-to-face mental health screening and those who attended the same screening via video teleconference. Adding group psychological briefing to a standard after-action review or operational briefing resulted in a significantly larger decrease in PTSD symptoms in one study (Eid, Johnsen, and Weisaeth, 2001). Finally, Solomon, Shklar, and Mikulincer (2005) conducted a 20-year follow-up of Israeli Defense Forces and found that front-line mental health treatment had a moderate-size effect on PTSD intensity compared with rear-echelon treatment that bordered on statistical significance.

Figure 3.10. Intervention Effect for PTSD Symptoms (active control)



NOTE: RE = random effects; VTC = video teleconference; F2F = face-to-face.

Results of a study comparing front-line reintegration at end of deployment in Iraq with standard reintegration postdeployment could not be pooled. This study found no difference in PTSD symptoms four to five months after end of deployment (Sipos et al., 2014). In addition, a study comparing large-group Battlemind training, small-group Battlemind training, Battlemind debriefing, and standard stress-education postdeployment (Castro et al., 2012) reported that no Battlemind intervention had significantly larger effects on PTSD than standard stress management in multivariate analysis, adjusting for potential confounders.

Six case studies without a comparison group reported PTSD measures (Dodge et al., 2018; Moore and Krakow, 2007; Parsloe et al., 2014; Potter et al., 2009; Ralph et al., 2017; Snyder et al., 2016). A Canadian study found no difference in PTSD symptoms before and after captivity training (Ralph et al., 2017). Postdeployment family interventions, such as the Strong Military Families Program and After Deployment: Adaptive Parenting Tools (ADAPT), reported positive results (Dodge et al., 2018; Snyder et al., 2016), as did a very small ($N = 11$) study of imagery rehearsal (Moore and Krakow, 2007). A two-day in-theater rehabilitation program based on the PIES principles (proximity, immediacy, expectancy, and simplicity) significantly decreased PTSD symptoms among U.S. Army soldiers (Potter et al., 2009). Finally, UK troops who took

rest and recuperation during deployment also decreased PTSD symptoms (Parsloe et al., 2014). Results for each study are displayed in Appendix B.

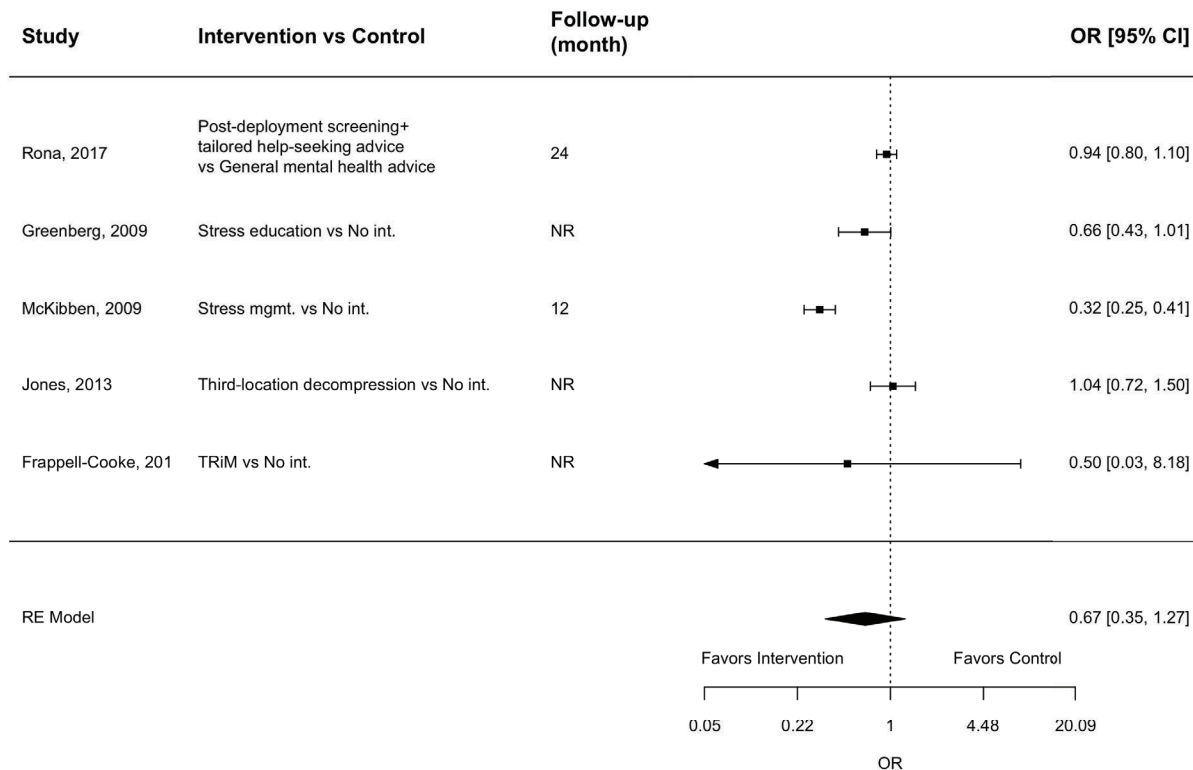
PTSD Cases, Postdeployment

Five studies comparing a stress-control intervention group with an untreated group reported the rate of PTSD postdeployment. Meta-analyses favored interventions, but the results were not statistically significant (odds ratio [OR] 0.67; CI = 0.35, 1.27). Substantial heterogeneity was detected ($I^2 = 91$ percent). Publication bias was not detected (Begg's test, $p = 0.82$). Results are displayed in Figure 3.11.

Meta-regression analyses to assess the possible effects of study design and follow-up timing were not possible. Two studies reported positive results. Greenberg et al. (2010) surveyed 1,559 UK Royal Navy personnel postdeployment and found that those who reported receiving any stress-management training were less likely to score over 50 on the PCL, while another study (McKibben et al., 2009) found similar results among U.S. infantry soldiers who attended standard stress-management training. Results for the UK trauma risk management (TRiM) program (Frappell-Cooke et al., 2010) and third-location decompression (Jones et al., 2013) were not statistically significant.

In addition to the studies pooled, a large cohort comparison found no significant difference between the prevalence of probable PTSD between U.S. Marines whose battalions received OSCAR training and those who did not receive training ($p = 0.13$), after adjusting for baseline characteristics and deployment experience (Vaughan et al., 2015).

Figure 3.11. Intervention Effect on PTSD cases, Postdeployment (versus no intervention)



Distress

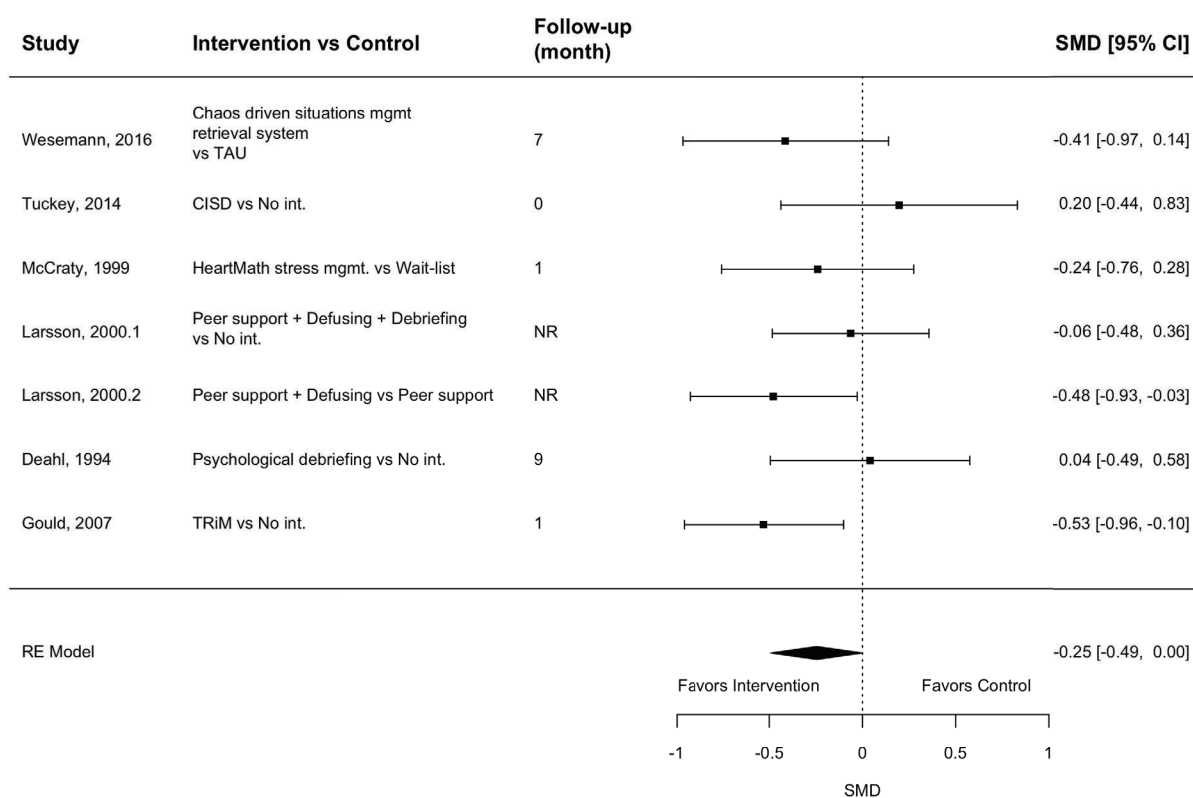
Six studies that compared a stress-control intervention with no intervention or a passive intervention reported psychological distress scores at baseline and postintervention. Study authors classified the following outcome measures as distress: Kessler-10, Personal and Organizational Quality Survey, General Health Questionnaire-28, and the distress scale of the Global Severity Index. In general, stress responses are normal reactions to environmental or internal perturbations and can be considered adaptive in nature. Distress occurs when stress is severe, prolonged, or both.

One study had four arms (Larrison, Michel, and Lundin, 2000); we included all arms, creating two comparisons to assess whether the entire intervention package had a significant effect versus no intervention and whether the defusing component was associated with an effect. Meta-analyses of standardized effect sizes revealed that, overall, subjects in the intervention groups had a greater decrease in distress, with a moderate-size effect that was statistically significant ($SMD = -0.25$; $CI = -0.49, 0.00$). Little heterogeneity was detected ($I^2 = 11$ percent). Publication bias was not detected (Begg's test, $p = 0.24$). Results are displayed in Figure 3.12.

Meta-regression analyses to assess possible effects of study design had no statistically significant results. Meta-analysis regarding follow-up timing was not possible. TRiM, a peer-

group intervention developed by the UK Royal Navy, had a statistically significant effect on distress (Gould, Greenberg, and Hetherington, 2007). The effect size was large ($SMD = -0.53$; $CI = -0.96, -0.10$) at the one-month follow-up. TRiM trains service members in psychological first aid, to identify at-risk personnel, and to refer to early intervention. Most participants were Royal Marines; about half were stationed in Iraq and half in Northern Ireland. In a study of peacekeeping forces in Bosnia (Larsson, Michel, and Lundin, 2000), adding defusing to peer support had a significant effect on distress; however, adding a debriefing to defusing and peer support led to effects that were not statistically different from not intervening.

Figure 3.12. Intervention Effect for Distress (versus no intervention or treatment as usual)



NOTE: RE = random effects; TAU = treatment as usual.

Two studies that directly compared one mode of stress control intervention with another reported distress scores at baseline and postintervention. They were not pooled because of the extreme heterogeneity of follow-up timing. Solomon, Shklar, and Mikulincer (2005) conducted a 20-year follow-up comparing distress levels of Israeli Defense Force members who received mental health treatment in theater (front-line treatment) with those who received rear-echelon treatment. Results favoring front-line treatment did not reach statistical significance ($SMD = -0.21$; $CI = -0.48, 0.06$). Tuckey and Scott (2014) found that, among Australian firefighters,

reduction in distress, while greater in a CISM group, did not significantly differ from a 90-minute stress-management education class (SMD = -0.21; CI = -0.79, 0.37).

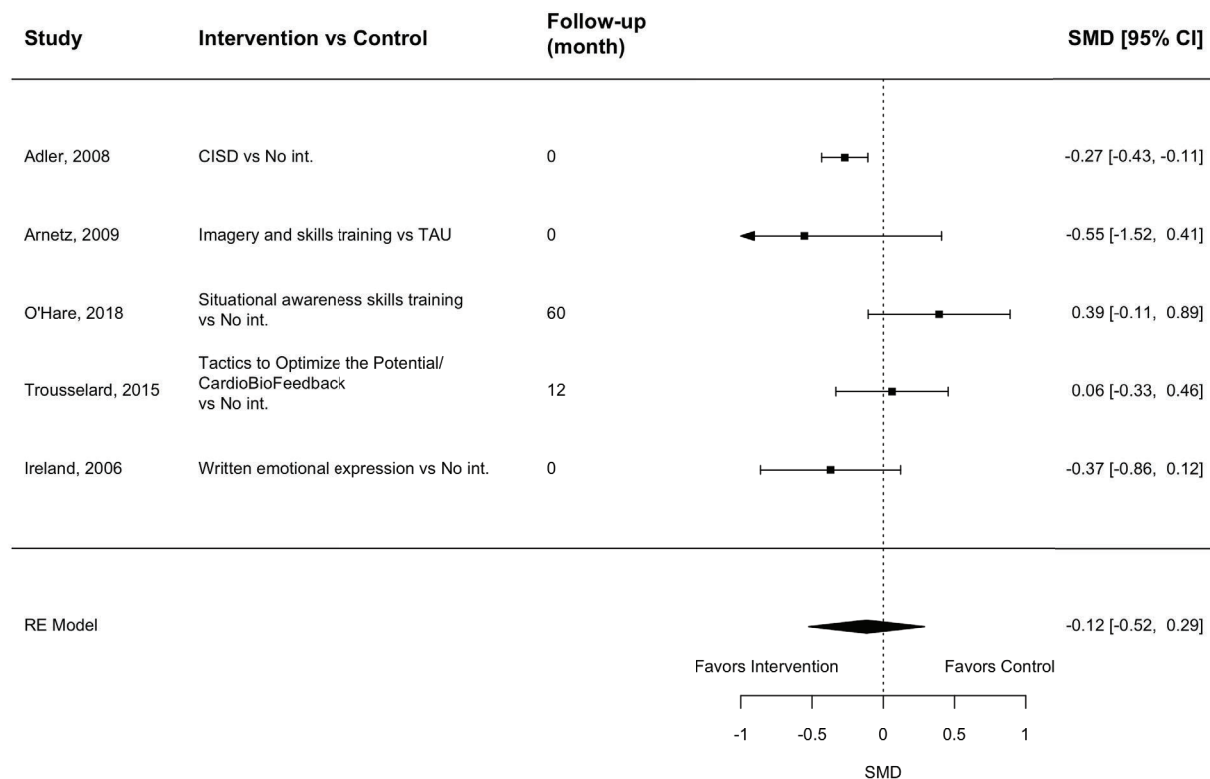
Four case studies without a comparison group reported level of distress pre- and postintervention (Judkins and Bradley, 2017; Pruitt, Bernheim, and Tomlinson, 1991; Saltzman et al., 2011; Wright State University, 2015). U.S. military programs Families OverComing Under Stress (FOCUS) (Saltzman et al., 2011), Fit to Win (Pruitt, Bernheim, and Tomlinson, 1991), and Marriage Check-Up (Wright State University, 2015) reported significant decreases in distress, as did the Freedom Restoration Clinic in Afghanistan (Judkins and Bradley, 2017). Details for each study are displayed in Appendix B.

Stress

Five studies comparing a stress-control intervention group with an untreated group or group receiving treatment as usual reported stress levels at baseline and postintervention. Measures consisted of the PSS, Subjective Units of Distress Scale (SUDS), a visual analog scale, and stress items on the DASS. Meta-analyses of standardized effect sizes favored the interventions, but the SMD was not statistically significant (SMD = -0.12; CI = -0.52, 0.29). Moderate heterogeneity was detected ($I^2 = 56$ percent), and CIs were wide. Publication bias was not detected (Begg's test, $p = 0.82$; Egger's test, $p = 0.88$). Results are displayed in Figure 3.13.

Meta-regression analyses to assess the possible effects of study design and follow-up timing were not possible. Of note, Adler et al. (2008) reported a significant reduction in stress for a CISM group compared with untreated controls. Imagery and skills training, situational-awareness skills training, the CardioBioFeedback program combined with the Tactics to Optimize the Potential program, and written emotional expression did not decrease stress more than not attending an intervention.

Figure 3.13. Intervention Effect for Stress (versus no intervention or treatment as usual)



NOTE: RE = random effects; TAU = treatment as usual.

Three studies comparing a stress-control intervention group to an alternatively treated group measured level of stress at baseline and postintervention. Wilson et al. (2001) studied law enforcement officers and reported a significantly larger reduction in stress for an eye movement desensitization and reprocessing intervention group than for six one-hour standard educational videos on stress management. Another study found no difference between social resilience training and cultural awareness training (Cacioppo et al., 2015). Standard stress management had a significantly larger effect on stress at 18 months than stress inoculation training in one study (Hourani et al., 2016).

Three case studies without a comparison group also reported level of stress or perceived stress (Carr et al., 2013; Williams et al., 2010; Bobrow et al., 2013). Twelve weekly Master Resilience Training (MRT) sessions in theater did not have a significant effect on stress levels (Carr et al., 2013). Stress Gym, an online cognitive behavioral–based self-help intervention, reduced stress significantly among active duty personnel at a U.S. naval medical center (Williams et al., 2010). The Coming Home Project had a significant effect on stress levels postdeployment; however, stress was measured by an instrument developed by the authors rather than a standard validated measure (Bobrow et al., 2013). Details are displayed in Appendix B.

Marriage and Family Outcomes

Seven studies with a comparison group reported outcomes related to marriage and family. Three of these studied interventions specifically aimed at marriage (Baddeley and Pennebaker, 2011) or parenting (Julian et al., 2018a; Pinna et al., 2017) issues. Pooling was not possible; results are displayed in Table 3.7.

Table 3.7. Marriage and Family Outcomes (controlled trials and cohort comparisons)

Study	Intervention	Control	Outcome
Baddeley and Pennebaker, 2011	Brief expressive writing—relationship focus	Brief expressive writing—nonemotional	- Couples whose soldier had more combat exposure were lower in marital satisfaction at 1 month, $p = 0.043$. - Couples in which the soldier was in the intervention group had greater marital satisfaction at 1 month. - For combat exposure by soldier-topic interaction, $p = 0.018$.
Julian et al., 2018a	Multifamily therapeutic group	Home-based psychoeducational written material	- Parent withdrawal or depression, Caregiver-Child Structured Interaction Procedure, 2 months: SMD = 0.12 (CI = -0.34, 0.57) - Parent irritability or anger, Caregiver-Child Structured Interaction Procedure, 2 months: SMD = -0.36 (CI = -0.82, 0.10).
McKibben et al., 2009	Stress-management training	No intervention	Receipt of stress-management training was significantly related to marital satisfaction after controlling for combat exposure.
Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018	ADAPT parenting group	Services as usual	- The ADAPT condition significantly predicted increased supportive emotion socialization ($p < 0.05$; Cohen's $d = 0.13$) and decreased nonsupportive emotion socialization ($p < 0.001$; Cohen's $d = 0.24$) in mothers at 6 months postbaseline. - For fathers, there were nonsignificant treatment effects on supportive emotion socialization and nonsupportive emotion socialization.

Study	Intervention	Control	Outcome
Sharpley et al., 2008	Preoperational stress briefing	No intervention	• Problems at home, during deployment: RR = 0.99 (CI = 0.72, 1.36) • Problems at home, postdeployment: RR = 1.13 (CI = 0.83, 1.53) • Marital satisfaction, postdeployment: RR = 1.02 (CI = 0.99, 1.06)
Sipos et al., 2014	Front-loaded reintegration	Standard reintegration	• Group did not predict differences in marital satisfaction.
Wilson et al., 2001	Eye movement desensitization and reprocessing	Standard stress-management program	• Marital Adjustment Test, postintervention: SMD = 0.87 (CI = 0.34, 1.4)

In brief, a multifamily therapy group (Julian et al., 2018a) did not have significant effects at two months, while the ADAPT program had significant effects for mothers but not fathers (Zhang, Zhang, et al., 2018). A brief relationship-focused expressive-writing program had significant effects on marital satisfaction at one month (Baddeley and Pennebaker, 2011), as did stress-management training one year postintervention (controlling for combat exposure) (McKibben et al., 2009). Two other programs aimed at military stress control had no long-term effects on marriage or family (Sipos et al., 2014; Sharpley et al., 2008). Of note, eye movement desensitization and reprocessing participants reported a large and significantly greater improvement in marital satisfaction than subjects in a group who attended stress-management education classes via video (Wilson et al., 2001).

Junior-ranked personnel, noncommissioned officers (NCOs), and commissioned officers in a U.S. Army brigade were surveyed in two waves before and after the manipulation of their work schedules to decrease stress; the first-wave participants partook in morning physical training, and the second wave partook in afternoon physical training (Posard, Hultquist, and Segal, 2013). The junior-ranked personnel experienced a significant reduction in work-family conflict, whereas there were no changes for NCOs and commissioned officers. Results for each study are displayed in Appendix B.

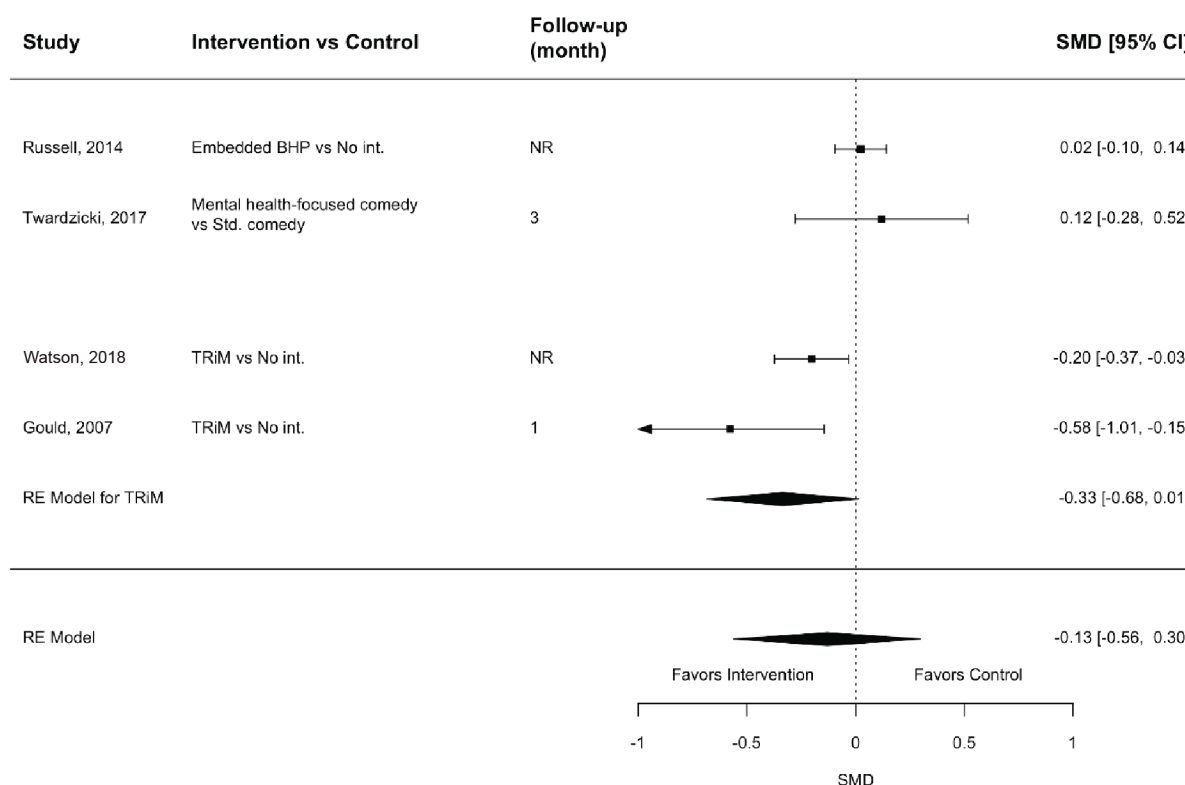
Two case studies without a comparison group reported marital or family outcomes (Pincus and Benedek, 1998; Gambardella, 2008). Results for each study are displayed in Appendix B. Attendees of a three- to seven-day restoration unit in Bosnia reported reduced marital or relationship problems one year after deployment (Pincus and Benedek, 1998), while six of ten couples attending a marital counseling program at a U.S. Army base reported improvement in a qualitative case study (Gambardella, 2008).

Help-Seeking Stigma

Four studies comparing a stress-control intervention group with an untreated group measured the level of help-seeking stigma at baseline and postintervention. Measures included the Military Stigma Scale and unnamed Likert scales. Meta-analyses of standardized effect sizes favored the interventions, but the SMD was not statistically significant ($SMD = -0.13$; $CI = -0.56, 0.30$). Considerable heterogeneity was detected ($I^2 = 77$ percent). Publication bias was not detected (Begg's test, $p = 0.33$). Results are displayed in Figure 3.14.

Meta-regression analyses on setting, population, and study design were not possible. The two studies of TRiM reported statistically significant results; pooled results approached significance ($SMD = -0.33$; $CI = -0.68, 0.01$). Watson and Andrews (2018) and Gould, Greenberg, and Hetherton (2007) both reported a significantly greater reduction in help-seeking stigma in TRiM participants than in untreated controls. Watson and Andrews studied law enforcement personnel and the postintervention follow-up timing was not reported; Gould, Greenberg, and Hetherton studied active duty military and collected data one month after the intervention. Regarding the other two studies, Russell et al. (2014) reported no statistical difference in change in help-seeking stigma between troops with access to embedded behavioral health providers and untreated controls, while Twardzicki and Jones (2017) reported no statistical difference in change in help-seeking stigma between attendees of a mental health-focused comedy show compared with those who attended a standard comedy show. Russell's postintervention follow-up timing was not reported; Twardzicki and Jones studied active duty military and collected data three months after the show.

Figure 3.14. Intervention Effect for Help-Seeking Stigma (versus no intervention or passive control)



NOTE: RE = random effects; BHP = behavioral health provider.

Two studies comparing a stress control intervention group to an alternatively treated group measured the level of help-seeking stigma at baseline and postintervention. Both used Battlemind approaches postdeployment. Mulligan et al. (2012) compared a briefing incorporating Battlemind approach with a standard briefing, while Adler et al. (2009) compared large group Battlemind training, small group Battlemind training, Battlemind debriefing, and standard stress education postdeployment. Neither study reported statistically significant differences for improvements in help-seeking or related stigma for Battlemind programs compared with standard stress programs.

After a social work outreach program at Fort Sill in Oklahoma, stigma was rated low by surveyed soldiers ($N = 61$); the mean response to “leadership might treat me differently” was 2.59 on a scale ranging from one (strongly disagree) to five (strongly agree).

Occupational Outcomes

Return to Duty

No controlled trials or cohort comparisons reported return to duty. Table 3.8 displays data from nine case studies reporting this outcome. Six reported on personnel stationed in Iraq or Afghanistan, one reported on peacekeepers in Kosovo, one reported data from the first Gulf War, and one reported data on a social work outreach program at Fort Sill.

Regarding three- to seven-day “restorative” programs, Pincus and Benedek (1998) found that 85 percent of Kosovo peacekeepers who attended the program were still on duty at a one-year follow-up. Hung (2008) found that 94 percent of Army soldiers who attended a similar program in Iraq in the first half of 2008 either returned to duty immediately or continued treatment in theater. However, there was no further follow-up of that cohort.

The social work outreach program at Fort Sill reported that 91 percent returned to duty immediately postconsultation (Piver-Renna, 2009).

The other studies reported on in-theater mental health treatment. Most did not report on return-to-duty rates by specific intervention component; rates were reported for all personnel who accessed clinics or providers during a specific time frame. All but one study reported return-to-duty rates of at least 90 percent; the only study with long-term follow-up (Jones et al., 2010), which was also the only study of UK personnel, reported that 74 percent who had available information about long-term military work outcomes served on for at least two years.

In sum, return-to-duty rates are high for in-theater behavioral health intervention. However, because no studies compared specific intervention types, modalities, settings, or populations, and because meta-regression analysis to investigate further was not possible, no conclusions can be made regarding those factors.

Table 3.8. Return to Duty

Study	Outcome	Follow-Up	Intervention	Population	N	Result
Ellsworth et al., 1993; Holsenbeck, 1992	Returned to duty	Postintervention	Psych-Force 90 (combat psychiatry)	Operations Desert Shield and Desert Storm	514	96.5%
Hassan et al., 2010	Returned to duty	Postintervention	Combat Stress Control and Prevention: resilience, stress inoculation, and psychological first aid	U.S. Army, OIF, January–June 2004	75	95%
Hoyt et al., 2015	Returned to duty	Postintervention	Behavioral health clinics	U.S. Army in Afghanistan, 2012–2013	513	97%

Study	Outcome	Follow-Up	Intervention	Population	N	Result
Hung, 2008	Returned to duty or continued treatment in theater	Postintervention	Restorative services, 3 to 7 days	U.S. Army, OIF, January–June 2008	594	94%
Hung, 2008	Returned to duty without limitations	Postintervention	Individual counseling or medication management	U.S. Army, OIF, January–June 2008	49,770	90.8%
Jones et al., 2010	Returned to duty	2 years	Deployed field mental health teams	UK military deployed in Iraq	825	71.6% with short-term military work outcomes available; 73.5% with long-term military work outcomes served on for at least two years
Parrish, 2008	Returned to duty	Unclear	Dialectical behavior therapy (modified cognitive behavioral therapy [CBT]) at wellness center	U.S. Army, OIF, January 2007–2008	Unclear, estimated >5,000 contacts	99%
Pincus and Benedek, 1998	Returned to duty	1 year	Restorative services, 3 to 7 days	Peace-keepers in Kosovo	135	85%
Piver-Renna, 2009	Return to duty	Postintervention	Social work outreach program	Soldiers at Fort Sill, consulted with program staff	468	63% returned to duty with no restrictions, 28% returned to duty with follow-up, 3% released to mental health staff officer, 7% taken to emergency room
U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003	Returned to duty	Postintervention	Behavioral health units	U.S. Army, OIF, 2002–2003	Unclear	95%

Other Occupational Outcomes

Eleven studies with a comparison group reported other occupational outcomes, such as retention in service, absenteeism, and perceived or measured performance. Pooling was not possible; results are displayed in Table 3.9. Five studied law enforcement personnel (Arnetz et al., 2009; Carlier, Voerman, and Gersons, 2000; Garner, 2008; O'Hare and Beer, 2018; Roger and Hudson, 1995).

The only military study to measure performance reported no significant difference in improvement in flight score after cognitive-adaptation training (Fornette et al., 2012). A police debriefing resulted in no differences in performance relative to usual processes (Carlier, Voerman, and Gersons, 2000), whereas imagery training increased police performance after a simulated event relative to usual training (Arnetz et al., 2009). Situational awareness training was associated with significantly higher perceived abilities during stress or threat five years later than no training; however, actual abilities and performance were not reported (O'Hare and Beer, 2018).

Three studies reported on absenteeism. The only military study reported that engagement in the UK-developed TRiM process was associated with a reduction in sickness absence at one month, especially in more-junior ranks (Hunt et al., 2013). A study of law enforcement found a significant decrease in absenteeism over 11 months for coping skills training compared to with training or no intervention (Roger and Hudson, 1995). A stress-inoculation training for law enforcement, focusing on criticism management, did not have a significant effect on absenteeism (Garner, 2008).

One study (McKibben et al., 2009) found that receipt of predeployment stress-management training was significantly related to retention intention one year later, after controlling for combat exposure. Another found that stress inoculation training had no effect on graduation from basic training (Cigrang, Todd, and Carbone, 2000). One study found no difference in retention rate after deployment among physicians who chose to attend a stress training during medical education at the Uniformed Services University of the Health Sciences; the training was not well described, and the length of time since the training varied widely (Haney and Gray, 2007). Lastly, a cohort study comparing Dutch Navy recruits who received resiliency training during basic training with those who did not found that the group that received resilience training scored significantly higher on perceived job value (Six and Delahaij, 2011).

Table 3.9. Other Occupational Outcomes (controlled trials and cohort comparisons)

Study	Intervention	Control	Outcome
Arnetz et al., 2009	Imagery and skills training	Police training as usual	Performance composite score, postsimulation: SMD = 1.2 (CI = 0.16, 2.24)
Carlier, Voerman, and Gersons, 2000	Debriefing	No debriefing; external and internal control groups	No significant differences between groups at assessment points
Cigrang, Todd, and Carbone, 2000	Stress-inoculation training	U.S. Air Force basic training without stress inoculation	Treatment and control group participants did not differ in Air Force basic training graduation rate
Fornette et al., 2012	Cognitive-adaptation training	No intervention	Performance, flight Score, postintervention: SMD = 0.07 (CI = -0.8, 0.94)
Garner, 2008	Criticism management and stress-inoculation training	Two groups: placebo training or no intervention	Sick days and duration of illness were not significantly different among groups
Haney and Gray, 2007	Elective Training Psychotherapy Experience	No intervention	- No difference in retention rate - RR = 0.96 (CI = 0.69, 1.34) between military physicians who underwent training versus those who did not
Hunt et al., 2013	TRiM briefing or 1:1 intervention	No intervention	Engagement in the TRiM process was associated with a reduction in sickness absence, especially in more-junior ranks
McKibben et al., 2009	Stress-management training	No intervention	- Retention intention, 12 months - Receipt of stress-management training was significantly related to retention intentions after controlling for combat exposure.

Study	Intervention	Control	Outcome
O'Hare and Beer, 2018	Situational awareness skills training	No intervention	• Performance, perceived abilities during stress or threat, 5 years: SMD = 0.51 (CI = 0.01, 1.00) • Performance, perceived abilities during nonstress times, 5 years: SMD = -0.12 (CI = -0.60, 0.37)
Roger and Hudson, 1995	Basic police training + follow-up coping-skills training	Basic police work training or no intervention	• Absenteeism days, 11 months: SMD = -0.67 (CI = -1.00, -0.34) • The average secondary absenteeism for basic + follow-up training group, basic training group, and the control group were 0 days, 1 day, and 1.33 days, respectively.
Vaughan et al., 2015	U.S. Marines OSCAR training	No OSCAR training	• Occupational impairment, Health Performance Questionnaire, 8 months postdeployment: RR = 0.92 (CI = 0.79, 1.07)

In addition to the case studies that reported return to duty, described earlier, one case study reported no change in job performance after 12 weekly sessions of MRT during deployment (Carr et al., 2013). Another case study of an Embedded Mental Health Pilot (EMHP) program on a U.S. Navy submarine (Rapley et al., 2017) reported significantly fewer Code 2 losses (unplanned personnel losses for psychological reasons) than the prior year. Results are displayed in Appendix B.

Acceptability and Satisfaction Outcomes

Twenty-one controlled trials or cohort comparison studies reported on acceptability or satisfaction with the stress-control intervention being studied. Measurement tools varied widely, and this was not a pre-post measure, so meta-analysis was not possible. Most studies used five-point Likert scales; however, many reported results qualitatively, making comparisons across studies difficult. Results are displayed in Table 3.10.

Of course, trials with no intervention or wait list as a comparator reported these results only for the stress-control intervention arm; few studies compared satisfaction or acceptability between intervention types, modalities, or settings. Two studies compared in person with

telehealth mental health screening (Sipos et al., 2012; Jones et al., 2012); although most participants preferred in-person screening or were neutral, there was no difference in satisfaction between modalities. Another study found no difference in satisfaction between front-loaded reintegration at end of deployment (in Iraq) and standard reintegration programming (Sipos et al., 2014).

Regarding population, CISD was very well received in two law enforcement studies (Young, 2012; Carlier, Voerman, and Gersons, 2000), but the one study of military debriefing (not characterized as CISD but as psychological with education about resources) reported that only half the participants found the intervention helpful (Deahl et al., 1994).

Most other military interventions were well received, especially psychological first aid and in-person stress-control trainings using varied approaches. One exception was a training on progressive muscle relaxation and controlled breathing for U.S. Army medics; only half of the sample considered practicing the techniques in the future (Stetz et al., 2009). Of note, only 20 percent of Polish soldiers who attend a virtual reality–assisted stress-inoculation training remembered attending 19 months later (Ilnicki et al., 2012).

An evaluation of OSCAR reported that focus groups felt that the level of stress-control training for Marines is excessive (Vaughan et al., 2015).

Table 3.10. Acceptability and Satisfaction (controlled trials and cohort comparisons)

Study	Intervention	Control	Outcome
Adler et al., 2015	Resilience training	Military history	Overall, more soldiers rated resilience training as helpful, a source of cohesion, and relevant than did those in the military history condition
Biggs et al., 2016	Troop Education for Army Morale (TEAM), based on psychological first aid, Skills for Psychological Recovery, CBT, Battlemind training, and Early Combined Collaborative Care	Assessment only	88.7% reported that the TEAM training was helpful
Carlier, Voerman, and Gersons, 2000	Debriefing, law enforcement	2 groups: no-debriefing external control, and no-debriefing internal control	98% were satisfied with the first and second debriefing sessions (24 hours and 1-month posttrauma), and 2% were satisfied to a degree; 88% were satisfied with the third session (3 months posttrauma), and 12% were satisfied to a degree

Study	Intervention	Control	Outcome
Castro et al., 2012; Adler et al., 2009	Battlemind training	Survey only	The majority receiving Battlemind Training agreed or strongly agreed that the training was clear and taught them how to prevent transition problems
Deahl et al., 1994	Psychological debriefing with education component	No intervention	50% of the 40 debriefed soldiers who provided additional information found the intervention helpful
Foran et al., 2013	Adapted Battlemind training	Battlemind adapted for alcohol and other issues	More than 70% of military personnel across four nations reported that they were satisfied with the trainings
Fornette et al., 2012	Cognitive-adaptation training (French Air Force)	No intervention	70% deemed that cognitive-adaptation training reduced stress
Greenberg et al., 2010; Greenberg et al., 2009	TRiM	Standard care	The majority (81%) of personnel who were aware of TRiM ($n = 43$) were supportive of its aims
Hourani et al., 2018	Stress-inoculation training (includes relaxation breathing)	Stress management	Used MP3 player loaded with stress exercises (yes), 18 months: no significant difference
Ilnicki et al., 2012	Virtual reality–assisted stress inoculation training (Polish Army)	No intervention	20% expressed that the training was helpful to some degree and 80% did not remember
Jones et al., 2012	Virtual Behavioral Health Pilot Program mental health screening—telehealth	Behavioral health screening—in person	Of soldiers who had both telehealth and in-person screenings, 55% ($n = 124$) preferred in-person, 39% ($n = 88$) were neutral, 5% ($n = 11$) preferred telehealth; 91% of soldiers who did not have a telehealth interview preferred face-to-face interviews; after a telehealth visit, the largest proportion (48%) was neutral and 34.9% preferred in-person screening.
Mulligan et al., 2012	Battlemind training	Standard stress-management brief	Ratings of satisfaction, usefulness, and relevance did not differ between the arms
Pinna et al., 2017	ADAPT parenting group	Services as usual	Mean satisfaction scores for individual sessions ranged from 3.37 to 3.59, and mean = 3.44 (standard deviation [SD] = 0.48) on a 5-point scale across all sessions

Study	Intervention	Control	Outcome
Roy, Highland, and Costanzo, 2015	Smartphone-based resilience training	Introductory session only	Preliminary results (approximately 10% of the overall targeted study sample) indicated uniformly high compliance and satisfaction with the intervention
Shipherd, Salters-Pedneault, and Fordiani, 2016	Acceptance-based skills training	2 groups: training as usual and change-based skills training	No significant differences in satisfaction between groups
Sipos et al., 2012	Postdeployment behavioral health screening—virtual (video teleconference)	Postdeployment behavioral health screening—face-to-face	There were no significant differences between the two groups on satisfaction with behavioral health interviews; most soldiers reporting being “somewhat satisfied” or “satisfied” with their behavioral health interview (90.9% video teleconference, 84.7% face-to-face)
Sipos et al., 2014	Front-loaded reintegration	Standard reintegration	63.7% reported agreeing or strongly agreeing with the statement, “I was satisfied with the reintegration process before block leave”; 63.6% reported agreeing or strongly agreeing with the statement, “I was satisfied with the reintegration process before leaving Iraq”
Stetz et al., 2009	Virtual reality: progressive muscle relaxation, controlled breathing	No intervention	Half of the sample ($n = 29$) of U.S. Army medics considered practicing these techniques after the study
Twardzicki and Jones, 2017	Comedy show with focus on mental health	Standard comedy show	There were no significant between-group differences in subjective impressions of the show; 96.4% of the control group was somewhat or very satisfied, compared with 93.9% of the intervention group ($p = 0.28$) 82.9 % of the control group ($n = 129$) felt that the show was somewhat or very useful, compared with 82.5% of the intervention group ($p = 0.90$) 93.6% of the control group would recommend the show to others, compared with 92.4% of the intervention group ($p = 0.65$)

Study	Intervention	Control	Outcome
Young, 2012	Critical incident stress management (CISM) weekly debriefings, law enforcement	No intervention	All officers in the treatment group found the meetings helpful and said that they should be continued
Zimmermann et al., 2015	Psychological resource, strengthening—3-week residential program	No intervention	The treatment success was rated good to very good, whereas the treatment program as a whole was rated very good to excellent (maximum value)

Twenty cases studies reported on acceptability of or satisfaction with an intervention (Bryan and Morrow, 2011; Carr et al., 2013; Gahm et al., 2009; Garber and Zamorski, 2012; Griffith and West, 2013; Hourani et al., 2017; Jarrett, 2013; Jones et al., 2011; Jones et al., 2013; Judkins and Bradley, 2017; Kizakevich et al., 2018; McCaslin et al., 2018; Milstein, Robinson, and Espinosa, 2015; Mishkind et al., 2012; Moldjord and Hybertsen, 2015; Piver-Renna, 2009; Start, Allard, and Toblin, 2017; Williams et al., 2013; Wright State University, 2015; Zimmerman and Weber, 2000). These included stress-control apps (Bush, Ouellette, and Kinn, 2014; Kizakevich et al., 2018) or websites (Williams et al., 2013), in-theater training (Bryan and Morrow, 2011; Carr et al., 2013; Griffith and West, 2013; Jarrett, 2013; McCaslin et al., 2018), and restoration (Garber and Zamorski, 2012; Jones et al., 2011; Judkins and Bradley, 2017), among others. Results of each study are displayed in Appendix B. The vast majority of case studies reported relatively high acceptability and satisfaction. Many studies were authored by the intervention’s developers, so publication bias is suspected. Of note, an implementation evaluation (Start, Allard, and Toblin, 2017) of Resilience Training for Healthcare Staff (RTHS) at a U.S. military treatment facility reported that, although 90 percent of trainers believed RTHS to be useful and relevant, only 46 percent agreed or strongly agreed that health care staff were receptive to the training.

We could not find efficacy or effectiveness studies on two interventions that were evaluated for acceptability and then incorporated in theater. Warrior resilience and thriving is a resilience training session based on principles of rational emotive behavior therapy, stoicism, and U.S. Army warrior ethos that was used with thousands of soldiers during OIF (Jarrett, 2013). *The Docs* (Hourani et al., 2017) is a graphic novel that was incorporated into the U.S. Navy’s Care for the Caregiver program and has won several awards.

Key Question 1a: Do These Effects Differ by Intervention Components, Intensity, or Modality?

Meta-regression analysis by component, intervention type, or modality was not possible because of insufficient data; results are described narratively by intervention type.

Social Work Outreach Program

An evaluation of a social work outreach program at the U.S. Army base at Fort Sill, Oklahoma, reported that, during implementation, psychiatric hospitalizations stabilized while outpatient treatment increased (Piver-Renna, 2009). The program consisted of trainings, screenings, and outreach to increase the visibility of mental health services and decrease stigma. After consultations with program staff, approximately 63 percent of soldiers returned to duty with no restrictions, 28 percent returned to duty with follow-up, 3 percent were released to a behavioral health staff officer, and 7 percent were taken to an emergency room. Soldiers surveyed had high satisfaction: The mean rating for “overall experience” was 4.52 on a five-point scale. Regarding barriers to care, stigma was rated low: Mean response to “leadership might treat me differently” was 2.59 on a scale ranging from one (strongly disagree) to five (strongly agree).

Predeployment Training

Captivity Training

We identified one small case study of a four-day captivity training for Canadian military troops conducted within driving distance of their military base in eastern Canada (Ralph et al., 2017). The training involved a realistic simulated-captivity experience that exposed participants to stressful situations while they tried to avoid exploitation from imitation captors. There was no significant decrease in PTSD symptoms (PTSD arousal, PSS: SMD = 0.08; CI = -0.38, 0.54; PTSD reexperiencing: SMD = -0.03; CI = -0.50, 0.43) or depression symptoms (SMD = 0.18; CI = -0.29, 0.64) postintervention, although there was a significant decrease in salivary cortisol (SMD = -1.13; CI = -1.63, -0.63). The quality of evidence is insufficient to make conclusive statements about this training type because of lack of replication, the small sample size ($N = 36$), and lack of a comparison group.

Resilience Training

An RCT (Cacioppo et al., 2015) of the U.S. Army’s Social Resilience Training program versus a cultural awareness training found no significant difference in effects on anxiety (SMD = 0.04; CI = -0.12, 0.21), depression (SMD = -0.03; CI = -0.19, 0.14), perceived stress (SMD = -0.10; CI = -0.26, 0.07), sleep quality (SMD = 0.06; CI = -0.11, 0.22), or alcohol misuse (SMD = -0.11; CI = -0.27, 0.06). An RCT of resilience training versus military history sessions (Adler et al., 2015) during basic training found a superior effect on depression (SMD = 0.09; CI = 0, 0.18) and no difference in effect on anxiety (SMD = 0.05; CI = -0.04, 0.13) or sleep problems (SMD = -0.02; CI = -0.11, 0.07). A cohort study compared recruits who received resiliency training with those who did not during basic training in the Dutch Navy; the effects of the intervention on self-efficacy, problem-focused coping, passive coping, and perceived value of training did not differ significantly. The group that received resilience training scored significantly higher on

perceived job value (Six and Delahaij, 2011). A case study (Griffith and West, 2013) surveyed California National Guard soldiers who attended predeployment MRT and found increased resilience competencies but did not report psychological or physical outcomes. An implementation evaluation (Start, Allard, and Toblin, 2017) of RTHS at a U.S. Military Treatment Facility led by MRT trainers reported that 90 percent of trainers believed RTHS to be useful and relevant, while 46 percent agreed or strongly agreed that health care staff were receptive to the training. (No efficacy outcomes were collected.)

Stress Inoculation with Biofeedback

We identified six RCTs that incorporated biofeedback (Bouchard et al., 2012; Hourani et al., 2016; Hourani et al., 2018; Lewis et al., 2015; Pyne et al., 2019; Trousselard et al., 2015). They involved stress inoculation, including the U.S. Marine Corps predeployment stress inoculation training (PRESIT). All used simulated situations with active duty military stationed in the United States; they reported mixed results regarding physiological outcomes. One (Hourani et al., 2016) reported PTSD cases at seven month follow up (adjusted OR = 0.79; CI = 0.28, 2.23) and another (Hourani, et al., 2018) measured PTSD symptoms at 12 months (SMD = 0.01; CI = -0.30, 0.32); no difference from the control group was found in either study. There is insufficient quality of evidence to make conclusive statements regarding stress inoculation programs using biofeedback because of inconsistency, imprecision, high risk of bias of some trials, and, with two exceptions, lack of reported outcomes other than physiological measurements.

Self-Reflection Training

We identified one head-to-head RCT of self-reflection training versus standard coping-skills training at a military academy (Crane et al., 2019). Self-reflection training had significantly larger effects on anxiety (SMD = -0.7; CI = -0.97, -0.42), depression (SMD = -0.56; CI = -0.83, -0.29) symptoms, and perceived stressor frequency (SMD = -0.47; CI = -0.74, -0.20) at three months. However, the quality of evidence is insufficient to form conclusions about self-reflection training because of lack of replication and possible publication bias (selection of outcomes reported).

Attention Training

We identified two head-to-head RCTs of attention bias modification training versus attention control training among Israeli Defense Forces members preparing to deploy (Wald et al., 2017; Wald et al., 2016). Both trials measured symptoms of PTSD and depression; there was no significant difference in these outcomes between intervention types. (Results were reported at multiple follow-up times; results are displayed in Appendix B.) The quality of evidence was rated low for no difference in effectiveness.

Mindfulness

We identified four RCTs in which mindfulness was incorporated into an intervention

program. None was conducted in theater. Mindfulness-Based Mind Fitness Training, an eight-week program at a Marine Corps base in the United States, reported only physiological outcomes and found decreased plasma concentrations of neuropeptide Y (a stress modulator) nine weeks after a simulated stressful event (Johnson et al., 2014). A small trial of the same intervention found no significant physiological results via fMRI (Haase et al., 2016). An RCT of Resilience at Work, an online mindfulness program, was conducted among Australian firefighters and reported only coping measures (Joyce et al., 2019). The trial found no significant effects. Finally, ADAPT, an intervention to improve parent stress and child adaptation in U.S. military families, included online supplemental mindfulness exercises that were used by 45 percent of participants enrolled in an RCT (Zhang, Rudi, et al., 2018). Lower risk of clinical PTSD (PCL > 40) was reported at 24 months (RR = 0.41; CI = 0.25, 0.68), although the effect on SMD in PTSD score (SMD = -0.18; CI = -0.38, 0.03) did not reach statistical significance. Because of the heterogeneity of programs, outcomes reported, and populations, quality of evidence was rated insufficient for all outcomes.

Other

A survey of members of the UK Royal Navy and Royal Marines who deployed to Iraq in 2003 (Sharpley et al., 2008) compared participants who self-reported attending any predeployment stress educational briefing sessions with those who self-reported no predeployment training. After adjusting for combat trauma exposure, receipt of training had no effect on problems at home (RR = 0.61; CI = 0.24, 1.55), alcohol misuse (RR = 1.13; CI = 0.85, 1.50), PTSD (PCL-C > 18, RR = 0.61; CI = 0.24, 1.55), or mental health status (RR = 0.86; CI = 0.61, 1.20) postdeployment.

Overall, there is insufficient evidence to conclude that predeployment stress-control training is effective in any area.

Resiliency Training in Theater

We identified two studies of in-theater stress-control training that reported efficacy or effectiveness outcomes: one case study of MRT (Griffith and West, 2013; Carr et al., 2013) and one cohort study of stress inoculation using a virtual reality simulation (Ilnicki et al., 2012). The case study of MRT among law enforcement (Carr et al., 2013) found no effect on job performance (SMD = 0.13; CI = -0.09, 0.35) or stress (SMD = -0.08; CI = -0.30, 0.14). The cohort study of stress inoculation using virtual reality with the Polish Army (Ilnicki et al., 2012) found no effect on anxiety (effect size not reported); in fact, 80 percent of attendees contacted did not remember the training 19 months later. The quality of evidence is insufficient to conclude that in-theater resilience training has an effect in any area.

Psychological First Aid

Special Psychiatric Rapid Intervention Team

We identified one qualitative case study of the U.S. Navy's Special Psychiatric Rapid Intervention Team (SPRINT) (Millegan, Delaney, and Klam, 2016). We classified this intervention as psychological first aid, although it also involved resiliency training and a complementary or alternative component (meditation). Teams were deployed after a cluster of suicides aboard a ship to assist the sailors in mitigating mental health issues by teaching resiliency self-care through meditation. The authors reported that self-care was a feasible tool and that it helped sailors have a healthy recovery; however, the quality of evidence was rated as insufficient to make statements about efficacy because of lack of any measured outcomes, lack of additional studies (despite SPRINT existing since 1978), and lack of a comparator group.

TRiM

The TRiM program developed by the UK Royal Navy is a peer-led intervention that takes place after trauma exposure. Peers are provided with a basic understanding of trauma psychology and are trained to carry out risk assessments. One RCT (published in three articles) (Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011) and five cohort studies (Frappell-Cooke et al., 2010; Gould, Greenberg, and Hetherton, 2007; Hunt et al., 2013; Jones et al., 2017; Watson and Andrews, 2018) on TRiM were identified. Four studies involved the UK military (published in six articles) (Frappell-Cooke et al., 2010; Gould, Greenberg, and Hetherton, 2007; Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011; Jones et al., 2017) and two involved law enforcement (Hunt et al., 2013; Watson and Andrews, 2018). One study reported a large positive effect on distress (SMD = -0.53; CI = -0.96, -0.10) at one-month follow-up (Gould, Greenberg, and Hetherton, 2007). Two pooled studies (Gould, Greenberg, and Hetherton, 2007; Watson and Andrews, 2018) found a decrease in help-seeking stigma that approached statistical significance (SMD = -0.33; CI = -0.68, 0.01). However, in another study, Marines reported slightly increased perceived social support from their units during deployment, while perceived support decreased for Army infantry members (Frappell-Cooke et al., 2010). In one study, the TRiM group reported significantly fewer posttraumatic stress symptoms ($p < 0.001$) after intervention than a control group not involved in TRiM, but preintervention PTSD symptoms were not measured (Watson and Andrews, 2018). The RCT (Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011) found no significant change in psychological health (SMD = 0.01; CI = -0.10, 0.12) or PTSD symptoms (SMD = -0.03; CI = -0.14, 0.08) but did find an improvement in stigma scores (SMD = 0.13; CI = 0.02, 0.24); there were very few potentially stressful events on the studied ships during the RCT. Another cohort study reported that engagement in the TRiM process was associated with a reduction in sickness absence at one month, especially in more-junior ranks (Hunt et al., 2013). There is low-quality of evidence that TRiM improves help-seeking stigma. Evidence is insufficient to make conclusions regarding any

psychological outcomes or absenteeism because of study limitations, lack of replication, and possible reporting bias (the developers of TRiM were often study authors).

OSCAR

The U.S. Marine Corps OSCAR program integrated mental health professionals into units to catch signs of combat stress and provide early intervention in Iraq and Afghanistan. In 2015, the RAND Corporation published an evaluation comparing two cohorts of Marines: those who served in OSCAR-trained battalions and those who served in non-OSCAR trained battalions (Vaughan et al., 2015). Postdeployment, there was no statistically significant effect of OSCAR on stress level (RR = 1.02; CI = 0.93, 1.12), high-risk alcohol use (RR = 1.00; CI = 0.83, 1.21), or attitudes toward stress response and recovery (RR = 0.98; CI = 0.88, 1.10). Marines whose battalions received OSCAR training were more likely than untrained Marines to have probable PTSD four months postdeployment; this difference approached statistical significance (RR = 1.2; CI = 0.97, 1.48). In addition, the OSCAR group had a significantly greater prevalence of probable depression (RR = 1.26; CI = 1.01, 1.57). Focus groups found that Marines noted that the level of stress-control training was excessive. Because of lack of replication, the quality of evidence was rated moderate that OSCAR had no positive effect on alcohol use, depression, stress level, and PTSD case rate postdeployment.

Front-Line Psychiatry and Embedded Mental Health Providers

Several large studies of in-theater mental health services were identified. However, most were case studies with no comparator, few reported efficacy outcomes other than return to duty, and outcome data for specific components were rare. Three case studies of the U.S. Army's mental health infrastructure in Iraq and Afghanistan (Hung, 2008; Hoyt et al., 2015; U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003) reported return-to-duty rates of at least 97 percent; one reported decreased risk of suicide or homicide (U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003). A case study of the UK Army's efforts (Jones et al., 2010) found lower return-to-duty rates (71.6 percent) at one-year follow-up. In a case study of a more specific effort, a U.S. Air Force combat stress-control and prevention team was integrated into Army units to provide prevention and treatment, which consisted of evaluations, psychoeducation, and consultations, while promoting resiliency. The team consisted of a licensed social worker, psychiatrist, and two behavioral health specialists (paraprofessional allied health workers). This case study reported a 95 percent return-to-duty rate (Hassan et al., 2010). A case study of the Witmer Wellness Center in Iraq (Parrish, 2008), which focused on dialectical behavioral therapy, reported a return-to-duty rate of over 99 percent. Standard efficacy outcomes, such as symptoms of PTSD, depression, anxiety, sleep problems, and stress levels, were not reported in these case studies.

A case study of the pilot Embedded Mental Health Program on a U.S. Navy submarine (Rapley et al., 2017) reported significantly fewer Code 2 losses (unplanned personnel losses for

psychological reasons) than in the prior year. Of note, the submarine was not located in theater.

One smaller cohort study (Russell et al., 2014) conducted a predeployment survey of California National Guard members and compared soldiers' experiences and perceptions in units with embedded behavioral health care providers to units without them. The authors reported no difference in symptoms of depression (SMD = 0.07; CI = -0.05, 0.19), anxiety (SMD = 0.06; CI = -0.05, 0.18), PTSD (SMD = 0.08, -0.04, 0.19), alcohol misuse (SMD = 0.06; CI = -0.05, 0.18), stigma (SMD = 0.02; CI = -0.10, 0.14), or barriers to care between groups. However, 60 percent had not previously been deployed, so applicability was low.

A 20-year longitudinal study of Israeli Defense Forces (Solomon, Shklar, and Mikulincer, 2005) compared soldiers who received front-line treatment after the diagnosis of combat stress with those who received such treatment in military hospitals. Those who received front-line treatment had lower rates of PTSD symptoms that bordered statistical significance (PTSD intensity, SMD = -0.26; CI = -0.53, 0.02; PTSD intrusion, SMD = -0.26; CI = -0.53, 0.01, PTSD hyperarousal, SMD = -0.26; CI = -0.53, 0.02) at 20 years.

Results of studies on specific components or programs are described below.

Imagery Rehearsal

We identified a small case study ($N = 11$) of imagery rehearsal conducted in theater (Iraq) with U.S. soldiers who experienced severe nightmares and were exposed to a traumatic event in the past 30 days (Moore and Krakow, 2007). The mean PTSD symptom score decreased 41 percent at one month ($p = 0.02$), and the number of nightmares also decreased significantly. In addition, an RCT of ten weeks of imagery training versus routine police training for rookie law enforcement officers in Sweden (Arnetz et al., 2009) reported that after a simulated high-stress situation, the imagery training group had lower stress levels (SMD = -2.19; CI = -3.44, -0.94), higher-performance scores (SMD = 1.20; CI = 0.16, 2.24), and lower negative mood scores (SMD = -1.05; CI = -2.07, -0.03). There was no difference in postsimulation heart rate. The sample size was small ($N = 25$). The evidence was rated insufficient because of small sample sizes, applicability issues (RCT in law enforcement), and lack of replication (only one study on each outcome type).

Eye Movement Desensitization and Reprocessing

Although not conducted with in-theater military, we identified one RCT of eye movement desensitization and reprocessing compared with standard stress management classes via video for general law enforcement stress (Wilson et al., 2001). Eye movement desensitization and reprocessing was statistically superior for PTSD symptoms (SMD = -0.54; CI = -1.05, -0.03), stress reduction (SMD = -1.48; CI = -2.05, -0.91), and marital adjustment (SMD = 0.87; CI = 0.34, 1.40). There was no difference in risk of PTSD diagnosis (RR = 0.44; CI = 0.04, 4.60). The quality of evidence was rated low because of lack of replication and indirect evidence (the population was not military).

Restoration

Instead of regular duty, service members with identified stress issues attend these programs for two to seven days to relieve stress and prevent exacerbation. We identified three case studies of in-theater restoration programs. None had a control or comparison group. The Freedom Restoration Clinic in Afghanistan (Judkins and Bradley, 2017)—which provided routine schedules for sleep hygiene and nutrition, short-term alienation from the unit to relieve stress and to focus on personal issues, and psychoeducational sessions—reported a large significant effect on distress levels ($SMD = -0.89$; $CI = -1.37, -0.41$). The Combat Stress Control Restoration Center in Iraq was a two-day rehabilitation program based on the PIES principles (Potter et al., 2009). The program included relaxation training, two individual counseling sessions, and many support-group sessions. A significant decrease in distress ($SMD = -0.48$; $CI = -0.94, -0.02$) and PTSD symptoms ($SMD = -0.56$; $CI = -1.08, -0.04$) was reported. Finally, a three- to seven-day restoration center for peacekeepers in Kosovo that provided coping skills and stress-management training reported decreased risk of marriage or family issues ($RR = 0.50$; $CI = 0.36, 0.70$) and suicidality ($RR = 0.50$; $CI = 0.36, 0.70$) one year later; 85 percent of participants were on duty a year later (Pincus and Benedek, 1998). (Another article on general mental health treatment in the Iraq theater [Hung, 2008] reported that only 6 percent of individuals who entered restoration facilities in the first half of 2008 were evacuated out of theater.) Because no study had a control or comparison group, the quality of evidence is low regarding whether two- to seven-day restoration programs have a significant positive effect on distress, PTSD symptoms, and home-front issues.

CISD

We identified two head-to-head RCTs of CISD versus a single stress-management class. One was conducted with peacekeepers in Kosovo (Adler et al., 2008); the other involved first responders in Australia (Tuckey and Scott, 2014). Regarding heart rate reduction, the stress-management class was superior to CISD in one study (Adler et al., 2008). Alcohol outcomes were superior for CISD in one study (Tuckey and Scott, 2014) and superior for the stress-management class in the other (Adler et al., 2008). No difference was found for depression symptoms in one study ($SMD = 0.02$; $CI = 0.27, 0.30$) (Adler et al., 2008) or distress score in one study (Tuckey and Scott, 2014). PTSD symptoms in both studies were not significant; pooled with one cohort study (Wee, Mills, and Koehler, 1999), the effects were not statistically significant ($SMD = -0.11$; $CI = -0.42, 0.21$).

These two studies also randomized subjects to a control group, which received no intervention. One study found significant decreases in problem alcohol use compared with the control (Tuckey and Scott, 2014), while the other found that the untreated control group improved more (Adler et al., 2008). There was no effect on depression in one study ($SMD = 0.02$; $CI = -0.29, 0.34$ [Adler et al., 2008]), on PTSD symptoms in both studies (pooled $SMD = -0.03$; $CI = -0.29, 0.23$), or on distress in one study ($SMD = 0.20$; $CI = -0.44, 0.83$ [Tuckey and

Scott, 2014]). One study (Adler et al., 2008) found a moderate-size effect on stress ($SMD = -0.20$; $CI = -0.43, -0.11$).

We also identified three cohort comparisons in law enforcement (Leonard and Alison, 1999; Carlier, Voerman, and Gersons, 2000) or first responders (Wee, Mills, and Koehler, 1999). All compared a CISM group with a group that did not receive an intervention. One found reduced PTSD symptoms (measured by the Frederick Reaction Scale) at two to three months that bordered statistical significance (Wee, Mills, and Koehler, 1999). One found that effects on anger and coping (using multiple measures, as presented in Appendix B) were not statistically significant (Leonard and Alison, 1999). The third found no effect on anxiety ($SMD = -0.14$; $CI = -0.44, 0.17$), an effect on some PTSD symptoms at one week but not at six months (using multiple measures, as presented in Appendix B), and no effect on sickness absences or work resumption compared with a group that received no intervention (Carlier, Voerman, and Gersons, 2000). These cohort studies did not report standard PTSD measurements, indicating possible reporting bias. In addition, evidence is indirect because the populations were not military.

Because of inconsistency, study limitations, and indirectness (four of the five studies were in law enforcement), the quality of evidence is insufficient to draw conclusions about the efficacy of CISM in the military.

Other Debriefing

Four studies reported on the efficacy or effectiveness of other types of debriefing (Deahl et al., 1994; Deahl et al., 2000; Eid, Johnsen, and Weisaeth, 2001; Larsson, Michel, and Lundin, 2000). A cohort study (Deahl et al., 1994) and an RCT (Deahl et al., 2000) reported on group psychological debriefing plus education with military personnel. These debriefings were held at the end of deployment and were not specific to any specific traumatic incident. The cohort study showed no significant effect on distress ($SMD = 0.04$; $CI = -0.49, 0.58$) or PTSD symptoms of avoidance or intrusion ($SMD = -0.19$; $CI = -0.72, 0.35$) at nine months (Deahl et al., 1994), while the RCT (Deahl et al., 2000) found a significant effect on alcohol misuse at one year ($RR = 0.21$; $CI = 0.05, 0.90$) but not at three months ($RR = 1.11$; $CI = 0.36, 3.44$) or six months ($RR = 0.51$; $CI = 0.21, 1.24$). There was a significant difference in anxiety or depression at one year (the effect size was not calculable), but there was no significant difference in PTSD symptoms at any point (the effect size was not calculable).

Another cohort study compared first responders who attended a group psychological debriefing in addition to counseling and standard debriefing with a group that received only the counseling and standard after action review or operational debriefing, after a serious multiple vehicle collision (Eid, Johnsen, and Weisaeth, 2001). The group psychological debriefing had a large, significant effect on PTSD symptoms at two weeks ($SMD = -1.22$; $CI = -2.26, -0.17$).

A cohort study reported on adding “defusing” to standard debriefing with peacekeepers in Bosnia (Larsson, Michel, and Lundin, 2000). There was no significant effect of the debriefing

with or without defusing on distress or PTSD symptoms compared with a group that received no intervention. Multiple outcome measures and comparisons can be found in Appendix B.

The quality of evidence is low that group psychological debriefing at the end of deployment had a positive effect on alcohol misuse and depression. The quality of evidence is moderate that this intervention had no long-term effect on PTSD symptoms.

Third-Location Decompression

Third-location decompression is a program that allows service members to decompress immediately after deployment before they return to their home countries. They participate in psychoeducation and relaxation activities. We identified three cohort comparisons (Fertout, Jones, and Greenberg, 2012; Jones et al., 2013; Schneider et al., 2016) and one case study reported in two articles (Burdett et al., 2011; Jones et al., 2011) of a third-location decompression program located on the coast of Cyprus in the Mediterranean. One cohort study found that individuals who attended third-location decompression had slightly worse alcohol outcomes (SMD = 0.08; CI = 0.01, 0.15) at six months than personnel who did not attend (Schneider et al., 2016); the same study found a significantly larger decrease in depression symptoms (SMD = -0.32; CI = -0.39, -0.25) and no effect on PTSD prevalence (RR = 1.13; CI = 0.76, 1.69) postdeployment. Another cohort study (Jones et al., 2013) found no significant effect on risk of alcohol misuse (RR = 1.1; CI = 0.95, 1.29) or PTSD (RR = 1.04; CI = 0.73, 1.47). The other two studies focused on acceptability and satisfaction; very positive results were reported (Burdett et al., 2011; Jones et al., 2011; Fertout, Jones, and Greenberg, 2012). Because of study design (nonrandomized but no adjustment for potential confounders) and possible reporting bias, the quality of evidence is low that third-location decompression had a positive effect on depression, no effect on PTSD symptoms, and no effect on improving alcohol misuse.

Mental Health Screening

Two cohort studies compared telehealth screening for mental health problems with in-person screening (Jones et al., 2012; Sipos et al., 2012). One reported no difference in PTSD symptoms (SMD = 0.01; CI = -0.24, 0.26), depression (SMD = -0.05; CI = -0.30, 0.20), anxiety (SMD = -0.04; CI = -0.29, 0.21), alcohol misuse (SMD = -0.07; CI = -0.31, 0.18), or stigma (SMD = 0.07; CI = -0.17, 0.32) between groups at four months (Sipos et al., 2012). The other study reported only acceptability and satisfaction outcomes (Jones et al., 2012). Although most participants preferred in-person screening or were neutral, there was no difference in satisfaction between modalities in either study. The quality of evidence was rated low for no difference in satisfaction.

An RCT conducted with active duty UK military immediately postdeployment (Rona et al., 2017) compared computerized mental health screening alone with screening plus customized advice on seeking treatment. There was no significant difference between groups at ten to 24 months in risk of PTSD (RR = 0.95; CI = 0.82, 1.09), alcohol misuse (RR = 0.99; CI = 0.86,

1.13), mental health disorders (RR = 0.95; CI = 0.83, 1.09), mental health service use (RR = 0.92; CI = 0.81, 1.05), or functional impairment (RR = 0.97; CI = 0.81, 1.15).

A cohort study (Warner et al., 2007) of U.S. Army soldiers stationed in Iraq reported that, toward the end of deployment, more than 19,500 soldiers were screened with the postdeployment health assessment, and 2,170 were flagged for further evaluation by a mental health professional for possible psychological or psychiatric issues. Those who were determined to be at moderate or high risk (about 200) were given the option for treatment while still in theater; 72 percent chose treatment at their home station immediately postdeployment. After deployment, all soldiers attended a ten-day decompression stateside, where they underwent another postdeployment health assessment. Compared with an earlier cohort of 17,600 soldiers who served in Iraq before this program was implemented, there was significantly lower risk of postdeployment driving under the influence (DUI), positive drug screen, suicidal ideation or attempt, domestic violence, and property crimes. Psychological measures, such as change in PTSD symptoms, depression, and anxiety, were not reported. Because of study limitations, only one study (Warner et al., 2007) had an unscreened comparison group, and that cohort study did not control for potential confounders and indirect evidence (DUI and drug screens rather than standardized measures of alcohol and drug use). The quality of evidence is low that screening had a positive effect on alcohol and substance misuse. The quality of evidence is insufficient to make statements regarding PTSD and other psychological outcomes.

Family Interventions

An RCT of expressive writing (Baddeley and Pennebaker, 2011) was conducted with active duty soldiers returning to Fort Hood, Texas, after deployment. Expressive-writing instructions were “to write about one’s deepest thoughts and feelings,” while control writing instructions were to describe one’s physical health activities. Couples in which the soldier was in the expressive intervention had greater marital satisfaction at one month. There was no effect on depression. (Effect sizes were not calculable.)

A cohort study published in three articles (Dodge et al., 2018; Julian et al., 2018a; Julian et al., 2018b) reported on Strong Military Families, a parenting intervention delivered in ten sessions via group therapy with other parents and one to three individual sessions. The program teaches stress-management skills and ways to respond to children appropriately. The multifamily group was compared with Homebased, which had similar content mailed to participants. Homebased participants showed no differences in parent behavior and affect between baseline and posttest, but multifamily group participants showed increases in these positive parent behavior and affect variables over the course of the intervention.

Results of an RCT of ADAPT were reported in four articles (Pinna et al., 2017; Snyder et al., 2016; Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018). ADAPT is an intervention to improve parent stress and child adaptation; participants meet in groups with facilitators for 14 sessions. The control group received emailed materials. The ADAPT program had significant

effects on supportive emotion socialization for mothers but not fathers (Zhang, Zhang, et al., 2018). The risk of clinical-level PTSD was not significant at 12 months ($RR = 0.70$; $CI = 0.47, 1.06$) but was significantly reduced at 24 months ($RR = 0.41$; $CI = 0.25, 0.68$).

A case study of more than 3,600 Army Reserve members who served in Operation Desert Shield or Operation Desert Storm (Rabb, Baumer, and Wieseler, 1993) reported on a program in which stress management teams provided outreach and counseling services to service members and their families in three phases: predeployment, deployment, and soldier homecoming. A postintervention phone call found that 95 percent reported that they were adjusting well to civilian life. Five percent reported financial problems, marital discord, child-adjustment problems, housing problems, legal concerns (e.g., child custody), isolation, depression, PTSD symptoms, unresolved military pay and promotion matters, medical bills, poor unit morale, or employment concerns. No standardized psychological measures were collected.

A case study of FOCUS was published in three articles (Lester et al., 2012; Saltzman et al., 2011; Saltzman et al., 2016). The program was designed to improve the nature and functionality of at-risk family relationships struggling because of stress and trauma after deployment and involved in-person family counseling. Significant effects on distress ($SMD = -0.59$; $CI = -0.72, -0.45$), family adjustment ($SMD = -0.35$; $CI = -0.48, -0.22$), depression ($SMD = -0.66$; $CI = -0.80, -0.53$), and anxiety ($SMD = -0.47$; $CI = -0.60, -0.34$) were reported.

An RCT of a family-based reintegration program versus waitlist control (Kritikos, DeVoe, and Emmert-Aronson, 2019) reported that, after adjustment for baseline relationship satisfaction, there was a statistically significant difference in posttest relationship satisfaction ($SMD = 0.07$; $CI = -0.35, 0.49$). The family-based reintegration program consisted of several modules that sought to understand and strengthen the parent-child and couple relationships. The couple-focused sessions worked on reflective functioning.

Because of study limitations, heterogeneity of approaches, and inconsistent measurement of outcomes, the quality of evidence that marriage and family have positive effects on the marriage and parenting outcomes is rated low.

Reintegration

TEAM is a U.S. Army intervention based on psychological first aid influenced by CBT, Battlemind training, and collaborative care (Biggs et al., 2016). We identified one RCT with mortuary soldiers upon return from deployment. The intervention included group sessions and telephone access to assistance, while the control group received an assessment only. There were no significant differences in effects on PTSD or depression at any time during ten months (the effect sizes were not calculable). The quality of evidence is low for no effect of this program, due to lack of replication and study limitations.

We identified one case study of another reintegration program. The Coming Home Project (Bobrow et al., 2013) held retreats for returning service members and their families. These retreats emphasized self-care and resilience practices to alleviate compassion fatigue, vicarious

trauma, and burnout. Female-only retreats and retreats for service providers were also held. Attendees reported significantly lower anxiety and stress postintervention (anxiety, SMD = -0.93; CI = -1.15, -0.71; stress, SMD = -0.72; CI = -0.94, -0.51) and at the one-month follow-up (anxiety, SMD = -0.65; CI = -0.87, -0.44; stress, SMD = -0.72; CI = -0.94, -0.51). However, these outcomes were measured by an instrument created by the author rather than by standard instruments. Although results were positive, the quality of evidence was insufficient to make conclusions about efficacy because of the lack of a comparison or control group, lack of replication, and lack of standardized outcome measures.

Battlemind Training Postdeployment

Two RCTs of Battlemind (Castro et al., 2012; Mulligan et al., 2012) conducted postdeployment reported efficacy and effectiveness outcomes. One RCT (Castro et al., 2012) compared Battlemind training with Battlemind debriefing or standard stress briefing; the other (Mulligan et al., 2012) compared Battlemind training with standard briefing (the content was not described). Both reported no difference in help-seeking stigma or sleep problems. One reported that Battlemind was superior for PTSD symptoms and depression at six months follow-up, while there were no significant differences in these outcomes in the other trial (Mulligan et al., 2012).

Key Question 1b: Do These Effects Vary by Setting?

Meta-regression analyses to assess possible effects of setting (in theater versus elsewhere) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. Meta-regression analyses found no significant effect of in-theater setting on depression, distress, or PTSD symptoms. Three studies directly compared settings (Sipos et al., 2014; Solomon, Shklar, and Mikulincer, 2005; Foran et al., 2013); results are described below.

A cohort study comparing front-line reintegration at the end of deployment in Iraq with standard reintegration postdeployment found no difference in PTSD symptoms or alcohol misuse four to five months after the end of deployment (Sipos et al., 2014). There was no difference in satisfaction between front-loaded reintegration (in Iraq) and standard reintegration programming. However, because of study limitations and lack of replication, the quality of evidence is insufficient to conclude that there is no difference in effectiveness.

A 20-year follow-up of Israeli Defense Forces found that front-line mental health treatment had a moderate-size effect on PTSD intensity compared with rear echelon treatment that bordered on statistical significance (Solomon, Shklar, and Mikulincer, 2005). There was no effect on distress at 20 years. Because of study limitations and the possible lack of applicability to U.S. troops, the quality of evidence is insufficient to make conclusions regarding differences in effectiveness.

Finally, one study compared Battlemind programs adapted by Canada, New Zealand, and the UK (Foran et al., 2013). Canadian forces presented a U.S. Battlemind video to soldiers while they attended third-location decompression. New Zealand integrated coping mechanisms and emotionality into Battlemind; the intervention was disseminated as soldiers were leaving a peacekeeping mission in East Timor. Like Canada, the UK also utilized the program while soldiers attended third-location decompression; however, they put more focus on alcohol abuse and added other modules on various topics. At least 75 percent of UK and Canadian attendees thought that the training was relevant, while the same was true for only 53 percent of New Zealand troops. Because of study limitations and lack of replication, the quality of evidence is insufficient to formulate conclusions regarding location.

Key Question 1c: Do These Effects Vary by Population?

Meta-regression analyses to assess possible effects of population (military versus law enforcement or other first responders) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. Meta-regression analyses found no effect of study population on results for depression, distress, or PTSD symptoms. Three studies compared results by military rank, branch, or role (Frappell-Cooke et al., 2010; Posard, Hultquist, and Segal, 2013; Fertout, Jones, and Greenberg, 2012). Their results are described below.

A cohort study (Frappell-Cooke et al., 2010) compared TRM program outcomes between UK Army infantry and Royal Marines commandos. Both groups had comparable combat exposure during deployment, but the groups were significantly different regarding education and number of deployments. There was no difference in distress caseness as measured by the 12-item General Health Questionnaire (GHQ-12) during deployment or postdeployment, nor was there a difference in PTSD case rate. Royal Marines commandos reported slightly increased perceived social support from their units during deployment, while perceived support decreased for Army infantry.

Junior-ranked personnel, NCOs, and commissioned officers in an Army brigade at a base in the United States were surveyed in two waves before and after the manipulation of their work schedules to decrease stress; the first-wave participants partook in morning physical training, and the second wave partook in afternoon physical training (Posard, Hultquist, and Segal, 2013). The junior-ranked personnel experienced a significant reduction in work-family conflict, whereas there were no changes for NCOs and commissioned officers.

The British Armed Forces utilized third-location decompression in Cyprus to physically and psychologically relax postdeployment (Fertout, Jones, and Greenberg, 2012). Formed units routinely attend the program, while individual augmentees do not, because, typically, they do not participate in combat. Formed units are more likely to serve on the front lines, while individual augmentees usually have specialties in medical, logistics, and engineering in nonconflict areas.

In March 2010, 121 formed units and 129 individual augmentees who attended third-location decompression were surveyed about their experiences. There were no significant differences in the perceived utility of third-location decompression between the groups. The group of formed units was significantly more likely to stigmatize the stress-management component. In both groups, the junior-ranked personnel were more likely to find the program useful.

Although there is some evidence that COSC programs are more useful for junior-ranked personnel, the quality of evidence is insufficient to formulate conclusions regarding populations.

4. Discussion

Summary of Findings

An extensive search for studies of stress-control interventions for active duty military, law enforcement, and first responders identified 4,742 potentially relevant publications. After review of abstracts, 566 full texts published from 1990 to 2020 were obtained. One hundred fifteen studies reported in 136 publications met inclusion criteria. Table 4.1 summarizes the findings.

Table 4.1. Summary of Findings

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Key Question 1: What are the effects of interventions on physiological, psychological, behavioral, occupational, and acceptability outcomes?				
Physiological				
Sleep				
COSC versus no intervention or treatment as usual	2 RCTs pooled (Haase et al., 2016; McCraty et al., 1999)	Inconsistent; imprecise; study limitations	Meta-analysis of 2 studies found statistically insignificant results (SMD = 0.11; CI = -3.38, 3.60)	Insufficient
COSC versus active comparators	4 RCTs (Adler et al., 2009; Adler et al., 2015; Cacioppo et al., 2015; Mulligan et al., 2012)	Study limitations	Meta-analysis not possible; no study found a significant effect	Moderate for no effect
Heart rate				
COSC versus no stress intervention	7 RCTs (Adler et al., 2008; Arnetz et al., 2009; Bouchard et al., 2012; Hourani et al., 2011; Johnson et al., 2014; Lewis et al., 2015; McCraty et al., 1999)	Inconsistent; imprecise; study limitations; indirect (most measured during or after simulations)	Meta-analysis not possible; mixed results	Insufficient
Psychological and behavioral				
Alcohol use and misuse				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
COSC versus no intervention	2 RCTs (Adler et al., 2008; Tuckey and Scott, 2014); 3 cohort comparisons (Russell et al., 2014; Schneider et al., 2016; Vaughan et al., 2015)	Inconsistent; imprecise	Meta-analysis of 4 studies found statistically insignificant results (SMD = -0.15; CI = -1.22, 0.93); 1 other found insignificant results	Low for no effect
COSC versus active comparators	2 RCTs (Adler et al., 2008; Tuckey and Scott, 2014); 2 cohort comparisons (Sipos et al., 2012; Vaughan et al., 2015)	Inconsistent; imprecise	Meta-analysis of 3 studies found statistically insignificant results (SMD = -0.07; CI = -1.13, 0.99)	Low for no effect
Anxiety				
COSC versus no intervention	3 RCTs (McCarty et al., 1999; Stetz et al., 2011; Ireland, Malouff, and Byrne, 2007); 2 cohort comparisons (Carlier, Voerman, and Gersons, 2000; Russell et al., 2014)	Inconsistent; imprecise; study limitations	Meta-analysis of 5 studies found statistically insignificant results (SMD = -0.12; CI = -0.49, 0.25)	Insufficient
COSC versus active comparators	1 RCT (Crane et al., 2019); 1 cohort comparison (Sipos et al., 2012)	Inconsistent; imprecise	Meta-analysis of 2 studies found statistically insignificant results (SMD = -0.37; CI = -4.54, 3.81)	Low for no effect
Depression				
COSC versus no intervention	4 RCTs (Wald et al., 2016; Adler et al., 2008; McCarty et al., 1999; Ireland, Malouff, and Byrne, 2007); 3 cohort comparisons (Schneider et al., 2016; Russell et al., 2014; Vaughan et al., 2015)	Inconsistent; study limitations	Meta-analysis of 6 studies found statistically insignificant results (SMD = -0.12; CI = -0.34, 0.11); one additional analysis that adjusted for important potential confounders found no significant difference between OSCAR participants and nonparticipants	Low for no effect
COSC versus active comparators	4 RCTs (Wald et al., 2016; Wald et al., 2017; Alder et al., 2008; Crane et al., 2019); 1 cohort comparison (Sipos et al., 2012)	Inconsistent	Meta-analysis of 5 studies found statistically insignificant results (SMD = -0.14; CI = -0.44, 0.15)	Moderate for no effect
PTSD symptoms				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
COSC versus no intervention	4 RCTs (Shipherd, Salters-Pedneault, and Fordiani, 2016; Wald et al., 2016; Adler et al., 2008; Tuckey and Scott, 2014); 3 cohort comparisons (Russell et al., 2014; Zimmermann et al., 2015; Wee, Mills, and Koehler, 1999)	Study limitations	Meta-analysis of 7 studies found statistically insignificant results (SMD = 0.00; CI = -0.15, 0.16)	Moderate for no effect
COSC versus active comparators	6 RCTs (Shipherd, Salters-Pedneault, and Fordiani, 2016; Wald et al., 2016; Wald et al., 2017; Adler et al., 2008; Tuckey and Scott, 2014; Hourani et al., 2018); 3 cohort comparisons (Solomon, Shklar, and Mikulincer, 2005; Sipos et al., 2012; Eid, Johnsen, and Weisaeth, 2001)	Study limitations	Meta-analysis of 9 studies found statistically insignificant results (SMD = -0.04; CI = -0.15, 0.07)	Moderate for no effect
PTSD or probable PTSD postdeployment, rate versus no intervention	2 RCTs (Rona et al., 2017; Greenberg et al., 2009); 5 cohort comparisons (McKibben et al., 2009; Jones et al., 2013; Frappell-Cooke et al., 2010; Vaughan et al., 2015; Solomon, Shklar, and Mikulincer, 2005)	Inconsistent; study limitations	Meta-analysis of 5 studies found statistically insignificant results (OR 0.67; CI = 0.35, 1.27); another analysis that adjusted for potential confounders found no significant difference between U.S. Marines whose battalions received OSCAR training and untrained Marines	Low for no effect
Stress level				
COSC versus no intervention or treatment as usual	4 RCTs (Adler et al., 2008; Arnetz et al., 2009; Trousselard et al., 2015; Ireland, Malouff, and Byrne, 2007); 1 cohort comparison (O'Hare and Beer, 2018); 3 case studies (Bobrow et al., 2013; Carr et al., 2013; Williams et al., 2010)	Inconsistent; study limitations	Meta-analysis of 5 studies found statistically insignificant results (SMD = -0.12; CI = -0.52, 0.29); case studies had mixed results	Low for no effect

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
COSC versus active comparators	3 RCTs (Wilson et al., 2001; Cacioppo et al., 2015; Hourani et al., 2018)	Inconsistent; imprecise; study limitations	Meta-analysis was not possible; 1 study found significant effects favoring eye movement desensitization and reprocessing, 1 study found no difference between social resilience training and cultural awareness training; 1 study found significant effects favoring standard stress management compared with stress inoculation	Insufficient
Distress				
COSC versus no intervention or treatment as usual	2 RCTs (Wesemann et al., 2016; Tuckey and Scott, 2014); 4 cohort comparisons (Larsson, Michel, and Lundin, 2000; Deahl et al., 1994; Gould, Greenberg, and Hetherton, 2007); 4 case studies (Judkins and Bradley, 2017; Pruitt, Bernheim, and Tomlinson, 1991; Saltzman et al., 2011; Wright State University, 2015)	Study limitations	Meta-analysis of 6 studies found significant results (SMD = -0.25; CI = -0.49, 0.00) favoring COSC; 4 case studies found significant reduction in distress	Moderate for effect
COSC versus active comparators	2 RCTs (Wilson et al., 2001; Cacioppo et al., 2015)	Study limitations; inconsistency; imprecision	Meta-analysis was not possible; 1 study found significant results	Insufficient
Help-seeking stigma				
COSC versus no intervention or passive comparator	4 cohort comparisons (Russell et al., 2014; Twardzicki and Jones, 2017; Watson and Andrews, 2018; Gould, Greenberg, and Hetherton, 2007)	Inconsistent; study limitations	Meta-analysis of 4 studies found statistically insignificant results (SMD = -0.13; CI -0.56, 0.30)	Low for no effect
COSC versus active comparators	2 RCTs (Mulligan et al., 2012; Adler et al., 2009)	Study limitations	Meta-analysis was not possible; 2 studies found insignificant results	Low for no effect
Marriage and family				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
COSC versus active control, passive control, or no comparison group	2 RCTs + 1 cohort comparison reported in 5 publications specifically targeted (Baddeley and Pennebaker, 2011; Julian et al., 2018a; Julian et al., 2018b; Zhang, Rudi, et al., 2018; Zhang, Zhang et al., 2018); 2 case studies of programs specifically targeted (Rabb, Baumer, and Wieseler, 1993; Lester et al., 2012); 1 RCT + 3 cohort studies on general COSC (McKibben et al., 2009; Sharpley et al., 2008; Sipos et al., 2014; Wilson et al., 2001); 2 case studies on general COSC (Pincus and Benedek, 1998; Gambardella, 2008)	Inconsistent; study limitations; imprecision	Meta-analysis was not possible; mixed results	Insufficient
Occupational				
Return-to-duty case studies with no comparison group	9 case studies (Holsenbeck, 1992; Hassan et al., 2010; Hoyt et al., 2015; Hung, 2008; Jones et al., 2010; U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003; Parrish, 2008; Pincus and Benedek, 1998; Piver-Renna, 2009)	Study limitations (design)	Meta-analysis was not appropriate for case studies; all studies but one reported return to duty of at least 90%; a study of a 3- to 7-day restorative program reported a 85% return-to-duty rate	Moderate for effect
Absenteeism COSC versus treatment as usual	1 RCT (Garner, 2008); 2 cohort comparisons (Hunt et al., 2013; Roger and Hudson, 1995)	Inconsistent; study limitations	Meta-analysis was not possible; 2 studies found significant improvement; 1 did not	Low for effect
Performance COSC versus usual care or no intervention	1 RCT (Arnetz et al., 2009); 2 cohort comparisons (Fornette et al., 2012; Carlier, Voerman, and Gersons, 2000); 1 case study (Carr et al., 2013)	Inconsistent; study limitations; indirect (2 law enforcement studies)	Meta-analysis was not possible; RCT in law enforcement found significant improvement; 3 other studies did not	Insufficient
Acceptability and satisfaction				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
For COSC study arms only	21 RCTs or cohort comparisons in 23 articles (Adler et al., 2015; Biggs et al., 2016; Carlier, Voerman, and Gersons, 2000; Castro et al., 2012; Adler et al., 2009; Deahl et al., 1994; Foran et al., 2013; Fornette et al., 2012; Greenberg et al., 2010; Greenberg et al., 2009; Hourani et al., 2018; Ilnicki et al., 2012; Jones et al., 2012; Mulligan et al., 2012; Pinna et al., 2017; Roy, Highland, and Costanzo, 2015; Shipherd, Salters-Pedneault, and Fordiani, 2016; Sipos et al., 2012; Sipos et al., 2014; Stetz et al., 2009; Twardzicki and Jones, 2017; Young, 2012; Zimmermann et al., 2015)	Publication bias	Meta-analysis was not possible because of diversity of outcome measures; no COSC programs or approaches reported low satisfaction	Moderate
COSC case studies with no comparison group	20 case studies in 21 articles (Bryan and Morrow, 2011; Bush Ouellette, and Kinn, 2014; Carr et al., 2013; Wright State University, 2015; Gahm et al., 2009; Garber and Zamorski, 2012; Griffith and West, 2013; Hourani et al., 2017; Jarrett, 2013; Jones et al., 2011; Burdett et al., 2011; Judkins and Bradley, 2017; Kizakevich et al., 2018; McCaslin et al., 2018; Milstein, Robinson, and Espinosa, 2015; Mishkind et al., 2012; Moldjord and Hybertsen, 2015; Piver-Renna, 2009; Start, Allard, and Toblin, 2017; Williams et al., 2013; Zimmerman and Weber, 2000)	Study limitations, publication bias	Meta-analysis was not appropriate for case studies; most studies reported high levels of acceptability and satisfaction	Low

Key question 1a: Do these effects vary by intervention components, intensity, and modality?

Direct comparisons

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
CISD versus standard stress management, postincident	2 head-to-head RCTs (Adler et al., 2008; Tuckey and Scott, 2014)	Inconsistent for alcohol misuse; consistency unclear for other outcomes (only 1 study each); indirect (1 law enforcement study); study limitations	Regarding heart rate reduction, standard stress management was superior to CISD (1 study); alcohol outcomes were superior for CISD in one study and superior for standard stress management in the other; no difference in depression symptoms (1 study), PTSD symptoms (2 studies), or distress scores (1 study)	Low for no difference for PTSD symptoms; insufficient for other outcomes
In-person mental health screening versus telehealth or virtual screening, end of deployment	2 cohort comparisons (Sipos et al., 2012; Jones et al., 2012)	Consistency unknown for outcomes with only 1 study; imprecise	No difference in alcohol use (1 study), anxiety symptoms (1 study), or depression symptoms (1 study); no difference in satisfaction (2 studies)	Low for no difference in satisfaction; insufficient for other outcomes
Self-reflection training versus coping skills training, at a military academy	1 head-to-head RCT (Crane et al., 2019)	Consistency unknown; indirect (population)	Self-reflection was superior for anxiety and depression symptoms (1 study)	Insufficient
Attention bias modification training versus attention-control training, Israeli Defense Forces preparing to deploy	2 RCTs (Wald et al., 2016; Wald et al., 2017)	Imprecise	No difference for depression symptoms; PTSD symptoms (2 studies)	Low for no difference
Eye movement desensitization and reprocessing versus standard stress management, general law enforcement stress	1 RCT (Wilson et al., 2001)	Consistency unknown; indirect (population)	Eye movement desensitization and reprocessing was superior for PTSD symptoms, stress reduction, and marital adjustment; no difference in PTSD diagnosis rate	Low for PTSD symptoms, stress reduction, marital
Battlemind briefing or training versus standard stress briefing or education, postdeployment	2 RCTs (Mulligan et al., 2012; Adler et al., 2009)	Inconsistent; imprecise	No difference in help-seeking stigma or sleep problems (2 studies); 1 study reported that Battlemind was superior for PTSD symptoms and depression, but no significant difference in these outcomes in the other study	Low for no difference in help-seeking stigma or sleep problems; insufficient for other outcomes
Indirect findings: meta-analyses not possible				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Predeployment training				
Captivity training	1 case study (Ralph et al., 2017)	No comparator; unclear consistency (only 1 study); study limitations	No significant decrease in PTSD symptoms postintervention; significant decrease in salivary cortisol	Insufficient
MRT	2 case studies (Griffith and West, 2013; Start, Allard, and Toblin, 2017)	No comparator; study limitations	Increased resiliency competencies in one study; in one study of health care staff, 46% of trainers felt that trainees were receptive; no report of psychological symptom or physical outcomes	Insufficient
Stress inoculation with biofeedback	6 RCTs (Bouchard et al., 2012; Hourani et al., 2016; Hourani et al., 2011; Lewis et al., 2015; Pyne et al., 2019; Trousselard et al., 2015)	Inconsistent; imprecise; study limitations	Mixed results for physiological outcomes; no effect on PTSD symptoms in 1 study; no effect on PTSD rate in 1 study	Insufficient
Self-reflection training	1 RCT (Crane et al., 2019)	Unclear consistency (only 1 study); possible reporting bias	Self-reflection had significantly larger effects on anxiety and depression symptoms than standard coping-skills training	Insufficient
Attention bias modification training	2 RCTs (Wald et al., 2017; Wald et al., 2016)	Imprecise	No difference in depression or PTSD symptoms versus attention-control training in 2 studies	Low for no difference
Mindfulness	4 RCTs (Haase et al., 2016; Johnson et al., 2014; Joyce et al., 2019; Zhang, Rudi, et al., 2018)	Inconsistent; heterogeneity of populations and outcome categories	Mixed results for physiological outcomes in 2 studies; 1 study reported no effect on coping skills; 1 study reported reduced risk of (PCL > 40) at 24 months but no effect on SMD in PCL score	Insufficient
Resilience training in-theater	1 cohort (Ilnicki et al., 2012); 2 case studies (Carr et al., 2013; Griffith and West, 2013)	Imprecise; possible reporting bias; study limitations	1 case study of MRT found an increase in competency; 1 study of stress inoculation using virtual reality found no effect on anxiety	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
Psychological first aid	1 case study of SPRINT (Millegan, Delaney, and Klam, 2016); 1 RCT published in three articles (Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011); 5 cohort studies of TRiM (Frappell-Cooke et al., 2010; Gould, Greenberg, and Hetherington, 2007; Hunt et al., 2013; Jones et al., 2017; Watson and Andrews, 2018); 1 cohort study of OSCAR (Vaughan et al., 2015)	TRiM: Possible reporting bias; study limitations; OSCAR: consistency unclear (only 1 study)	SPRINT: study reported only on feasibility; TRiM: 2 pooled studies found an effect on help-seeking stigma; 1 study found an effect on stress; 1 study found an effect on PTSD symptoms; 1 study found reduction in absenteeism; OSCAR: 1 study found no effect on alcohol misuse, stress level, PTSD case rate and depression postdeployment	SPRINT: insufficient; TRiM: low for help-seeking stigma; insufficient for psychological outcomes; OSCAR: moderate for no effect on alcohol misuse, depression, stress level, and PTSD case rate post-deployment
Front-line mental health				
General and embedded specialists	2 cohort studies (Russell et al., 2014; Solomon, Shklar, and Mikulincer, 2005), 7 case studies in six publications (U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003; Hung, 2008; Hoyt et al., 2015; Jones et al., 2010; Hassan et al., 2010; Parrish, 2008)	Study limitations	6 case studies reported high return-to-duty and retention rates; mixed results for psychological outcomes in 2 cohort studies	Moderate for return to duty; insufficient for psychological outcomes
Imagery rehearsal for nightmares	1 RCT (Arnetz et al., 2009)	Study limitations, Indirect	1 study found positive effects on stress and performance; 1 study found positive effect on insomnia and PTSD symptoms	Insufficient
Eye movement desensitization and reprocessing for non-clinical-level stress	1 RCT (Wilson et al., 2001)	Applicability (law enforcement sample); unclear consistency (only 1 study)	1 study found positive effects for PTSD symptoms, stress reduction, and marital adjustment compared with standard stress management; no difference in PTSD rate	Low for effect on PTSD symptoms, stress, and marital adjustment; low for no effect on PTSD rate

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Restoration (2 to 7 day)	3 case studies (Judkins and Bradley, 2017; Potter et al., 2009; Pincus and Benedek, 1998)	Study limitations (no control or comparator); possible reporting bias	2 studies found an effect on distress; 1 study found an effect on PTSD symptoms; 1 study found a positive effect on marriage and family issues and suicidality	Low for effect on distress, PTSD symptoms, and homefront issues
CISD	2 RCTs (Adler et al., 2008; Tuckey and Scott, 2014); 3 cohort studies (Leonard and Alison, 1999; Carlier, Voerman, and Gersons, 2000; Wee, Mills, and Koehler, 1999)	Inconsistent; study limitations; indirect (4 studies are law enforcement)	Mixed results on all psychological outcomes	Insufficient
Other debriefing	1 RCT (Deahl et al., 2000); 3 cohort studies (Deahl et al., 1994; Eid, Johnsen, and Weisaeth, 2001; Larsson, Michel, and Lundin, 2000)	For PTSD symptoms, inconsistent and indirect (1 of 3 studies was first responders)	1 RCT of group psychological debriefing at the end of deployment found a positive effect on alcohol misuse and depression, 3 RCTs found mixed results for PTSD symptoms	Low for effect on alcohol misuse and depression; insufficient for PTSD symptoms
Third-location decompression	3 cohort studies (Fertout, Jones, and Greenberg, 2012; Jones et al., 2013); 1 case study in 2 articles (Jones et al., 2011; Burdett et al., 2011)	Unclear consistency regarding alcohol, depression, and PTSD—only one study; study limitations	1 cohort study found worse alcohol outcomes for attendees, positive effect on depression scores and no effect on PTSD; 1 cohort study found no effect on alcohol misuse or PTSD other studies focused on acceptability and satisfaction, which was very high	Low for positive effect on depression; no effect on PTSD symptoms; no improvement in alcohol misuse
Mental health screening	1 RCT (Rona et al., 2017); 3 cohort studies (Jones et al., 2012; Sipos et al., 2012; Warner et al., 2007)	Study limitations; unclear consistency for alcohol and substance misuse (only 1 study)	3 studies found no difference between modality types; one large cohort study found a positive effect on alcohol and substance misuse	Low for effect on alcohol and substance misuse; insufficient for other psychological outcomes

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
Family interventions	3 RCTs in 6 articles (Baddeley and Pennebaker, 2011; Kritikos, DeVoe, and Emmert-Aronson, 2019; Pinna et al., 2017; Snyder et al., 2016; Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018); 1 cohort study in 3 articles (Julian et al., 2018a; Julian et al., 2018b; Dodge et al., 2018); 2 case studies in 4 articles (Saltzman et al., 2011; Lester et al., 2012; Saltzman et al., 2016; Rabb, Baumer, and Wieseler, 1993)	Study limitations; possible reporting bias	5 reported positive effects on marriage and family outcomes	Low for marriage and family outcomes
Other reintegration programs	1 RCT of TEAM (Biggs et al., 2016); 1 case study of the Coming Home Project (Bobrow et al., 2013)	Unclear consistency (1 study of each program); study limitations; possible reporting bias	Mixed results	Insufficient
Key question 1b: Do these effects vary by setting (in theater versus not in theater)?				
Alcohol use and misuse	2 RCTs (Adler et al., 2008; Tuckey and Scott, 2014); 4 cohort comparisons (Russell et al., 2014; Schneider et al., 2016; Sipos et al., 2012; Vaughan et al., 2015)	Not applicable	Meta-regression was not possible	Insufficient
Anxiety	4 RCTs (McCraty, 1999; Stetz et al., 2011; Ireland, Malouff, and Byrne, 2007; Crane et al., 2019); 3 cohort comparisons (Carlier, Voerman, and Gersons, 2000; Russell et al., 2014; Sipos et al., 2012)	Not applicable	Meta-regression not possible; the only positive findings were for a relaxation app used predeployment and not tested in theater	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Depression	5 RCTs (Wald et al., 2016; Adler et al., 2008; McCraty et al., 1999; Ireland, Malouff, and Byrne, 2007; Crane et al., 2019); 3 cohort comparisons (Schneider et al., 2016; Russell et al., 2014; Sipos et al., 2012)	Indirect	Meta-regression, passive-control studies: effect of in-theater setting was not significant (0.17; CI = – 0.56 0.89)	Low
PTSD symptoms	6 RCTs (Shipherd, Salters-Pedneault, and Fordiani, 2016; Wald et al., 2016; Wald et al., 2017; Adler et al., 2008; Tuckey and Scott, 2014; Hourani et al., 2018); 6 cohort comparisons (Solomon, Shklar, and Mikulincer, 2005; Sipos et al., 2012; Russell et al., 2014; Zimmermann et al., 2015; Eid, Johnsen, and Weisaeth, 2001; Wee, Mills, and Koehler, 1999)	Indirect	Meta-regression, passive-control studies: effect of in-theater setting was not significant (SMD = –0.01; CI = –0.63, 0.60)	Low
PTSD cases (PCL > 50)	2 RCTs (Rona et al., 2017; Greenberg et al., 2009); 3 cohort comparisons (McKibben et al., 2009; Jones, Hammond, and Platoni, 2013; Frappell-Cooke et al., 2010)	Not applicable	Meta-regression was not possible	Insufficient
Distress	4 RCTs (Wesemann et al., 2016; Tuckey and Scott, 2014; Wilson et al., 2001; Cacioppo et al., 2015); 4 cohort comparisons (Larsson, Michel, and Lundin, 2000; Deahl et al., 1994; Gould, Greenberg, and Hetherington, 2007)	Indirect	Meta-regression, passive control studies: Effect of in-theater setting was not significant (0.04; CI = – 0.55, 0.62)	Low
Stress level	7 RCTs (Adler et al., 2008; Arnetz et al., 2009; Hourani et al., 2018; Trousselard et al., 2015; Ireland, Malouff, and Byrne, 2007; Wilson et al., 2001; Cacioppo et al., 2015); 1 cohort comparison (O'Hare and Beer, 2018)	Not applicable	Meta-regression was not possible.	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Help-seeking stigma	2 RCTs (Mulligan et al., 2012; Adler et al., 2009); 4 cohort comparisons (Russell et al., 2014; Twardzicki and Jones, 2017; Watson and Andrews, 2018; Gould, Greenberg, and Hetherton, 2007)	Not applicable	Meta-regression was not possible	Insufficient
Return to duty	8 case studies with no comparator (Holsenbeck, 1992; Hassan et al., 2010; Hoyt et al., 2015; Hung, 2008; Jones et al., 2010; U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003; Parrish, 2008; Pincus and Benedek, 1998)	Not applicable	Meta-regression was not possible; all in theater	Not applicable
Absenteeism	1 RCT (Garner, 2008); 2 cohort comparisons (Hunt et al., 2013; Roger and Hudson, 1995)	Not applicable	Meta-regression was not possible; only one military study, of the UK Royal Navy (positive results)	Insufficient
Performance	1 RCT (Arnetz et al., 2009); 2 cohort comparisons (Fornette et al., 2012; Carlier, Voerman, and Gersons, 2000)	Not applicable	Meta-regression was not possible; only one military study, not in theater (insignificant results)	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Acceptability and satisfaction	21 RCTs or cohort comparisons in 23 articles (Adler et al., 2015; Biggs et al., 2016; Carlier, Voerman, and Gersons, 2000; Castro et al., 2012; Adler et al., 2009; Deahl et al., 1994; Foran et al., 2013; Fornette et al., 2012; Greenberg et al., 2010; Greenberg et al., 2009; Hourani et al., 2018; Ilnicki et al., 2012; Jones, 2012; Mulligan et al., 2012; Pinna et al., 2017; Roy, Highland, and Costanzo, 2015; Shipherd, Salters-Pedneault, and Fordiani, 2016; Sipos et al., 2012; Sipos et al., 2014; Stetz et al., 2009; Twardzicki and Jones, 2017; Young, 2012; Zimmermann et al., 2015); 18 case studies in 19 articles (Bryan and Morrow, 2011; Bush, Ouellette, and Kinn, 2014; Carr et al., 2013; Gahm et al., 2009; Garber and Zamorski, 2012; Griffith and West, 2013; Hourani et al., 2017; Jarrett, 2013; Jones et al., 2011; Burdett et al., 2011; Judkins and Bradley, 2017; Kizakevich et al., 2018; McCaslin et al., 2018; Milstein, Robinson, and Espinosa, 2015; Mishkind et al., 2012; Moldjord and Hybertsen, 2015; Williams et al., 2013; Wright State University, 2015; Zimmerman and Weber, 2000)	Not applicable	Meta-regression was not possible; no COSC programs or approaches reported low satisfaction; third-location decompression was extremely popular	Moderate
Direct comparisons				
Front-loaded reintegration training (in Iraq) versus reintegration not in theater	1 cohort comparison (Sipos et al., 2014)	Consistency unknown; imprecise	No difference in PCL scores, alcohol use, or marital satisfaction 4 to 5 months after return from deployment	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/Magnitude of Effect	GRADE of Evidence for Outcome
Front-line mental health treatment versus rear echelon treatment, Israeli Defense Forces	1 cohort comparison, 20 years posttreatment (Solomon, Shklar, and Mikulincer, 2005)	Consistency unknown; imprecise for distress	Front-line treatment approached statistical superiority for PTSD symptoms; no difference in distress scores	Insufficient
Battlemind training upon end of deployment, during third-location decompression versus at peacekeeping location	1 cohort study (Foran et al., 2013)	Consistency unknown	UK and Canadian forces attended during third-location decompression; New Zealand forces attended in East Timor; U.S. forces attended 4 months after return from deployment; components of training most important to overall satisfaction were similar across the U.S. and Canada: normalize emotional reactions, learn from good examples from previously deployed personnel, and prevent transition problems	Insufficient

Key question 1c: Do these effects vary by population?

Sleep problems	6 RCTs (Haase et al., 2016; McCraty et al., 1999; Adler et al., 2009; Adler et al., 2015; Cacioppo et al., 2015; Mulligan et al., 2012)	Not applicable	Meta-regression was not possible; no comparative studies found positive results	Insufficient
Heart rate	7 RCTs (Adler et al., 2008; Arnetz, 2009; Bouchard et al., 2012; Hourani et al., 2011; Johnson et al., 2014; Lewis et al., 2015; McCraty et al., 1999)	Not applicable	Meta-regression was not possible	Insufficient
Alcohol use and misuse	2 RCTs (Adler et al., 2008; Tuckey and Scott, 2014); 4 cohort comparisons (Russell et al., 2014; Schneider et al., 2016; Sipos et al., 2012; Vaughan et al., 2015)	Not applicable	Meta-regression was not possible; indirect comparison: CISM improved outcomes with first responders (1 study) but not military (another study)	Insufficient
Anxiety	4 RCTs (McCraty, 1999; Stetz et al., 2011; Ireland, Malouff, and Byrne, 2007; Crane et al., 2019); 3 cohort comparisons (Carlier, Voerman, and Gersons, 2000; Russell et al., 2014; Sipos et al., 2012)	Not applicable	Meta-regression was not possible	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Depression	5 RCTs (Wald et al., 2016; Adler et al., 2008; McCraty et al., 1999; Ireland, Malouff, and Byrne, 2007; Crane et al., 2019); 3 cohort comparisons (Schneider et al., 2016; Russell et al., 2014; Sipos et al., 2012)	Indirect	Meta-regression, passive control studies: no significant effect of population (military versus police or first responders (SMD = 0.27; CI = -0.34, 0.88)	Low
PTSD symptoms	6 RCTs (Shipherd, Salters-Pedneault, and Fordiani, 2016; Wald et al., 2016; Wald et al., 2017; Adler et al., 2008; Tuckey and Scott, 2014; Hourani et al., 2018); 6 cohort comparisons (Solomon, Shklar, and Mikulincer, 2005; Sipos et al., 2012; Russell et al., 2014; Zimmermann et al., 2015; Eid, Johnsen, and Weisaeth, 2001; Wee, Mills, and Koehler, 1999)	Indirect	Meta-regression, passive control studies: no significant effect of population (military versus police or first responders (SMD = 0.24; CI = -0.42, 0.90)	Low
PTSD cases (PCL > 50)	2 RCTs (Rona et al., 2017; Greenberg et al., 2009); 3 cohort comparisons (McKibben et al., 2009; Jones, Hammond, and Platoni, 2013; Frappell-Cooke et al., 2010)	Not applicable	Meta-regression was not possible; all military studies	Not applicable
Distress	4 RCTs (Wesemann et al., 2016; Tuckey and Scott, 2014; Wilson et al., 2001; Cacioppo et al., 2015); 4 cohort comparisons (Larsson, Michel, and Lundin, 2000; Deahl et al., 1994; Gould, Greenberg, and Hetherington, 2007)	Indirect	Meta-regression, passive control studies: no significant effect of population (military versus police or first responders) (SMD = -0.24; CI = -0.86, 0.39)	Low
Stress level	7 RCTs (Adler et al., 2008; Arnetz et al., 2009; Hourani et al., 2018; Trousselard et al., 2015; Ireland, Malouff, and Byrne, 2007; Wilson et al., 2001; Cacioppo et al., 2015); 1 cohort comparison (O'Hare and Beer, 2018)	Not applicable	Meta-regression was not possible	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Help-seeking stigma	2 RCTs (Mulligan et al., 2012; Adler et al., 2009); 4 cohort comparisons (Russell et al., 2014; Twardzicki and Jones, 2017; Watson and Andrews, 2018; Gould, Greenberg, and Hetherton, 2007)	Not applicable	Meta-regression was not possible	Insufficient
Return to duty	8 case studies with no comparator (Holsenbeck, 1992; Hassan et al., 2010; Hoyt et al., 2015; Hung, 2008; Jones et al., 2010; U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003; Parrish, 2008; Pincus and Benedek, 1998)	Not applicable	Meta-regression was not possible; all military studies	Insufficient
Absenteeism	1 RCT (Garner, 2008); 2 cohort comparisons (Hunt et al., 2013; Roger and Hudson, 1995)	Not applicable	Meta-regression was not possible; the only military study showed positive results	Insufficient
Performance	1 RCT (Arnetz et al., 2009); 2 cohort comparisons (Fornette et al., 2012; Carlier, Voerman, and Gersons, 2000)	Not applicable	Meta-regression was not possible; the only military study showed insignificant effect	Insufficient

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Acceptability and satisfaction	21 RCTs or cohort comparisons in 23 articles (Adler et al., 2015; Biggs, 2016; Carlier, Voerman, and Gersons, 2000; Castro et al., 2012; Adler et al., 2009; Deahl et al., 1994; Foran et al., 2013; Fornette et al., 2012; Greenberg et al., 2010; Greenberg et al., 2009; Hourani et al., 2018; Ilnicki et al., 2012; Jones, 2012; Mulligan et al., 2012; Pinna et al., 2017; Roy, Highland, and Costanzo, 2015; Shipherd, Salters-Pedneault, and Fordiani, 2016; Sipos et al., 2012; Sipos et al., 2014; Stetz et al., 2009; Twardzicki and Jones, 2017; Young, 2012; Zimmermann et al., 2015); 18 case studies in 19 articles (Bryan and Morrow, 2011; Bush, Ouellette, and Kinn, 2014; Carr et al., 2013; Gahm et al., 2009; Garber and Zamorski, 2012; Griffith and West, 2013; Hourani et al., 2017; Jarrett, 2013; Jones et al., 2011; Burdett et al., 2011; Judkins and Bradley, 2017; Kizakevich et al., 2018; McCaslin et al., 2018; Milstein, Robinson, and Espinosa, 2015; Mishkind et al., 2012; Moldjord and Hybertsen, 2015; Williams et al., 2013; Wright State University, 2015; Zimmerman and Weber, 2000)	Not applicable	Meta-regression was not possible; no COSC programs or approaches reported low satisfaction	Insufficient
Direct comparisons				

Intervention, Comparator	Number of Studies and Citations	Reasons for Downgrading or Upgrading Quality	Findings: Direction/ Magnitude of Effect	GRADE of Evidence for Outcome
Third-location decompression, individual augmentees versus formed units	1 cohort comparison (Fertout, Jones, and Greenberg, 2012)	Consistency unknown	No significant differences in perceived utility; formed units more likely to stigmatize stress-control component; junior-ranked personnel more likely to find program useful	Insufficient
UK TRiM program, UK Army infantry versus Royal Marines commandos	1 cohort comparison (Frappell-Cooke et al., 2010)	Consistency unknown	UK Royal Marines reported slightly increased perceived social support from unit during deployment, while support decreased for Army infantry	Insufficient
Revised work schedules, U.S. military base, junior-ranked personnel versus NCOs versus commissioned officers	1 cohort comparison (Posard, Hultquist, and Segal, 2013)	Consistency unknown	Junior ranks experienced a significant reduction in work-family conflict, while there were no changes for NCOs and commissioned officers; junior ranks reported higher levels in preparedness, while the NCOs reported lower levels	Insufficient

Key Question 1

Overall, meta-analyses found that COSC programs had no significant difference in effect on sleep, alcohol misuse, anxiety, depression, PTSD symptoms (usually measured by PCL score), or help-seeking stigma compared with active interventions, such as a single, standard stress-management class. Meta-analyses also found no significant effect on alcohol misuse, depression, PTSD symptoms, PTSD case rate, stress level, or help-seeking stigma compared with no intervention. Against active comparators, the quality of evidence of no significant difference in effect was moderate for sleep, depression, and PTSD symptoms and low for alcohol misuse, anxiety, and help-seeking stigma. Compared with no intervention, the quality of evidence was moderate for no effect on PTSD symptoms and PTSD case rate and low for alcohol misuse, depression, stress level, and help-seeking stigma.

The quality of evidence was insufficient to form conclusions regarding the difference of effect on stress and distress level versus active comparators and effect on heart rate, marriage or family outcomes, and occupational performance versus any comparison group, regardless of whether the comparison group received an intervention.

Positive outcomes were found in several areas. The COSC programs studied, on the whole, had positive effects on return to duty (moderate quality of evidence), absenteeism (low quality of evidence), and distress (moderate quality of evidence versus no stress intervention). In general, these outcomes are the primary targets of COSC programs. However, although COSC programs

may reduce distress enough for active duty troops to function, COSC appears to have no significant impact on symptoms of psychological disorders, such as PTSD and depression.

Most COSC programs reported high levels of acceptability and satisfaction.

Results for specific approaches and intervention types are summarized in the “Key Question 1a” section. Specific settings and populations are discussed in the “Key Question 1b” and “Key Question 1c” sections, respectively. These sections summarize evaluations of efficacy and effectiveness; focus group studies and case studies that reported only acceptability, satisfaction, or usability were discussed in Chapter 3, with findings displayed in tables.

Key Question 1a

It was not possible to conduct meta-regression analysis for most intervention types or components because of insufficient data. No intervention types or components had high- or moderate-strength evidence of efficacy or effectiveness for any outcome. There is low-strength evidence that TRiM decreases help-seeking stigma; two- to seven-day restoration programs have a significant positive effect on distress, PTSD symptoms, and homefront issues; eye movement desensitization and reprocessing for subclinical stress reduces stress and PTSD symptoms and improves marital adjustment; group psychological debriefing (not incident-specific) at the end of deployment has a positive effect on alcohol misuse and depression; third-location decompression has a positive effect on depression but a possible negative effect on alcohol use; end-of-deployment screening has a positive effect on alcohol and substance misuse; and marriage and family interventions have positive effects on marriage and parenting outcomes.

There is insufficient evidence to conclude that any type of predeployment stress-control training is effective.

Although front-line psychiatry and embedded mental health staff have moderate evidence for an effect on return to duty, it is unclear which components and approaches are most effective because of insufficient data.

Key Question 1b

Meta-regression analyses to assess possible effects of setting (in theater versus elsewhere) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. The quality of evidence was insufficient to determine the effect of in-theater setting on those outcomes. Meta-regression analyses found no significant effect of in-theater setting on depression, distress, or PTSD symptoms; the quality of evidence was rated low. Two studies compared locations head-to-head; a small cohort study comparing front-line reintegration at the end of deployment in Iraq with standard reintegration postdeployment found no differences in outcomes, whereas a 20-year follow-up of Israeli Defense Forces found that front-line mental health treatment had a moderate-size effect on PTSD intensity compared with rear-echelon treatment that bordered on statistical significance.

Key Question 1c

Meta-regression analyses to assess the possible effects of population (military versus law enforcement or other first responders) were not possible for sleep, alcohol misuse, anxiety, PTSD case rate, stress, marriage and family outcomes, or help-seeking stigma. The quality of evidence was insufficient to draw conclusions about any possible population differences in effects on these outcomes. Meta-regression analyses found no effect of study population on results for depression, distress, or PTSD symptoms; the quality of evidence was low. Although there was some evidence from two cohort studies that COSC programs were more useful for junior-ranked personnel, the quality of evidence was insufficient to formulate conclusions.

Prior Systematic Reviews

Although several previous systematic reviews attempted to assess the efficacy and comparative effectiveness of stress-control programs for military, law enforcement, or first responders, few identified strong evidence on specific approaches, programs, or components. Most identified few studies, and authors often noted inconsistent methodological quality. The vast majority concluded that additional high-quality research was needed before conclusions about efficacy or comparative effectiveness could be made. Table 4.2 displays a summary of the findings.

Table 4.2. Prior Systematic Reviews on Military, Law Enforcement, or First Responders

Study	Search Years	Population	Intervention	Number of Studies, Designs	Meta-analysis	Conclusions
Mulligan et al., 2011	1998–2009	Military	Psycho-educational briefing	3 RCTs, 3 cohort comparison, 1 case study	No	Still a need for an intervention that effectively reduces the impact of exposure to combat trauma
Pallavicini et al., 2016	2001–2015	Military and civilians	Virtual reality	11 cohort comparisons, 3 case studies	No	More high-quality studies with standardized measures and procedures needed
Patterson, Chung, and Swan, 2014	1984–2008	Law enforcement	Various stress management	9 RCTs, 3 cohort comparisons	Yes	Results consistent with other research; more high-quality studies needed
Peñalba, McGuire, and Leite, 2008	1979–2006	Law enforcement	Various psychosocial	10 RCTs or quasi-RCTs (only 5 had usable data), 3 cohort comparisons, numerous case studies	No	More high-quality studies needed to determine effectiveness
Russell and Figley, 2017b	1918–2015	Military	Front-line psychiatry	3 cohort comparisons, numerous case studies	No	Not enough credible evidence to determine the benefits of front-line psychiatric interventions
Russell and Figley, 2017c	1947–2016	Military	Front-line psychiatry	3 cohort comparisons, 13 case studies	No	Front-line psychiatry is more harmful than beneficial; more high-quality studies should be conducted; UK guidelines that limit deployment length and combat exposure should be adopted
Skeffington, Rees, and Kane, 2013	1979–2011	Military and law enforcement	Resiliency training	2 RCTs, 5 cohort comparisons	No	More high-quality studies needed to determine effectiveness
Thompson and Dobbins, 2018	2006–2015	Military	Resiliency training	4 RCTs, 1 cohort comparison	No	More high-quality studies needed to determine effectiveness
Whybrow, Jones, and Greenberg, 2015	2007–2013	Military, law enforcement, and emergency services	TRiM	1 RCT, 3 cohort comparisons, 9 case studies	No	TRiM potentially improves mental health outcomes, but more research should investigate its effect on occupational outcomes

Resiliency Training for Military

Thompson and Dobbins (2018) described four RCTs and one retrospective comparative study of resilience training. The interventions studied were predeployment stress-education seminars, one-hour Battlemind training, biofeedback, CBT-based resilience training, and mindfulness-based training. Predeployment stress-education seminars and CBT-based training reported no effect on mental health outcomes. A one-hour Battlemind training reported small significant effects on PTSD symptoms and depression. Biofeedback and mindfulness training had small mental health effects.

Similarly, a 2013 systematic review (Skeffington, Rees, and Kane, 2013) of two RCTs and five cohort comparison studies published from 1979 to 2011 examined the efficacy of resiliency training programs with a psychoeducational component on psychological health and PTSD prevention. Four studies reported positive effects; however, methodological concerns made the results inconclusive.

Stress-Management Training, Various Psychosocial Interventions for Law Enforcement

A 2009 Cochrane Collaboration systematic review of randomized or quasirandomized trials published from 1979 to 2006 evaluated the effectiveness of psychosocial interventions for law enforcement (Peñalba, McGuire, and Leite, 2008). Of the ten studies included, four compared a stress-management program with a psychoeducational one. Others studied a mental-imaging training, counseling sessions, visuomotor behavior rehearsal, social skills training versus problem-solving skills training, and two physical-activity programs. Most studies reported effects that were not statistically significant. Because several reports were missing data, the review authors proposed further research using robust methods before any conclusions could be made.

Another systematic review and meta-analysis of controlled trials and cohort comparisons published from 1984 to 2008 (Patterson, Chung, and Swan, 2014) investigated the efficacy of stress-management interventions among law enforcement populations. Of the 12 included studies, four were unpublished dissertations or reports, nine were RCTs, and three were cohort comparisons. Interventions included eye movement desensitization and reprocessing, stress-management training, physical training, writing, and psychotherapy that measured physiological, psychological, and behavioral outcomes. Two studies reported physiological outcomes and yielded a small overall effect (Hedge's $g = 0.196$). All 12 studies reported psychological outcomes; pooled analysis yielded no significance (Hedge's $g = 0.038$). Three studies were included in the analysis of behavioral outcomes and yielded a small negative effect that was not significant (Hedge's $g = -0.176$). Heterogeneity tests indicated that the studies using physiological and behavioral outcomes shared a common effect. The authors concluded that their findings were consistent with other research on stress management for law enforcement but emphasized the need for more-robust RCTs and mixed-methods studies that categorize the type of stressors and concentration of intervention.

TRiM

Whybrow, Jones, and Greenberg (2015) reviewed studies of the TRiM peer-support intervention created in the UK, published from 2007 to 2013. The review included 13 studies on military, law enforcement, and emergency service populations; several used the same data set. One RCT, three cohort comparisons, and various case studies were included. Five studies reported positive mental health outcomes, while two showed positive occupational outcomes. One reported negative findings about TRiM familiarity. One did not report mental health results,

and one described the main findings of a semistructured interview about the importance of peer support. The review authors suggested that TRiM may be beneficial to chain-of-command organizations and that the intervention may yield positive mental health outcomes. Of note, the researchers included several pieces of their own work, which may indicate a conflict of interest. In addition, the inclusion of multiple studies on the same participants might have led to overestimating the intervention's efficacy.

Psychoeducational Briefing and Debriefing

A 2011 systematic review of studies published from 1998 to 2009 examined the efficacy of the psychoeducational briefing of military populations (Mulligan et al., 2011). Two surveys, three RCTs, three cohort comparisons, and one case study were included that studied historical group debriefing, CISM, stress education, TRiM, and Battlemind interventions. The majority of studies reported no effects for all outcomes.

Importantly, two seminal systematic reviews on debriefing did not meet our inclusion criteria, as populations were primarily civilian (van Emmerik et al., 2002; Rose et al., 2002). Published in 2002, these publications provided strong conclusions and recommendations. Rose et al. (2002) found no evidence that single session individual psychological debriefing was effective at preventing PTSD and recommended that mandatory debriefing of trauma victims be discontinued. Van Emmerik et al. (2002) found that CISM did not improve symptoms or recovery from trauma. Despite the focus on civilians, these reviews had a major impact on military policy, as the U.S. Department of Defense stopped using CISM and the defense departments of Canada, the UK, and Australia followed suit.

A systematic review and meta-analysis on the effectiveness of CISM, primarily in the civilian population, was also published in 2002 (Everly, Flannery, and Eyler, 2002). CISM is a multicomponent program implemented after traumatic events, primarily in the civilian population. Importantly, all studies included a group CISM component. Five case studies on the Assaulted Staff Action Program for psychiatric facility employees, described in four articles, were included. Another case study assessed a 12-component CISM program among UK Royal Air Force members, and one case study and one cohort comparison measured CISM effects among other civilians. All studies reported positive effects, with the exception of one, which reported no effects. A meta-analysis generated a large effect size (Cohen's $d = 3.11$), indicating success in decreasing PTSD symptomatology. Although the results indicate that programs with a CISM framework are effective, the review authors suggested that no conclusions could be made until the intervention approach is tested in a controlled trial. Despite a high-quality statistical analysis, the authors included only studies published from 1995 and 2000. In addition, the review authors are developers of CISM interventions, suggesting a possible conflict of interest.

Front-Line Psychiatry

Russell and Figley published a series of articles on military front-line psychiatric programs in 2017. The first (Russell and Figley, 2017b) reviewed studies published from 1918 to 2015; the vast majority were case studies. Three cohort comparison studies reported no significant differences between service members treated by front-line programs or at nonmilitary hospitals, although each of these reports had a high level of missing data. Two reported positive effects regarding career retention. One showed no effect of the OSCAR front-line prevention program, two showed reductions in mental health symptomatology, two reported positive return-to-duty rates, and three showed both improved mental health and positive return-to-duty rates. The review authors noted there were not long-term data or reliable evidence concerning the benefits to front-line psychiatric interventions. The second systematic review (Russell and Figley, 2017c) examined the potential negative effects of the U.S. military's front-line psychiatry doctrine on veterans and included studies published from 1947 to 2016. Four studies reported negative mental health outcomes for those who received front-line psychiatric interventions, and one reported no effect. Five reported evidence of mental health relapse. The review authors concluded that the front-line psychiatry doctrine poses more harm than value. Russell and Figley suggest that unbiased comprehensive studies be conducted and that the U.S. military should implement the UK harmony guidelines and mandatory treatment procedures.

The difference in findings may be due to the time frame of the reviews. Much of Russell and Figley's data come from studies of World Wars I and II, Korea, and Vietnam; for applicability, those studies were excluded from this project. In addition, we found problems with the data Russell and Figley reported from studies that we identified for this review. For example, Russell and Figley reported that 100 percent of 11 U.S. Army soldiers who underwent imagery rehearsal in Iraq returned to duty (citing Potter et al., 2009); we found no mention of return to duty in that journal article. Similarly, Russell and Figley noted that Schmitz et al. (2012) reported a return-to-duty rate of 99 percent in 1,167 U.S. personnel deployed to Iraq. We retrieved that publication and excluded it from our review for lack of relevant outcomes; return to duty is not mentioned. Schmitz et al. (2012) does mention that medical evacuation was "considered" or "recommended" for 4 percent of patients but contains no disposition as to how many were actually evacuated. Thus, the Russell and Figley review is of questionable quality.

Virtual Reality

Pallavicini et al. (2016) investigated the efficacy of virtual reality stress-management training programs among military and civilian populations. Eleven comparison studies and three case series with pre-post data (including one with only four subjects) were included. Four studies reported positive outcomes related to emotional reactivity reduction, and three reported positive outcomes related to stress-level reduction, although all had relatively small sample sizes. The review authors concluded that teaching stress-management techniques via virtual environments

is a feasible method; however, challenges in obtaining sufficient evidence of efficacy included a lack of standardized measures and procedures.

Strengths and Limitations

This review has several strengths: an a priori research design, duplicate study selection and data extraction of study information, a comprehensive search of electronic databases, risk-of-bias assessments, and use of comprehensive quality of evidence assessments to formulate review conclusions.

To avoid missing relevant studies, we reviewed 4,742 abstracts and 566 full-text articles and reports. Prior systematic reviews on military, law enforcement, or emergency responders often included a small number of studies because of their scope (often assessing only one intervention type) or the time frame considered. For example, the Thompson and Dobbins (2018) review on resiliency training included only literature published from 2006 to 2015, resulting in five studies. Similarly, despite searching for studies published over a 32-year period (1979 to 2011), Skeffington, Rees, and Kane (2013) identified only seven RCTs or cohort comparisons of resiliency training for military or law enforcement. In contrast, our project searched for studies published from 1990 through early 2020 on all types of stress-control interventions, resulting in the inclusion of 115 studies, 73 of which are controlled trials or cohort comparisons.

Unlike prior systematic reviews, we assessed the quality and risk of bias of each included study using valid and reliable international standards. We rated the quality of each study using different instruments designed for RCTs, cohorts, and case studies. These assessments contributed to our quality-of-evidence ratings. Our assessments were based only on publicly available information. We reviewed all identified journal articles and reports corresponding to each included study; however, we did not contact authors with questions on methodology because of resource limitations. In our experience, authors of older studies are often unreachable or unresponsive or do not have time to find the requested information.

Other limitations vary according to the design of the included studies. Regarding clinical trials, randomization is used to attempt to balance potential patient-level confounders in each group. Because randomization by individual is often difficult in active duty military, many RCTs were randomized by unit (cluster randomization). This sometimes resulted in baseline group differences in potential confounders, such as age, combat experience, or initial symptomatology. As cohort studies do not involve randomization, the same issue sometimes arose. We included case studies without a comparison group; evidence based solely on studies with this design was downgraded.

We conducted meta-analyses when results on the same outcome were identified; we calculated the I^2 statistic to assess heterogeneity. However, some undetected heterogeneity may exist. The I^2 statistic is dependent on statistical power, which is primarily influenced by the number of studies and secondarily by the size of the studies; some meta-analyses included only

two or three studies, and study sample size was often small compared with typical studies of medications and health care interventions.

Implications for Future Research

Controlled trials with active military in theater are difficult to conduct for obvious reasons. Thus, most trials reported on training conducted before troops were deployed or interventions to decrease stress during reintegration or postdeployment. Perhaps due to lack of high-quality studies in military populations, the U.S. Department of Defense has discontinued some programs and interventions based on evidence from civilian populations. For example, individual CISM was discontinued after systematic reviews on civilians reported no evidence of efficacy (van Emmerik et al., 2002; Rose et al., 2002). Similarly, the Department of Defense has implemented some programs and interventions in theater based on studies reporting satisfaction, acceptability, and usability without evaluation of efficacy (Hourani et al., 2017; Jarrett, 2013).

Many controlled studies of COSC programs reported no significant effects. Studies that found positive significant effects could be replicated to increase the quality of evidence. These are described below.

Compared with no intervention, only one intervention, an app that assisted with progressive muscle relaxation and controlled breathing, reported significant improvement in anxiety level (Stetz et al., 2011). The app was tested during a simulated stressful event; it has not been studied in theater. Similarly, one study at a military base in Australia found that self-reflection training resulted in a statistically significant decrease in anxiety compared with coping skills training at a three-month follow-up (Crane et al., 2019). This intervention could be studied in active duty U.S. military.

Eye movement desensitization and reprocessing significantly reduced stress levels among law enforcement officers with subclinical stress in an RCT (Wilson et al., 2001). Eye movement desensitization and reprocessing could be studied in U.S. military personnel with subclinical stress levels after a traumatic event. The UK-developed TRiM program, based on psychological first aid, decreased help-seeking stigma compared with no intervention in two studies. One study involved police (Watson and Andrews, 2018) and the other military personnel (Gould, Greenberg, and Hetherington, 2007). A pilot study of the TRiM program could be conducted with U.S. military personnel.

No study of COSC versus no intervention found a significant difference in sleep-problem improvement. Interventions consisted of stress inoculation with biofeedback, mindfulness training, Battlemind, and resilience training. Another RAND systematic review on sleep problems in PTSD patients is under review; successful sleep-specific interventions could be studied with active duty military personnel with subthreshold stress.

Although return to duty was frequently reported, few studies of in-theater mental health systems reported psychological outcomes or the effect of specific mental health treatment

components. If possible, retrospective cohort studies should use official individual service member records to assess the effect of the amount and type of mental health services used during deployment on psychological measures. Ideally, these studies would report longitudinal postdeployment data on service use and psychological disorders.

Three comparative studies of interventions focused on homefront issues found mixed results (Baddeley and Pennebaker, 2011; Julian et al., 2018a; Pinna et al., 2017). Only four studies of other COSC programs reported marriage or family outcomes (McKibben et al., 2009; Sharpley et al., 2008; Sipos et al., 2012; Wilson et al., 2001). Future COSC studies should collect data on marriage and family outcomes using validated instruments.

Only one small study reported on performance of military tasks. The study was conducted in France, and the authors reported no significant difference in improvement in flight score after cognitive-adaptation training (Fornette et al., 2012). Studies of the effect of COSC programs on task performance are needed.

One only one study with a comparison group reported on absenteeism in a military population. The UK-developed TRiM process was associated with a reduction in sickness absence at one month, especially in more-junior ranks (Hunt et al., 2013). Studies of COSC should measure absenteeism, particularly among troops returned to duty after intervention.

Appendix A. Search Strategies

PsycINFO: English Only; NOT Editorial; Academic Journals Only; 1990–Present

(TI(“combat operational stress control” OR COSC OR “operational stress control and readiness” OR OSCAR OR “traumatic event management” OR “resilience training” OR “stress inoculation” OR “stress management” OR “coping skills training” OR “hardiness training” OR “ptsd prevention” OR “prevent ptsd” OR “psychological first aid” OR biofeedback OR “critical incident stress debriefing” OR “comprehensive soldier fitness program” OR CSF OR battlemind OR “captivity survival training” OR “counseling support cell” OR reconstitution OR restoration OR reconditioning OR “trauma risk management” OR TRIM OR “pre-exposure preparation*” OR “preexposure preparation*” OR “post-deployment reintegration” OR “postdeployment reintegration” OR “multi-disciplinary behavioural health” OR “multi-disciplinary behavioral health” OR “multidisciplinary behavioural health” OR “multidisciplinary behavioral health” OR multi-d OR “multi-disciplinary mental health” OR “multidisciplinary mental health” OR “Unit Marine Awareness and Prevention Integrated Training” OR “deployment cycle training” OR “operational stress control” OR OSC OR “mind body resilience training” OR MBRT OR “caregiver occupational stress control” OR CGOSC) OR (TI(“combat stress reaction*” AND TI(prevent* OR Treat*)) OR TI((“mental health” OR “behavioral health” OR “behavioural health”) AND embed*) OR ((TI(“behavioral health”) OR TI(“mental health”) OR TI(psyc*)) AND TI(deploy*)))

OR

(AB(“combat operational stress control” OR COSC OR “operational stress control and readiness” OR OSCAR OR “traumatic event management” OR “resilience training” OR “stress inoculation” OR “stress management” OR “coping skills training” OR “hardiness training” OR “ptsd prevention” OR “prevent ptsd” OR “psychological first aid” OR biofeedback OR “critical incident stress debriefing” OR “comprehensive soldier fitness program” OR CSF OR battlemind OR “captivity survival training” OR “counseling support cell” OR reconstitution OR restoration OR reconditioning OR “trauma risk management” OR TRIM OR “pre-exposure preparation*” OR “preexposure preparation*” OR “post-deployment reintegration” OR “postdeployment reintegration” OR “multi-disciplinary behavioural health” OR “multi-disciplinary behavioral health” OR “multidisciplinary behavioural health” OR “multidisciplinary behavioral health” OR multi-d OR “multi-disciplinary mental health” OR “multidisciplinary mental health” OR “Unit Marine Awareness and Prevention Integrated Training” OR “deployment cycle training” OR “operational stress control” OR OSC OR “mind body resilience training” OR MBRT OR “caregiver occupational stress control” OR CGOSC) OR (AB(“combat stress reaction*” AND

AB(prevent* OR Treat*)) OR AB(("mental health" OR "behavioral health" OR "behavioural health") AND embed*) OR ((AB("behavioral health") OR AB("mental health") OR AB(psyc*)) AND AB(deploy*))

AND

TI(Military OR Army OR Navy OR "Air force" OR Marines OR soldier* OR combat OR police OR policemen OR policeman OR policewoman OR policewomen OR fireman OR firemen OR firewoman OR firewomen OR "fire fighter" OR "fire fighters" OR "first responder" OR "first responders" OR EMT OR "emergency medical technician" OR "emergency medical technicians") OR AB(Military OR Army OR Navy OR "Air force" OR Marines OR soldier* OR combat OR police OR policemen OR policeman OR policewoman OR policewomen OR fireman OR firemen OR firewoman OR firewomen OR "fire fighter" OR "fire fighters" OR "first responder" OR "first responders" OR EMT OR "emergency medical technician" OR "emergency medical technicians")

PTSDPubs (formerly PILOTS): English Only; NOT Editorial; Academic Journals Only; 1990–Present

ab(("combat operational stress control" OR COSC OR "operational stress control and readiness" OR OSCAR OR "traumatic event management" OR "resilience training" OR "stress inoculation" OR "stress management" OR "coping skills training" OR "hardiness training" OR "ptsd prevention" OR "prevent ptsd" OR "psychological first aid" OR biofeedback OR "critical incident stress debriefing" OR "comprehensive soldier fitness program" OR CSF OR battlemind OR "captivity survival training" OR "counseling support cell" OR reconstitution OR restoration OR reconditioning OR "trauma risk management" OR TRIM OR "pre-exposure preparation*" OR "preexposure preparation*" OR "post-deployment reintegration" OR "postdeployment reintegration" OR "multi-disciplinary behavioural health" OR "multi-disciplinary behavioral health" OR "multidisciplinary behavioural health" OR "multidisciplinary behavioral health" OR multi-d OR "multi-disciplinary mental health" OR "multidisciplinary mental health" OR "deployment cycle training" OR "operational stress control" OR OSC OR "mind body resilience training" OR MBRT OR "caregiver occupational stress control" OR CGOSC)) OR ti(("combat operational stress control" OR COSC OR "operational stress control and readiness" OR OSCAR OR "traumatic event management" OR "resilience training" OR "stress inoculation" OR "stress management" OR "coping skills training" OR "hardiness training" OR "ptsd prevention" OR "prevent ptsd" OR "psychological first aid" OR biofeedback OR "critical incident stress debriefing" OR "comprehensive soldier fitness program" OR CSF OR battlemind OR "captivity survival training" OR "counseling support cell" OR reconstitution OR restoration OR reconditioning OR "trauma risk management" OR TRIM OR "pre-exposure preparation*" OR "preexposure preparation*" OR "post-deployment reintegration" OR "postdeployment reintegration" OR "multi-disciplinary behavioural health" OR "multi-disciplinary behavioral health"

health" OR "multidisciplinary behavioural health" OR "multidisciplinary behavioral health" OR multi-d OR "multi-disciplinary mental health" OR "multidisciplinary mental health" OR "deployment cycle training" OR "operational stress control" OR OSC OR "mind body resilience training" OR MBRT OR "caregiver occupational stress control" OR CGOSC))
 OR (**ab**((("Unit Marine Awareness" AND "Prevention Integrated Training") OR **ti**((("Unit Marine Awareness" AND "Prevention Integrated Training")) OR (**ab**((("combat stress reaction*" AND (prevent* OR Treat*)) OR **ti**((("combat stress reaction*" AND (prevent* OR Treat*))) OR (**ab**((("mental health" OR "behavioral health" OR "behavioural health") AND embed*) OR **ti**((("mental health" OR "behavioral health" OR "behavioural health") AND embed*)) OR (**ab**((("behavioral health") OR ("mental health") OR (psyc*)) AND (deploy*)) OR **ti**((("behavioral health") OR ("mental health") OR (psyc*)) AND (deploy*))

AND

ab(Military OR Army OR Navy OR "Air force" OR Marines OR soldier* OR combat OR police OR policemen OR policeman OR policewoman OR policewomen OR fireman OR firemen OR firewoman OR firewomen OR "fire fighter" OR "fire fighters" OR "first responder" OR "first responders" OR EMT OR "emergency medical technician" OR "emergency medical technicians") OR **ti**(Military OR Army OR Navy OR "Air force" OR Marines OR soldier* OR combat OR police OR policemen OR policeman OR policewoman OR policewomen OR fireman OR firemen OR firewoman OR firewomen OR "fire fighter" OR "fire fighters" OR "first responder" OR "first responders" OR EMT OR "emergency medical technician" OR "emergency medical technicians")

Cochrane (Reviews and Trials): English Only; Limited to 1990–Present

((("combat operational stress control" OR COSC OR "operational stress control and readiness" OR OSCAR OR "traumatic event management" OR "resilience training" OR "stress inoculation" OR "stress management" OR "coping skills training" OR "hardiness training" OR "ptsd prevention" OR "prevent ptsd" OR "psychological first aid" OR biofeedback OR "critical incident stress debriefing" OR "comprehensive soldier fitness program" OR CSF OR battlemind OR "captivity survival training" OR "counseling support cell" OR reconstitution OR restoration OR reconditioning OR "trauma risk management" OR TRIM OR "pre-exposure preparation*" OR "preexposure preparation*" OR "post-deployment reintegration" OR "postdeployment reintegration" OR "multi-disciplinary behavioural health" OR "multi-disciplinary behavioral health" OR "multidisciplinary behavioural health" OR "multidisciplinary behavioral health" OR multi-d OR "multi-disciplinary mental health" OR "multidisciplinary mental health" OR "deployment cycle training" OR "operational stress control" OR OSC OR "mind body resilience training" OR MBRT OR "caregiver occupational stress control" OR CGOSC):**ab**,**ti** OR ("Unit Marine Awareness" AND "Prevention Integrated Training"):ti,**ab**

OR

("combat stress reaction*" AND (prevent* OR Treat*)):ti,ab OR (("mental health" OR "behavioral health" OR "behavioural health") AND embed*):ti,ab OR (("behavioral health" OR "mental health" OR psyc*) AND deploy*):ti,ab)

AND

(Military OR Army OR Navy OR "Air force" OR Marines OR soldier* OR combat OR police OR policemen OR policeman OR policewoman OR policewomen OR fireman OR firemen OR firewoman OR firewomen OR "fire fighter" OR "fire fighters" OR "first responder" OR "first responders" OR EMT OR "emergency medical technician" OR "emergency medical technicians"):ti,ab

Appendix B. Evidence Table

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Adler et al., 2008 Study design: Cluster RCT Region of origin: U.S. Setting: Europe, in theater	Number enrolled: 1,004 Subjects: Army Population description: Peacekeepers stationed in Kosovo. CISD group was 96.2% male, 60.5% junior enlisted officers, 51.3% white, 41.7% married. Inclusion criteria: Not described—entire platoons randomized Exclusion criteria: None	CISD compared with a stress-management class and control group that received no intervention	• PTSD, PCL, 3–4 months, CISD versus survey only: SMD = -0.1 (CI = $-0.3, 0.1$) • PTSD, PCL, 3–4 months, CISD versus stress-management class: SMD = -0.02 (CI = $-0.21, 0.17$) • Alcohol use, AUDIT, 3–4 months, CISD versus survey only: SMD = 0.28 (CI = $0.08, 0.48$) • Alcohol use, AUDIT, 3–4 months, CISD versus stress-management class: SMD = 0.28 (CI = $0.09, 0.47$) • Depression, Center for Epidemiological Studies Depression scale, 3–4 months, CISD versus survey only: SMD = 0.02 (CI = $-0.18, 0.22$) • Depression, Center for Epidemiological Studies Depression scale, 3–4 months, CISD versus stress-management class: SMD = 0.04 (CI = $-0.15, 0.23$) • Stress, SUDS, postintervention, CISD versus survey only: SMD = -0.27 (CI = $-0.43, -0.11$) • Stress, SUDS, postintervention, CISD versus stress-management class: SMD = 0.09 (CI = $-0.07, 0.24$) • Physiological arousal, heart rate, postintervention, CISD versus survey only: SMD = -0.53 (CI = $-0.69, -0.36$) • Physiological arousal, heart rate, postintervention, CISD versus stress-management class: SMD = 0.18 (CI = $0.02, 0.33$) • PTSD, PCL, 8–9 months, CISD versus survey only, SMD = -0.01 (CI = $-0.33, 0.30$) • PTSD, PCL, 8–9 months, CISD versus

Study Details	Participants	Intervention/Treatment	Outcome
			stress-management class: SMD = -0.01 (CI = -0.30, 0.28) - Depression, Center for Epidemiological Studies Depression scale, 8–9 months, CISD versus survey only: SMD = 0.02 (CI = -0.29, 0.34) - Depression, CESD, 8–9 months, CISD versus stress-management class: SMD = 0.02 (CI = -0.27, 0.30)
Author, year: Adler et al., 2015 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., basic training	Number enrolled: 1,940 Subjects: Army Population description: 62% male; 88% male; 5.5% bachelor's degree or higher; 47% Army National Guard or Army Reserves Inclusion criteria: Active duty U.S. soldiers in two basic combat training brigades Exclusion criteria: Not applicable	Resilience training condition: Training occurred in 1-hour blocks separated by 1–2 days during the first week of basic combat training; military history. Control received military history training.	- Anxiety, GAD-7, 8 weeks: SMD = 0.05 (CI = -0.04, 0.13) - Depression, PHQ-D, 8 weeks: SMD = 0.09 (CI = 0.00, 0.18) - Sleep problems, 4-item scale, 8 weeks: SMD = -0.02 (CI = -0.11, 0.07) - Found training satisfying, useful, interesting, and relevant, 10-item measure, postintervention: Overall, more soldiers rated resilience training as helpful, a source of cohesion, and relevant than did those in the military history condition
Author, year: Arnetz et al., 2009 Study design: RCT—individuals randomized Region of origin: Europe Setting: Europe, unclear setting	Number enrolled: 25 Subjects: Law enforcement Population description: Healthy, young, male police officers with 1 year of experience on a Swedish police force Inclusion criteria: Rookie police officers on a Swedish police force who participated in a live, lifelike critical incident simulation involving the reenactment of a post office robbery Exclusion criteria: None	10-week imagery training program included an initial psychoeducational session followed by 10 weekly, 2-hour, small-group (10 or fewer participants) sessions consisting of relaxation and imagery training with mental skill rehearsal. Comparison group received training as usual.	- Stress, visual analog scale, postsimulation: SMD = -2.19 (CI = -3.44, -0.94) - Performance, performance composite score, postsimulation: SMD = 1.20 (CI = 0.16, 2.24) - Mood, Profile of Mood States (negative mood composite), postsimulation: SMD = -1.05 (CI = -2.07, -0.03) - Physiological arousal, cortisol, postsimulation: SMD = 1.13 (CI = 0.10, 2.16) - Physiological arousal, heart rate, during simulation: SMD = -6.97 (CI = -9.74, -4.20) - Physiological arousal, heart rate, postsimulation: SMD = 0.18 (CI = -0.76, 1.13)

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Baddeley and Pennebaker, 2011 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 206 Subjects: Army Population description: White ($n = 134$), Hispanic ($n = 35$), African American ($n = 28$), Asian ($n = 4$), or other or not reporting ($n = 5$); mean age = 32 years; 72 had at least a 4-year college degree Inclusion criteria: Active duty Army returning to Fort Hood after deployment. Minimum age = 18; married at least 1 year. Exclusion criteria: Plans to redeploy within 2 months, suicidal, or in treatment for a major psychiatric disorder	Expressive-writing instructions were “to write about one’s deepest thoughts and feelings.” Control writing instructions were to describe one’s physical health activities.	• Marital satisfaction, Relationship Assessment Scale, 1 month: Couples whose soldier had more combat exposure were lower in marital satisfaction at 1 month; couples in which the soldier was in the expressive intervention had greater marital satisfaction at 1 month; combat exposure by soldier topic interaction was significant • Depression, PHQ, 1 month, 6 months: No significant effect of condition on physical symptoms or depression emerged at either time
Author, year: Biggs, 2016 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 126 Subjects: Army Population description: Mean age = 28.1, 68% male, 57.6% White, 55.2% had at least some college or technical school, 62.4% married, 43.5% had children, 98.4% were enlisted. Inclusion criteria: U.S. Army mortuary affairs soldiers were given the opportunity to volunteer for a TEAM study approximately 1 month after returning from deployment to the Middle East. Recruited in 10 cohorts over 5 years. Exclusion criteria: None	TEAM is an intervention based on psychological first aid principles enlightened by skills for psychological recovery, CBT, Battlemind training, and early combined collaborative care. There were 4 2-hour group sessions 2, 3, 4, and 7 months after deployment with access to informational materials, including handouts, websites, email, and phone line service.	• PTSD, PCL-17, 10 months: There was no significant difference in PCL between the groups throughout the 6 time points; there was a significant time-by-treatment interaction at months 2 and 3 • Depression, PHQ-9, 10 months: There was no significant difference in PHQ-9 between the groups through the 6 time points, nor was there an interaction of time and treatment • Helpfulness, questionnaire, 10 months: 88.7% reported that the TEAM training was helpful
Author, year: Bobrow et al., 2013 Study design: Case series or case study Region of origin: U.S. Setting: U.S., other: retreats	Number enrolled: 347 Subjects: Army, Navy, Marine Corps Population description: Majority of participants between 25 and 35 years old. White (34%), Latino (17%), African American (12%), Asian/Pacific Islander (9%), and other/mixed (11%). Army (56%), Navy (16%), Air Force (13%), and Marine Corps (17%). Inclusion criteria: Served in Iraq or Afghanistan and attended 1 of 4 military-family retreats in May, June, July, and August 2010 in Washington, D.C.; San Diego, Calif.; Santa Rosa, Calif.; and San Antonio, Tex. No other criteria mentioned. Exclusion criteria: None	The Coming Home Project: Retreats emphasize self-care and resilience practices to alleviate compassion fatigue and vicarious trauma and burnout and provide a space to tend to and transform the invisible injuries of caring for warriors and their families.	• Anxiety, investigator-developed evaluation instrument, postintervention, military-family retreat versus baseline: $SMD = -0.93$ ($CI = -1.15, -0.71$) • Anxiety, investigator-developed evaluation instrument, 1–2 months: $SMD = -0.65$ ($CI = -0.87, -0.44$) • Anxiety, investigator-developed evaluation instrument, postintervention, female-only retreat versus baseline: $SMD = -0.96$ ($CI = -1.39, -0.53$) • Anxiety, investigator-developed evaluation instrument, postintervention, service-provider retreat versus baseline: $SMD = -1.19$ ($CI = -1.46, -0.93$)

Study Details	Participants	Intervention/Treatment	Outcome
			- Stress, investigator-developed evaluation instrument, postintervention, military-family retreat versus baseline: SMD = -1.55 (CI = -1.79, -1.31) - Stress, investigator-developed evaluation instrument, 1-2 months: SMD = -0.72 (CI = -0.94, -0.51) - Stress, investigator-developed evaluation instrument, postintervention, female-only retreat versus baseline: SMD = -1.55 (CI = -2.02, -1.08) - Stress, investigator-developed evaluation instrument, postintervention, service-provider retreat versus baseline: SMD = -2.23 (CI = -2.54, -1.91)
Author, year: Bouchard et al., 2012 Study design: RCT—individuals randomized Region of origin: Canada Setting: Canada, military base, not in theater	Number enrolled: 59 Subjects: Army Population description: Valcartier military base, Canada, all male, mean age = 24.9, 68% single, 62% prior combat experience Inclusion criteria: Prior enrollment in a basic stress-management program and basic first-aid training Exclusion criteria: Vestibular problems, recurrent migraines, epilepsy, postural balance problems, cardiac or ocular problems, or frequent and intense motion sickness in transport	The Stress Management Training program, taken from U.S. Comprehensive Soldier Fitness, required participants to wear a system that monitored heart rate and skin conductance while playing for 30 minutes a modified version of a 3D first-person shooter game. The immersive and biofeedback training was delivered inside two military ambulances located in the medical simulation center. The control group received no training.	- Physiological arousal, salivary cortisol, postsimulation: SMD = -0.35 (CI = -0.97, 0.27) - Physiological arousal, heart rate, during simulation: SMD = 0.09 (CI = -0.53, 0.70)
Author, year: Bryan and Morrow, 2011 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in-theater	Number enrolled: 192 Subjects: Air Force Population description: Male (89.6%), Caucasian (61.5%), African American (18.2%), Hispanic/Latino (12.0%), Asian/Pacific Islander (3.1%), and other (5.2%); average age = 24.47 (range = 18 to 43). Inclusion criteria: U.S. Air Force Security Forces (personnel charged with conducting security patrols and other combat related duties as part of a quick reaction force	Defender's Edge adopted a strengths-based philosophy and integrated a psychologist in theater to implement interventions that promote resilience and health and to mitigate psychological health issues and morbidity both during and after deployment. Skills training was conducted in 5 30-minute modules.	- Acceptability, questionnaire, postintervention: Participants rated Defender's Edge curriculum as helpful for completing their mission, easy to understand, relevant to their mission, and worthwhile. - Two-thirds to three-quarters agreed or strongly agreed that they would recommend the program to friends and that Defender's Edge should be fully integrated into combat-specific training

Study Details	Participants	Intervention/Treatment	Outcome
	mission while deployed to Iraq. Exclusion criteria: NA		and more-generalized career training.
Author, year: Bush, Ouellette, and Kinn, 2014 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 8 Subjects: Army Population description: 63% male, 75% Caucasian, 63% married, 50% some postsecondary education, 50% E-5–E-9. Inclusion criteria: Residents of a Warrior Transition Unit (WTU) enrolled in behavior health treatment. Exclusion criteria: None	T2 Mood Tracker is a mobile app that allows users to rate their moods, report to health care providers, and track their symptoms.	• All subjects rated the app “somewhat” or “very” easy to use • Seven found it worthwhile and beneficial; six would recommend to others
Author, year: Cacioppo et al., 2015 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 1,138 Subjects: Army Population description: Mean age = 24 years (range = 18 to 42), and average length of Army service = 4.5 years (range = 1 to 24 years) Inclusion criteria: None Exclusion criteria: None	Social resilience training to improve maladaptive social cognition and loneliness (intervention condition) or Afghanistan cultural awareness training	• Anxiety, Interaction Anxiousness Scale, postintervention: SMD = 0.04 (CI = –0.12, 0.21) • Depression, PHQ-9, postintervention: SMD = –0.03 (CI = –0.19, 0.14) • Stress, PSS, postintervention: SMD = –0.10 (CI = –0.26, 0.07) • Sleep quality, Pittsburgh Sleep Quality Index, postintervention: SMD = 0.06 (CI = –0.11, 0.22) • Alcohol misuse, Two-Item Conjoint Screen, postintervention: SMD = –0.11 (CI = –0.27, 0.06)
Author, year: Carlier, Voerman, and Gersons, 2000 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, unclear	Number enrolled: 243 Subjects: Law enforcement Population description: 90% patrol officers, 5% supervisors, 5% detectives, 93% from the Netherlands, 71% male officers Experimental group: Mean age = 28.9; mean years of experience = 5.1 Internal control group: Mean age = 31.7, mean years of experience = 8.7. Inclusion criteria: Police officers in the Netherlands, recently exposed to a traumatic event Exclusion criteria: None	CISD is a preventive intervention that takes place 1 day, 1 month, and 3 months after experiencing a potentially traumatic event to talk through what happened. The external control group consists of police officers with trauma exposure from before debriefing was proposed in 1992. The internal control group consists of police officers who refused a debriefing session.	• Anxiety, STAI-State Anxiety, 1-day posttrauma (first debriefing): SMD = –0.14 (CI = –0.44, 0.17) • PTSD (reexperiencing), Self-Rating Scale for PTSD (SRS-PTSD), 1-week posttrauma, Debriefing internal versus no-debriefing external control, SMD = 0.47 (CI = 0.15, 0.78) • PTSD (re-experiencing), Self-Rating Scale for PTSD, 1 week posttrauma, debriefing internal versus no debriefing—internal control: SMD = 0.29 (CI = –0.01, 0.60) • PTSD (avoidance), Self-Rating Scale for PTSD, 1 week posttrauma, debriefing internal versus no debriefing—external

Study Details	Participants	Intervention/Treatment	Outcome
			control: SMD = -0.28 (CI = -0.59, 0.03) - PTSD (avoidance), Self-Rating Scale for PTSD, 1 week posttrauma, debriefing internal versus no debriefing—internal control: SMD = 0.15 (CI = -0.15, 0.45) - PTSD (hyperarousal), Self-Rating Scale for PTSD, 1 week posttrauma: SMD = 0.16 (CI = -0.14, 0.47) - PTSD, Self-Rating Scale for PTSD, 6 months posttrauma: There are no longer any significant differences between the comparison groups - Sick leave and work resumption: No significant differences between groups could be established at any of the assessment points - Satisfaction, postintervention: 98% were satisfied with the first and second debriefing sessions (24 hours and 1 month posttrauma), and 2% were satisfied to a degree; 88% were satisfied with the third session (3 months posttrauma)
Author, year: Carr et al., 2013 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in-theater	Number enrolled: 391 Subjects: Army, Navy Population description: Army and Navy personnel; a range of military occupations and ranks; less than 10% female; demographic characteristics were not gathered Inclusion criteria: U.S. Army and Navy personnel assigned to a detention facility in Afghanistan Exclusion criteria: Not reported	Over a 12-week period in 2010, all personnel received structured weekly resilience training overseen by a certified MRT trainer.	- Job performance, 30-item locally created measure, postintervention: SMD = 0.13 (CI = -0.09, 0.35) - Stress, 30-item locally created measure, postintervention, SMD = -0.08 (CI = -0.30, 0.14) - Usability/helpfulness, 30-item locally created measure, postintervention: 9 of the 30 behaviors showed ≥25% increase in reported use following MRT; none showed commensurate improvement in reported helpfulness of the behavior following MRT
Author, year: Castro et al., 2012; Adler et al., 2009 Study design: Cluster RCT Region of origin: U.S. Setting: In-theater	Number enrolled: 1,645 Subjects: Army Population description: U.S. soldiers in a brigade combat team: 96% male, 60.89% with E-1–E-4 rank Inclusion criteria: Active duty U.S. soldiers	This Battlemind training module was designed to enhance soldier mental-skills development, adaptation to the stressors of combat, and management of the transition	- PTSD, PCL, 6 months: SMD = -0.29 (CI = -0.46, -0.12) - Depression, PHQ-D, 6 months: SMD = -0.21 (CI = -0.38, -0.04) - Stigma about help-seeking, 5-item stigma scale, 6 months: SMD = -0.04 (CI = -

Study Details	Participants	Intervention/Treatment	Outcome
	in a brigade combat team who had returned from a 12-month combat deployment to Iraq 4 months earlier Exclusion criteria: Under age 18	from combat to home. Another group received a Battlemind debriefing. A third group received standard stress education.	0.21, 0.13) - PTSD, PCL, 4 months, Battlemind debriefing versus stress education: SMD = -0.07 (CI = $-0.25, 0.10$) - PTSD, PCL, 4 months, Battlemind training (small group) versus stress education: SMD = -0.05 (CI = $-0.22, 0.12$) - PTSD, PCL, 4 months, Battlemind training (large group) versus stress education: SMD = -0.11 (CI = $-0.29, 0.06$) - Depression, PHQ-D, 4 months, Battlemind debriefing versus stress education: SMD = -0.16 (CI = $-0.33, 0.01$) - Depression, PHQ-D, 4 months, Battlemind training (small group) versus stress education: SMD = -0.07 (CI = $-0.24, 0.10$) - Depression, PHQ-D, 4 months, Battlemind training (large group) versus stress education: SMD = -0.21 (CI = $-0.38, -0.04$) - Stigma about help-seeking, 5-item stigma scale, 4 months, Battlemind debriefing versus stress education: SMD = -0.04 (CI = $-0.21, 0.14$) - Stigma about help seeking, 5-item stigma scale, 4 months, Battlemind training (small group) versus stress education: SMD = 0.00 (CI = $-0.17, 0.17$) - Stigma about help-seeking, 5-item stigma scale, 4 months, Battlemind training (large group) versus stress education: SMD = -0.15 (CI = $-0.32, 0.03$) - Sleep problems, 4-item questionnaire, 4 months, Battlemind debriefing versus stress education: SMD = -0.02 (CI = $-0.19, 0.16$) - Sleep problems, 4-item questionnaire, 4 months, Battlemind training (small group) versus stress education: SMD = -0.07 (CI = $-0.25, 0.10$)

Study Details	Participants	Intervention/Treatment	Outcome
			- Sleep problems, 4-item questionnaire, 4 months, Battlemind training (large group) versus stress education: SMD = -0.04 (CI = $-0.22, 0.13$) - Session utility, goals, and atmosphere, 10-item measure, postintervention: The majority receiving Battlemind Training agreed or strongly agreed that the training was clear and taught them how to prevent transition problems
Author, year: Cigrang, Todd, and Carbone, 2000 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 178 Subjects: Air Force Population description: Entry-level military trainees referred for a psychological evaluation from Air Force basic training and recommended for return to duty; 65 women and 113 men, mean age = 20.1 years, range = 17 to 31 years, 75% White, 62% diagnosed with adjustment disorder Inclusion criteria: Referred for a psychological evaluation and recommended for return to duty Exclusion criteria: Not applicable	Two 90-minute stress-management classes were held on separate days versus usual care. The classes provided education and practice in relaxation training, problem-solving, and self-instruction skills consistent with a stress-inoculation training model.	Graduation rate: Treatment and control group participants did not differ in basic training graduation rate
Author, year: Crane et al., 2019 Study design: Cluster RCT Region of origin: Australia/New Zealand Setting: Australia/New Zealand, other: military academy	Number enrolled: 226 Subjects: Army Population description: 16.9% female, mean age = 22, mean time served = 2.4 years, 51% working toward a degree at the Australian Defense Force, 6% of cadets were from foreign militaries Inclusion criteria: Second-class soldiers enrolled at Australian Royal Military College Exclusion criteria: None	Self-reflection training group versus coping-skills training. The self-reflection training group received a 30-minute brief and completed a 15-minute guided self-reflection writing task each week for 5 weeks. In the 30-minute introduction to coping-skills training, participants learned about deep breathing, grounding, resilience, and distorted thinking. Coping-skills training participants had free time when self-reflection training participants were completing their writing task.	- Stress, perceived stressor frequency, 3 months: SMD = -0.47 (CI = $-0.74, -0.20$) - Anxiety, GAD-7, 3 months: SMD = -0.7 (CI = $-0.97, -0.42$) - Depression, PHQ-8, 3 months: SMD = -0.56 (CI = $-0.83, -0.29$) - Stress, perceived stressor frequency, 4 weeks: SMD = -0.74 (CI = $-1.01, -0.47$) - Anxiety, GAD-7, 4 weeks: SMD = -0.25 (CI = $-0.52, 0.01$) - Depression, PHQ-8, 4 weeks: SMD = 0.00 (CI = $-0.26, 0.27$)

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Deahl et al., 1994 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Middle East, in-theater, military base	Number enrolled: 74 Subjects: Army Population description: Not described Inclusion criteria: UK soldiers serving with the Army War Grave Service in the Gulf War Exclusion criteria: None	Psychological debrief with an educational portion describing PTSD and resources for those who want to get help	• Distress, GHQ-28, 9 months postdeployment: SMD = 0.04 (CI = -0.49, 0.58) • PTSD (intrusion and avoidance), Impact of Events Scale, 9 months postdeployment: SMD = -0.19 (CI = -0.72, 0.35) • Helpfulness, questionnaire, 9 months postdeployment: 50% of the 40 debriefed soldiers who provided additional information found the intervention helpful
Author, year: Deahl et al., 2000 Study design: RCT—individuals randomized Region of origin: Europe Setting: Europe, in theater	Number enrolled: 106 Subjects: UN peacekeepers in then-Yugoslavia Population description: Among the debriefed, median age = 24, median years of service = 5; among the nondebriefed, median age = 24, median years of service = 6 Inclusion criteria: UK military personnel scheduled for a 6-month deployment to Bosnia Exclusion criteria: None	A psychological debrief 2–3 days after exposure to trauma allows soldiers to properly process their experience.	• Alcohol misuse, CAGE > 2, 3 months: RR = 1.11 (CI = 0.36, 3.44) • Alcohol misuse, CAGE > 2, 6 months: RR = 0.51 (CI = 0.21, 1.24) • Alcohol misuse, CAGE > 2, 12 months: RR = 0.21 (CI = 0.05, 0.90) • Anxiety and depression, Hospital Anxiety and Depression Scale, 6 months: Hospital Anxiety and Depression Scale scores in the nondebriefed group were significantly higher than the debriefed group, which decreased • PTSD (intrusion and avoidance), Impact of Events Scale, 6 months: There was a small but significant reduction in Impact of Events Scale scores in the nondebriefed group but no change in the debriefed group • Mental health, Symptom Checklist–90, 6 months: Symptom Checklist–90 scores were elevated in the debriefed group and reduced in the nondebriefed group at 6 months, but there were no differences at 1 year • PTSD, PTSS-10, 6 months: The difference between groups was not significantly different between groups at any time • Alcohol misuse, CAGE, 6 months: The difference between groups was not significantly different between groups at

Study Details	Participants	Intervention/Treatment	Outcome
			any time
Author, year: Eid, Johnsen, and Weisaeth, 2001 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, not in theater	Number enrolled: 18 Subjects: Military personnel and civilian firefighters Population description: 100% male; military: 78% conscripts, 22% officers; firefighters: 33% full time, 67% volunteer Inclusion criteria: Military personnel and firefighters who were at the scene of a car crash involving victims with severe injuries Exclusion criteria: None	Both groups received counseling and standard debriefing. One group also received group psychological debriefing for 2.5 hours after participating in the rescue operation of a serious accident.	• Problem-focused coping, Coping Styles Questionnaire, 2 weeks: SMD = -0.54 (CI = -1.50, 0.42) • Emotion-focused coping, Coping Styles Questionnaire, 2 weeks: SMD = 0.17 (CI = -0.77, 1.11) • Avoidance-focused coping (maladaptive), Coping Styles Questionnaire, 2 weeks: SMD = -0.61 (CI = -1.58, 0.35) • PTSD (intrusion, avoidance), Impact of Event Scale, 2 weeks: SMD = -0.60 (CI = -1.57, 0.36) • PTSD, PSS1-10, 2 weeks: SMD = -1.22 (CI = -2.26, -0.17) • Psychological adjustment/quality of life, GHQ-30, 2 weeks: SMD = -0.09 (CI = -1.03, 0.85)
Author, year: Ellsworth et al., 1993; Holsenbeck, 1992 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 87 Subjects: Army Population description: Soldiers serving in Operation Desert Shield; demographic data not provided; 84% active Army, 9% Army Reserves, 7% National Guard Inclusion criteria: Soldiers referred to Combat Stress Control program during November and December 1990 in Operation Desert Shield Exclusion criteria: None	Occupational therapy included as part of the 582th Medical Detachment (Psychiatry) during Operation Desert Shield	• Returned to duty, postintervention: 96.5%
Author, year: Fertout, Jones, and Greenberg, 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, other: decompression facility in Cyprus	Number enrolled: 250 Subjects: UK military personnel, all branches Population description: 52% individual augmentees, 48% formed units; individual augmentees: 91% male, 98% combat, 20% junior rank; formed units: 95% male, 66% noncombat, 39% junior rank. Inclusion criteria: UK military personnel after deployment in Afghanistan Exclusion criteria: None	Third-location decompression is for military personnel after deployment to decompress in a location different from their home country and deployment country.	• Usefulness, survey, postintervention: 78% of individual augmentees and 84% of formed unit personnel found the intervention useful or a little useful

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Foran et al., 2013 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S., Canada, Europe, Australia/New Zealand Setting: U.S., Canada, Europe, Australia/New Zealand: compared in-theater, military base and third-location decompression facility in Cyprus	Number enrolled: 14,150 Subjects: Army, Navy, Air Force, civilian Population description: Canada: 91.7% male, mean age = 32.8, mean years of service = 11.8, 68.8% junior rank, 18.3% senior, 12.9% officer, 81.4% Army, 3.3% Navy, 13% Air Force, 2.3% civilian, sample size = 12,122; UK: 98.9% male, mean age = 27.2, mean years of service = 7.8 Inclusion criteria: Military personnel from 4 countries Exclusion criteria: None	Postdeployment training was compared among U.S., Canada, New Zealand, and UK. Canada: U.S. Battlemind training video was shown during third-location decompression with discussion in Cyprus. New Zealand: transition program involved group psychological debriefing before leaving deployment at East Timor. UK: Battlemind training and other modules were used during third-location decompression in Cyprus. U.S.: Core elements of Battlemind were presented in a PowerPoint 4 months after deployment.	Satisfaction, questionnaire, postintervention: More than 70% of military personnel across the 4 nations reported satisfaction with the training
Author, year: Fornette et al., 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, other: French flying school	Number enrolled: 22 Subjects: French Air Force Population description: Mean age = 22 years, standard deviation = 1.27 years; no other information provided Inclusion criteria: Cadets who participated in a 7-month training Exclusion criteria: None	Cognitive adaption training consisted of 6 2-hour sessions that focused on becoming aware of mental processes.	- Performance, Flight Score, postintervention: SMD = 0.07 (CI = -0.80, 0.94) - Perceived stress change, questionnaire, postintervention: RR = 4.4 (CI = 0.59, 33.07) - Mood, Profile of Mood States, postintervention: No significant group effect or interaction was observed for overall mood scores - Anxiety, STAI-State Anxiety, postintervention: No significant group effect or interaction was observed - Usability, questionnaire, postintervention: 70% of the cadets deemed that cognitive-adaptation training reduced stress
Author, year: Frappell-Cooke et al., 2010 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, Middle East, in-theater and military base,	Number enrolled: 180 Subjects: UK Army, UK Royal Marines Population description: UK Royal Marines: 67% 18–24 years old, 14% no qualifying education, 43% O level, 27% A level, 16% degree, 78% junior rank, 16% junior NCO, 3% senior NCO, 2% officer;	TRiM is a peer-led intervention that provided psychological assessment and education after exposure to trauma. A company of Army personnel during their beginning stages of implementing TRiM were	- Distress (caseness), GHQ-12 ≥ 4, during deployment: RR = 1.17 (CI = 0.54, 2.53) - Distress (caseness), GHQ-12 ≥ 4, postdeployment: RR = 0.30 (CI = 0.08, 1.21) - PTSD (caseness), PCL-C ≥ 50, during deployment: RR = 0.29 (CI = 0.03, 2.71)

Study Details	Participants	Intervention/Treatment	Outcome
not in theater	Army: 59% 18–24 years old, 24% no qualifying education, 51% education, 11% A level, 12% degree Inclusion criteria: Royal Marines and Army members who deployed to Afghanistan in 2007 Exclusion criteria: None	compared with a company of Royal Marines who had already been implementing TRiM.	PTSD (caseness), PCL-C $\geq$ 50, postdeployment: RR = 0.51 (CI = 0.03, 7.90)
Author, year: Gahm et al., 2009 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 7,880 Subjects: Army Population description: 89% male, 89% enlisted, 8.5% officers, 2% warrant officers, mean age = 26.95. Inclusion criteria: Soldiers who completed the Soldier Wellness Assessment Program (SWAP) between January 2007 and November 2007 Exclusion criteria: None	SWAP is an in-person program that evaluates the needs of soldiers by health care providers after deployment.	- Comfortable seeking mental health help, questionnaire, postintervention: RR = 1.18 (CI = 1.15, 1.22) - Helpfulness, questionnaire, postintervention: 67% found the health assessment process helpful
Author, year: Gambardella, 2008 Study design: Case series or case study Region of origin: U.S. Setting: U.S., other: therapy clinic	Number enrolled: 10 Subjects: Army Population description: 100% male; 55% Caucasian, 35% African American, 10% Hispanic; 10% one child, 20% 2 children, 20% 3 children, 10% 4 children, 40% no children Inclusion criteria: Military personnel and their civilian spouses experiencing marital issues Exclusion criteria: None	Couples counseling with the integration of role-exit theory after a partner returns from deployment: Role-exit involves disassociating oneself with a role and incorporating a new role into one's identity.	Marital relationship, questionnaire, postintervention: 6 of the 10 couples self-reported improvement in the marital relationship following intervention
Author, year: Garber and Zamorski, 2012 Study design: Case series or case study Region of origin: Canada Setting: Europe, other: third-location decompression in Cypress	Number enrolled: 3,473 Subjects: Canadian Armed Forces Population description: At baseline, 91% male; 30% 26 or younger, 40% 27–36, 30% 37 or older; 88% English as first language, 12% French; 58% married; 70% junior rank, 18% senior rank, 13% officer Inclusion criteria: Members of the Canadian Armed Forces that completed third-location decompression in Cyprus after deployment in Kandahar Exclusion criteria: None	Third-location decompression gives service members the opportunity to decompress 5 days in a location different from their home country and deployment country before returning home. Third-location decompression consists of psychoeducation and relaxing activities.	- Satisfaction, questionnaire, postintervention: 95% agreed that some form of third-location decompression is a good idea; 90% agreed that letting off steam before going home is a good idea; 81% of respondents felt that third-location decompression was a valuable experience for them; 91% felt that it was a valuable experience for others; 83% would recommend third-location decompression for future rotations to Afghanistan - Satisfaction, questionnaire, 4–6 months: The perceived value of third-location decompression still remained strong

Study Details	Participants	Intervention/Treatment	Outcome
			postdeployment, with 81% indicating that it was a valuable experience for me, 89% responding that it was valuable for others, and 84% recommending the third-location decompression for future rotations
Author, year: Garner, 2008 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., other: regional academy	Number enrolled: 63 Subjects: Law enforcement Population description: Texas law enforcement officers—demographic information was not provided Inclusion criteria: Not applicable Exclusion criteria: Not applicable	A 16-hour stress-inoculation training program and 2 subsequent 1-hour booster sessions were compared with a group training on criminal and civil law. A third group received no training.	• Sick days/duration of illness, archival data, 3 months: Sick days and duration of illness were not significantly different • Stress, perceived level of stress, 1 month: There was a significant difference between group 1 (intervention) and the other 2 groups • Performance, performance rating, 1 month, there was a significant difference between group 1 (intervention) and the other two groups
Author, year: Gould, Greenberg, and Hetherington, 2007 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, military base, not in theater	Number enrolled: 124 Subjects: UK Army, Royal Navy, Royal Marines Population description: 80% Royal Marines, 10% Army, 10% Royal Navy; 35% ranked lance corporal, 19.4% corporal, 9% class 2 warrant officers; 97% male; mean age = 30; mean service length = 10 years Inclusion criteria: UK Royal Navy, Royal Marines, and Army recruited from three bases in England and one in Scotland Exclusion criteria: None	TRiM training versus control no training: TRiM is a peer-led intervention that provides psychoeducation and identifies at-risk individuals.	• Mental health, GHQ-28, 1 month: SMD = -0.53 (CI = -0.96, -0.10) • Help-seeking attitude from normal support, Help-Seeking Stigma Questionnaire, 1 month: SMD = 0.58 (CI = 0.15, 1.01) • Help-seeking attitude from TRiM practitioners, Help-Seeking Stigma Questionnaire, 1 month: SMD = 1.21 (CI = 0.75, 1.68)

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011 Study design: Cluster RCT Region of origin: Europe Setting: Ship	Number enrolled: 1,559 Subjects: Navy Population description: 90% male, 45% married, 7% divorced, 47.5% single, 12% officer, 22% senior NCO, 66% junior NCO, 18% 20 and younger, 31% ages 21–25, 17% ages 26–30, 14% ages 31–35, 21% age 36 or older. Inclusion criteria: Royal Navy personnel Exclusion criteria: None	TRiM is a peer-led intervention that takes place after trauma exposure and involves psychological assessment. TRiM was compared with standard care.	• Mental health, GHQ-12, 12–18 months: SMD = 0.01 (CI = –0.10, 0.12) • PTSD, PCL-C, 12–18 months: SMD = –0.03 (CI = –0.14, 0.08) • Internal stigma, questionnaire, 12–18 months: SMD = 0.13 (CI = 0.02, 0.24) • PTSD (caseness), PCL-C $\geq$ 50: OR = 0.66 (CI = 0.43, 1.00) • Mental health caseness, GHQ-12 $\geq$ 4, OR = 0.69 (CI = 0.56, 0.88) • Acceptability, semistructured interview, 12–18 months: The majority (81%) of personnel who were aware of TRiM ($n = 43$) were supportive of its aims
Author, year: Griffith and West, 2013 Study design: Case series or case study Region of origin: U.S. Setting: U.S., other: university campus	Number enrolled: 611 Subjects: Army Population description: 75% male, 48.7% over 38 years old, all rank E-5 or higher Inclusion criteria: Army National Guard soldiers Exclusion criteria: Not applicable	MRT is part of Comprehensive Soldier Fitness. MRT21 consists of 4 modules of instruction taught over a period of about 1 week. The content and format of each module instructs students in 6 core competencies: connection, optimism, mental agility, self-awareness, self-regulation, and character strength.	• Resilience competencies—connection, Resilience Competency Scale: SMD = 6.88 (CI = 6.75, 7.02) • Resilience competencies—optimism, Resilience Competency Scale: SMD = 6.70 (CI = 6.57, 6.83) • Resilience competencies—mental agility, Resilience Competency Scale: SMD = 6.43 (CI = 6.30, 6.56) • Resilience competencies—self-awareness, Resilience Competency Scale: SMD = 6.48 (CI = 6.35, 6.62) • Resilience competencies—self-regulation, Resilience Competency Scale: SMD = 4.41 (CI = 4.28, 4.54) • Resilience competencies—character strengths, Resilience Competency Scale: SMD = 6.85 (CI = 6.72, 6.99) • Helpfulness, questionnaire, NR: 90% or more of the respondents rated the training as very helpful or helpful

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Haney and Gray, 2007 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., University of Health Sciences	Number enrolled: 370 Subjects: U.S. military physicians Population description: 56 trained in psychiatry and 54 trained in internal medicine; no demographic data Inclusion criteria: Military physicians who graduated from the University of Health Sciences after 1980 and received specialized training in psychiatry, internal medicine, or both; less than 1/3 had been deployed Exclusion criteria: None	Physicians who participated in Training Psychotherapy Experience while receiving professional training for their degrees compared with MDs who did not	Retention rate: RR = 0.96 (CI = 0.69, 1.34)
Author, year: Hassan et al., 2010 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: Unknown Subjects: Army Population description: Not described Inclusion criteria: Army personnel who were part of OIF between January and June 2004 Exclusion criteria: None	An Air Force combat stress control and prevention team was integrated into Army units to provide prevention and treatment for combat operational stress, which consisted of evaluations, psychoeducation, and consultations while promoting resiliency. The team consisted of a licensed social worker, psychiatrist (MD), and two behavioral health specialists (paraprofessional allied health workers).	Return to duty, postintervention: 95%
Author, year: Haase et al., 2016 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 42 Subjects: Marine Corps Population description: Mindfulness-Based Mind Fitness Training: mean age = 22.35; mean years of education = 12.37; control: mean age = 20.81; mean years of education = 12.0 Inclusion criteria: Marines from two infantry battalions expected to complete training before deployment Exclusion criteria: None	Participants had an fMRI scan before Mindfulness-Based Mind Fitness Training and had an fMRI two weeks after the intervention. They completed breathing and performance tasks during the fMRI.	- Sleep quality, Pittsburgh Sleep Scale, postintervention: SMD = 0.47 (CI = -0.29, 1.23) - Resilient responses to stressors, Response to Stressful Experiences Scale, postintervention: SMD = -0.36 (CI = -1.22, 0.50)
Author, year: Hourani et al., 2011 Study design: RCT—individuals randomized Region of origin: U.S.	Number enrolled: 77 Subjects: Marines Population description: Age = 20.8, high school education or less = 80.5% Inclusion criteria: Marines at Camp	PRESIT comprises education on COSC, attentional retraining and relaxation training, and practice and assessment via a multimedia	Physiological arousal, heart rate variability, postintervention: The difference between experimental and control groups was nearly significant, with the control group showing greater overall

Study Details	Participants	Intervention/Treatment	Outcome
Setting: U.S., military base	Pendleton in infantry immersion training Exclusion criteria: Not applicable	stressor environment. The comparison group received “current best practices” that were not described.	relaxation after training
Author, year: Hourani et al., 2016 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., military base	Number enrolled: 352 Subjects: Marine Corps Population description: Mean age = 21, range = 18–39, high school or less education = 72%, used tobacco = 59%, previously deployed = 64%, pay grade E-1–E-3 = 78%, experienced a high level of combat exposure during deployment = 85.7% Inclusion criteria: Marines at Camp Lejune scheduled for imminent deployment Exclusion criteria: Did not deploy, female, demonstrated mental health issues at baseline	PRESIT consists of three modules: (1) educational materials on COSC, (2) coping-skills training on breathing exercises with biofeedback, and (3) exposure to a video multimedia stressor environment to practice. The control group received 20-minute current best practice–standardized lecture and slide presentation.	- Physiological arousal, respiratory sinus arrhythmia, postintervention: SMD = 0.83 (CI = 0.29, 1.37) - PTSD (caseness), PCL-C > 50, 7 months: adj. OR = 0.79 (CI = 0.28, 2.23) - Stress, PSS, 7 months: There were no differences in self-reported PSS scores postdeployment
Author, year: Hourani et al., 2017 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base	Number enrolled: 80 Subjects: Marine Corps Population description: 80 active duty Marines not described Inclusion criteria: Active duty Marines at two bases who responded to flyers inviting them to participate in focus groups Exclusion criteria: None	Two graphic novels to prepare personnel for deployment to combat zones and reduce the stigma associated with mental health problems. The novels were developed based on embedding the principles of COSC into realistic and relatable characters, stories, and images.	Although not formally evaluated, <i>The Docs</i> was incorporated into Navy Medicine’s Care for the Caregiver program and has won several awards
Author, year: Hourani et al., 2018; Hourani et al., 2016 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., military base	Number enrolled: 891 Subjects: Army Population description: Mean age = 24, 95% male Inclusion criteria: U.S. Army soldiers who volunteered to participate from a convenience sample of companies expected to deploy from a large East Coast Army base. Exclusion criteria: None	Stress-inoculation training was compared with a control group receiving a stress-management presentation. Soldiers attended 90-minute session and were then assigned to group. The stress-management group listened to a taped narrative and presentation. The group for stress-inoculation training received a 20-minute presentation on two relaxation breathing techniques along with a stress-management	- Stress, PSS, 18 months: SMD = 0.95 (CI = 0.69, 1.20) - PTSD, PCL-C, 18 months: SMD = 0.09 (CI = –0.15, 0.33) - Usability, used stress-inoculation training MP3 player (yes), 18 months: RR = 1.13 (CI = 0.79, 1.62)

Study Details	Participants	Intervention/Treatment	Outcome
		educational pamphlet. Posttraining, the participants received an MP3 player with condition-specific stress-mitigation training. After the baseline data collection, emails were sent bimonthly to each participant to complete an assessment regarding the techniques they learned.	
Author, year: Hoyt et al., 2015 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 1,623 Subjects: Army Population description: Mean age = 29.1; 55% White, 21% Black, 19% Hispanic, 3% Asian/Pacific Islander, and 2% other Inclusion criteria: U.S. Army Stryker brigade combat team deployed to Afghanistan between 2012 and 2013 for a 9-month tour Exclusion criteria: None	Behavioral health treatment occurred before, during, and after deployment. The battalions had access to behavioral health staff, and some bases offered telehealth, the OASIS program for rest and recovery, 90-day stabilization period postdeployment, and health assessments postdeployment	• Psychiatric hospitalizations, postdeployment: RR = 0.46 (CI = 0.27, 0.81) • Behavioral health utilization, records from the brigade surgeon's office, during deployment: The numbers of clinic encounters and evacuations relative to the size of the brigade were very similar to previous deployment reports • Return to duty, records from the brigade surgeon's office, during deployment: Of the 513 service members who sought care (13% of the deployed force), the overall return-to-duty rate was 97%
Author, year: Hung, 2008 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: Psychoeducational classes ($n = 3,900$), traumatic event interventions ($n = 535$), command-directed mental health evaluations ($n = 750$), and casual walkabout/prevention contacts ($n = 80,400$) Subjects: Army Population description: Not reported Inclusion criteria: U.S. service members who received services from combat stress control units and other behavioral health services from January to June 2008 Exclusion criteria: Navy and Marine Corps	Combat-stress prevention offered outreach to units, educational classes, interventions for traumatic experiences, and intervention for those with COSR.	• Overall quality of care, satisfaction survey, postintervention, 98% of those surveyed rated the overall quality of care as good or excellent (mean score = 3.7) • Return to duty, COSC Workload and Activity Reporting System, during intervention period: The vast majority of individuals were returned to duty without limitations (90.8%); some individuals returned to duty with limitations • Evacuations out of theater, COSC Workload and Activity Reporting System, during intervention period: 0.67% of the dispositions were for evacuations out of theater
Author, year: Hunt et al., 2013 Study design: Cohort study	Number enrolled: 662 Subjects: Law enforcement, civilian support staff	TRiM is a peer-led intervention that provides psychological evaluation after trauma	• Psychological risk, TRiM score, 1 month: SMD = -2.17 (CI = $-2.47, -1.88$) • Sickness absence, administrative record,

Study Details	Participants	Intervention/Treatment	Outcome
(comparing 2 or more groups) Region of origin: Europe Setting: Europe, police stations	Population description: Police officers: 68% male; 51% ages 40–49; 74% junior, 23% middle rank, 3% senior; 67% married or cohabiting; civilians: 29% male; 40% ages 40–49; 56% married or cohabiting Inclusion criteria: Police officers, civilian support staff, and Civil Nuclear Constabulary officers who assisted with a fatal mass shooting on June 2, 2010, in Cumbria, England Exclusion criteria: None	exposure.	1 month: Engagement in the TRiM process was associated with a reduction in sickness absence especially in more-junior ranks
Author, year: Ilnicki et al., 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Middle East, in theater	Number enrolled: 118 Subjects: Polish Army Population description: Age range from 21 to 44 years, 112 males and 6 females, army service ranged from 8 to 231 months. Inclusion criteria: Not applicable Exclusion criteria: Mental disorders	Both groups first got a 90-minute lecture. The intervention group also had virtual reality stress inoculation training.	- Anxiety, STAI, 19 months: No differences in anxiety state or anxiety trait were observed between the experimental and control group - Usability, questionnaire, 19 months: 20% expressed that the training was helpful to some degree, and 80% did not remember
Author, year: Ireland, Malouff, and Byrne, 2007 Study design: RCT—individuals randomized Region of origin: Australia/New Zealand Setting: Australia/New Zealand, police department during work	Number enrolled: 129 Subjects: Law enforcement Population description: 58% male; mean age = 38.83 Inclusion criteria: Australian Police Force officers Exclusion criteria: None	Written emotional expression was compared with the control group. Members of the intervention group were assigned a 15-minute writing task to complete during 4 work shifts that disclosed any intense emotion they were feeling and how they planned to work through it. The control group was not assigned a writing task.	- Depression, DASS, postintervention: SMD = -0.20 (CI = $-0.69, 0.29$) - Anxiety, DASS, postintervention: SMD = -0.22 (CI = $-0.71, 0.27$) - Stress, DASS, postintervention: SMD = -0.37 (CI = $-0.86, 0.12$)
Author, year: Jarrett, 2013 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 2,554 Subjects: Army Population description: Not described Inclusion criteria: Military personnel from an explosive ordinance disposal unit between July and November 2008 at Camp Liberty, Iraq Exclusion criteria: None	Warrior Resilience and Thriving consists of a 90-minute lecture and PowerPoint presentation to teach emotion management and resiliency.	Acceptability/utility, questionnaire, postintervention: Results of standardized feedback form showed high acceptability and utility
Author, year: Johnson et al., 2014 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., University of	Number enrolled: 281 Subjects: Marines Population description: Main sample, Mindfulness-Based Mind Fitness Training: mean age = 21.7, mean years of service =	Mindfulness-Based Mind Fitness Training (MMFT) is an 8-week program consisting of 20 hours of lecture teaching awareness, control, and being	- Physiological arousal, heart rate reduction after recovery, postsimulation (9 weeks): SMD = -0.53 (CI = $-0.93, -0.13$) - Physiological arousal, breathing rate

Study Details	Participants	Intervention/Treatment	Outcome
California, San Diego, Center for Functional MRI, Infantry Immersion Trainer facility	2.7, Caucasian = 70%: main sample: treatment as usual: mean age = 21.4; mean years of service = 2.9, Caucasian = 61% Inclusion criteria: U.S. infantry Marine battalions at Camp Pendleton scheduled for predeployment training in 2011 Exclusion criteria: None	present with assigned homework. Participants took part in MMFT or training as usual; their heart rate, blood samples, and self-report measures were taken at baseline, 8-week follow-up, and during the Infantry Immersion Trainer session, 9 weeks after predeployment training. A subset of the sample was measured via fMRI.	reduction after recovery, postsimulation (9 weeks): SMD = -4.63 (CI = -5.39, -3.87) - Physiological arousal, plasma concentrations of neuropeptide Y (stress modulator), postsimulation (9 weeks): SMD = -1.57 (CI = -1.91, -1.23) - Physiological arousal, heart rate, during simulation (9 weeks): Groups were significantly different only during anticipation - Physiological arousal, breathing rate, postsimulation (9 weeks): Groups were significantly different only during recovery - Physiological arousal, plasma concentrations of neuropeptide Y (stress modulator), 8 weeks: No significant difference between the intervention and control groups
Author, year: Jones et al., 2010 Study design: Case series or case study Region of origin: Europe Setting: Middle East, in theater	Number enrolled: 825 Subjects: Army Population description: 88% male, 52% junior rank, 34% junior NCO, 8% senior NCO, 1% warrant officer, 4.5% officer; 12% younger than 20, 34% 20–24, 20% 25–29, 16% 30–34, 18% older than 35, 47% combat service support, 52% 5–9 years of service, 72% regular forces, 28% reserve forces Inclusion criteria: UK military personnel referred to field mental health teams during an Iraq deployment between 2003 and 2007 Exclusion criteria: None	Field mental health teams support and provide treatment to military personnel experiencing mental health issues and try to get them back to work.	Returned to duty, centralized military personnel record system, 2 years: 71.6% of the referred soldiers with a documented short-term military work outcome ($n = 711$) returned to their operational unit, and 73.5% of those who had a documented long-term military work outcome ($n = 801$) served on for a period in excess of two years
Author, year: Jones et al., 2011; Burdett et al., 2011 Study design: Case series or case study Region of origin: Europe Setting: Europe, third-location decompression in Cyprus	Number enrolled: 13,000 Subjects: Army, Marine Corps Population description: 94% male; 54% noncombat; 90% junior rank, NCO, or warrant officer; 10% officer Inclusion criteria: Soldiers deployed in Afghanistan or Iraq and participated in third-location decompression in Cyprus Exclusion criteria: None	Third-location decompression is a program that allows soldiers to decompress after deployment in a location different from their home and deployment country. They participate in psychoeducation and relaxation activities.	Helpfulness, questionnaire, postintervention, 91% of UK armed forces personnel who attended third-location decompression found it helpful upon completion

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Jones et al., 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., military bases	Number enrolled: Site 1 = 510, site 2 = 3,324, site 3 = 7,037 Subjects: Army Population description: Not described Inclusion criteria: Soldiers who participated in the telehealth programs; site 1: soldiers at Tripler Army Medical Center/Schofield Barracks in 2009 after returning from Iraq; site 2: soldiers at Fort Richardson in 2010 after returning from Afghanistan; site 3: soldiers at Joint Base Lewis-McChord in 2010 Exclusion criteria: None	Telehealth and in-person medical screening procedures were compared postdeployment. Site 1: In-person was compared with a video teleconference webcam. Site 2: Webcams were used 2–3 weeks after deployment and in-person visits occurred 3–6 months after. Site 3: In-person and telehealth were compared.	• Preference for face-to-face interview, 5-item scale, 14–21 days postdeployment: There were no differences in preference between telehealth modalities; 91% of soldiers who did not have a telehealth interview prefer face-to-face interviews • Those soldiers who receive only telehealth care, either via video teleconference or webcam, are more ambivalent and likewise prefer in-person care, but this preference is less strong after a telehealth visit, with the largest proportion (48%) being neutral and 34.9% preferring in-person screening • Interview style preference, 3-item scale, 14–21 days, 90–180 days postdeployment: Of soldiers who had both telehealth and in-person screenings, 55% ($n = 124$) preferred in-person, 39% ($n = 88$) were neutral, 5% ($n = 11$) preferred telehealth • Preference for/against telehealth, choice/consent, 7–14 days postdeployment: Only 0.34% ($n = 24$) of soldiers given the choice of telehealth chose it, but when scheduled for telehealth, only 7% ($n = 10$) of soldiers opted out
Author, year: Jones, Hammond, and Platoni, 2013 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, third-location decompression in Cyprus	Number enrolled: 3,071 Subjects: UK Army Population description: Third-location decompression group: 95% Army, 5% Royal Marines; 92.8% male; 3% ages 18–20, 24% 21–25, 28% 26–30, 19.5% 31–35, 18% 35–40, 5% 41–45, 2% older than 46; 95% regular engagement; 58% combat service support, 39% junior NCO; 89% formed-unit personnel Inclusion criteria: Randomly selected participants who took part in Operation Telic and Herrick who responded to a question on a survey that asked whether they spent time away from their deployment area before	Third-location decompression allows the soldiers to relax and decompress in a place besides their home country and deployment country before returning home.	• PTSD (cases), PCL-C ≥ 50: RR = 1.04 (CI = 0.73, 1.47) • Alcohol misuse, AUDIT ≥ 16: RR = 1.1 (CI = 0.95, 1.29) • Readjustment problems, 4 questions from 11-item readjustment scale: RR = 1.13 (CI = 1.05, 1.22) • Multiple physical symptoms, Multiple Physical Symptoms instrument ≥ 18: RR = 0.81 (CI = 0.63, 1.04)

Study Details	Participants	Intervention/Treatment	Outcome
	returning home Exclusion criteria: Participants who did not responded to a question on a survey that asked whether they spent time away from their deployment area before returning home; participants who claimed they had a decompression period and the date recorded was during a time third-location decompression did not exist		
Author, year: Jones et al., 2014; Twardzicki and Jones, 2017 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, unclear	Number enrolled: 594 Subjects: UK Army Population description: 95% male, 75% under age 30, 60% in long-term relationship, 42% have children, 62% junior rank Inclusion criteria: British Army volunteers Exclusion criteria: Not reported	A mental health awareness–focused comedy show had these themes: mental health problems (definition, incidence, contributory factors), mental health–related stigma (incidence, seeking help is actually a sign of strength), help-seeking (effectiveness, sources of help, self-help strategies); and alcohol (incidence of problems, ineffectiveness as a coping strategy for mental health problems/stress, negative links regarding risk of and existing mental health problems). The control group saw a standard comedy show.	• Stigma—military stigmatization and barriers to care, Military Stigma Scale, postintervention: SMD = 0.00 (CI = −0.21, 0.21) • Stigma—military stigmatization and barriers to care, Military Stigma Scale, 3 months: SMD = 0.12 (CI = −0.28, 0.52) • Satisfaction, questionnaire, postintervention: RR = 0.97 (CI = 0.93, 1.02) • Usefulness, questionnaire, postintervention: RR = 0.99 (CI = 0.90, 1.09) • Would recommend to others, questionnaire, postintervention: RR = 0.99 (CI = 0.93, 1.04) • Have knowledge of effective coping strategies, Mental Health Knowledge Schedule, postintervention: RR = 1.25 (CI = 0.97, 1.61) • Have knowledge of effective coping strategies, Mental Health Knowledge Schedule, 3 months: RR = 0.70 (CI = 0.56, 0.88) • Stigma—new help seekers for a mental health problem, NR, 3 months: RR = 0.37 (CI = 0.11, 1.29) • Common mental disorder, GHQ-12 ≥ 4, 3 months: RR = 2.05 (CI = 0.62, 6.75) • PTSD, Primary Care PTSD scale (PC-PTSD) ≥ 2, 3 months: RR = 1.23 (CI = 0.48, 3.19) • Alcohol misuse, AUDIT-C ≥ 4, 3 months:

Study Details	Participants	Intervention/Treatment	Outcome
			RR = 0.98 (CI = 0.80, 1.19) Stigma—new help seekers for a mental health problem, NR, postintervention: RR = 0.96 (CI = 0.67, 1.38)
Author, year: Jones et al., 2017 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Middle East, in theater	Number enrolled: 638 Subjects: UK Army, Royal Navy, Royal Marines Population description: Majority male and junior ranked 59% Army, 39% Royal Marines, 2% Royal Navy Inclusion criteria: UK military personnel who participated in a TRiM interview or Operational Mental Health Needs Evaluation during a 2011 Afghanistan deployment and took the postoperational screening trial after returning home. Exclusion criteria: Not described	TRiM is a peer-led intervention that takes place approximately 72 hours after trauma exposure. It is delivered through structured interviews to assess for mental health difficulties. Another interview is conducted one month after exposure. TRiM was compared with trauma-exposed personnel with no participation in TRiM and personnel with no trauma exposure.	- Sought formal mental health support, access, 1–2 years postdeployment: RR = 2.73 (CI = 1.41, 5.28) - Sought formal medical support, access, 1–2 years postdeployment: RR = 1.22 (CI = 0.95, 1.57) - Sought informal sources of support, access, 1–2 years postdeployment: RR = 1.87 (CI = 1.1, 3.17) - Anxiety or depression, GAD-2, PHQ-2, 1–2 years postdeployment: RR = 1.78 (CI = 0.81, 3.92) - PTSD, Primary Care PTSD Scale, 1–2 years postdeployment: RR 1.44 (CI = 0.93, 2.22) - Alcohol use, AUDIT-QF, 1–2 years postdeployment: RR = 0.98 (CI = 0.66, 1.47) - Stigma/barriers to care, 7-item scale, 1–2 years postdeployment: RR = 1.38 (CI = 0.93, 2.03) - Mental health caseness (new onset + persistent), single variable for scoring positive on GAD-2, PHQ-2, Primary Care PTSD Screen or AUDIT-QF, 1–2 years postdeployment: RR = 1.42 (CI = 1.03, 1.95) - Accessed a mental health practitioner (among mental health cases), access, 1–2 years postdeployment, RR = 2.49 (CI = 1.12, 5.53) - Accessed an informal source of help (among mental health cases), access, 1–2 years postdeployment: RR = 1.66 (CI = 0.87, 3.18) - Accessed medical officer (among mental health cases), access, 1–2 years postdeployment: RR = 0.83 (CI = 0.66,

Study Details	Participants	Intervention/Treatment	Outcome
			1.06)
Author, year: Joyce et al., 2019 Study design: Cluster RCT Region of origin: Australia/New Zealand Setting: Australia/New Zealand, unclear	Number enrolled: 143 Subjects: First responders Population description: Intervention group: 93% male, 42% worked as a firefighter for more than 20 years, 64% exposed to 20+ cases of trauma during career, mean age = 43.9, control group: 98% male, 33% worked as a firefighter for 6–10 years, 45% exposed to 20+ cases of trauma Inclusion criteria: Firefighters working full time in one of the primary rescue and hazmat stations chosen for this study Exclusion criteria: None	The Resilience at Work (RAW) mindfulness program consists of 6 20–25-minute online sessions that teach mindfulness and psychoeducation and incorporates several therapeutic techniques. The Healthy Living Program control condition consisted of 6 20-minute online modules that presented information on aspects of a healthy lifestyle.	• Active coping, Brief–Coping Orientation to Problems Experienced, postintervention: SMD = 0.10 (CI = –0.34, 0.55) • Use of emotional support, Brief–Coping Orientation to Problems Experienced, postintervention: SMD = 0.63 (CI = 0.17, 1.08) • Active coping, Brief–Coping Orientation to Problems Experienced, 6 months: SMD = 0.30 (CI = –0.18, 0.78) • Use of emotional support, Brief–Coping Orientation to Problems Experienced, 6 months: SMD = 0.34 (CI = –0.14, 0.82)
Author, year: Judkins and Bradley, 2017 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 328 Subjects: Army, Navy, Air Force Population description: 43.3% between ages 20 and 25; 81% Army, 2.7% Navy, 16.2% Air Force; 70% male; 89% had no combat exposure; 48.7% had one previous deployment Inclusion criteria: Participated in treatment at the Freedom Restoration Clinic in Afghanistan and provided complete responses to the pre and post Outcome Questionnaire–45.2 and 30-Day Post-Restoration Program Survey Exclusion criteria: Incomplete responses to the pre and post Outcome Questionnaire–45.2 and 30-Day Post-Restoration Program Survey	Freedom Restoration Clinic in Afghanistan for combat related stress had three components: (1) routine schedules for sleep hygiene and nutrition, (2) short-term alienation from the unit to relieve stress and to focus on personal issues, and (3) psychoeducational sessions.	• Distress, Outcome Questionnaire–45.2, postintervention: SMD = –0.89 (CI = –1.37, –0.41) • Distress, Outcome Questionnaire–45.2, 1 month: SMD = –0.92 (CI = –1.40, –0.44) • Usability, 30-Day Post-Restoration Program Survey, 1 month: 56% reported that they are almost always using the lessons learned from the Freedom Restoration Clinic
Author, year: Julian et al., 2018a; Julian et al., 2018b; Dodge et al., 2018 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., other: at home	Number enrolled: 107 Subjects: Army, other: veterans and their civilian families Population description: Parents: 86.8% ages 22–40, 5.3% single parents, 78.7% Caucasian; children: 50% male, mean age = 3.82; 31.6% of families had one child, 36.8% had two, 22.4% had three	Multifamily Group is a parenting intervention delivered in 10 sessions via group therapy with other parents and 1–3 individual sessions that teaches stress-management skills and ways to respond to children	• Parent withdrawal/depression, Caregiver–Child Structured Interaction Procedure, 2 months: SMD = 0.12 (CI = –0.34, 0.57) • Parent irritability/anger, Caregiver–Child Structured Interaction Procedure, 2 months: SMD = –0.36 (CI = –0.82, 0.10)

Study Details	Participants	Intervention/Treatment	Outcome
	Inclusion criteria: Families with a soldier or veteran parent previously deployed and with at least one child 7 years and younger Exclusion criteria: None	appropriately. Multifamily Group is compared with Homebased, which has the same content except it is mailed to participants.	
Author, year: Kizakevich et al., 2018 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base	Number enrolled: 14 Subjects: Army Population description: Participants were deployed 1 to 6 times Inclusion criteria: Soldiers stationed at Fort Bragg from the Warrior Transition Battalion who had returned from deployment within a year Exclusion criteria: None	Soldiers participated in 90-minute focus groups to help develop the Personal Health Intervention Toolkit for Duty, an app that specializes in providing a personalized intervention to treat various mental health issues. The focus groups concentrated on common mental health vulnerabilities, deployment issues, and coping techniques.	Mean score of 85 on the Systems Usability Scale, high satisfaction
Author, year: Kritikos, DeVoe, and Emmert-Aronson, 2019 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 100 Subjects: Army, Navy, Air Force, Marine Corps, civilian partners Population description: 76% Caucasian, mean children per family = 2; 92; mean age = 34.37; 8% Air Force, 86% Army, 4% Marines, 1% Navy, 1% other; homefront partner mean age = 33.82 Inclusion criteria: Families with one parent deployed within the past 12 months, at least one child 5 years or younger, and the parents and child(ren) lived together; must live within an hour and a half of the study center Exclusion criteria: One or both parents struggled with suicidal ideation, psychotic symptoms, substance dependence, or any other need that required a higher degree of care	Family-based reintegration program group versus the waiting list control group. The family-based reintegration program consists of several modules that seek to understand and strengthen the parent-child and couple relationships. The couples-focused sessions work on reflective functioning.	Relationship satisfaction, Dyadic Adjustment Scale, postintervention: SMD = 0.07 (CI = -0.35, 0.49)
Author, year: Larsson, Michel, and Lundin, 2000 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, military base	Number enrolled: 724 Subjects: Peacekeeping forces Population description: 96% male, 64% blue-collar workers, mean age = 27.6 Inclusion criteria: Participants were recruited from a Swedish battalion that was a part of NATO peacekeeping in Bosnia in	Peer support was compared with ventilation or defusing led by the ordinary group leader, and these were compared with formal debriefing sessions led by an external counselor.	- Distress, GHQ-28, postdeployment, peer support + defusing + debriefing versus no intervention: SMD = -0.06 (CI = -0.48, 0.36) - Distress, GHQ-28, postdeployment, peer support + defusing + debriefing versus peer support + defusing: SMD = 0.49 (CI

Study Details	Participants	Intervention/Treatment	Outcome
	1996. Exclusion criteria: None		= 0.07, 0.91) • Distress, GHQ-28, postdeployment, peer support + defusing + debriefing versus peer support only: SMD = 0.07 (CI = -0.42, 0.56) • PTSD (intrusion and avoidance), Impact of Event Scale, postdeployment, peer support + defusing + debriefing versus no intervention: SMD = 0.24 (CI = -0.18, 0.66) • PTSD (intrusion and avoidance), Impact of Event Scale, postdeployment, peer support + defusing + debriefing versus peer support + defusing: SMD = 0.24 (CI = -0.17, 0.66) • PTSD (intrusion and avoidance), Impact of Event Scale, postdeployment, peer support + defusing + debriefing versus peer support only: SMD = -0.07 (CI = -0.56, 0.43)
Author, year: Leonard and Alison, 1999 Study design: Cohort study (comparing 2 or more groups) Region of origin: Australia/New Zealand Setting: Australia/New Zealand, unclear	Number enrolled: 60 Subjects: Law enforcement Population description: Male police officers between ages 21 and 52 years, from the New South Wales State Police Service, who had been involved in shooting incidents Inclusion criteria: Officers who had killed or wounded a suspect or had been wounded themselves or had seen another police officer or person killed or wounded or had a loaded firearm pointed directly at them Exclusion criteria: Not described.	This CIRD intervention aims to mitigate maladaptive coping practices and anger. The comparison group received no intervention.	• State anger, State-Trait Anger Expression Inventory (STAXI), NR: SMD = -0.59 (CI = -1.11, -0.07) • Trait anger, STAXI, NR: SMD = -0.58 (CI = -1.10, -0.06) • Anger expression, STAXI, NR: SMD = -0.40 (CI = -0.92, 0.11) • Adaptive coping, Coping Scale of Carver, NR: SMD = 0.47 (CI = -0.04, 0.99) • Maladaptive coping, Coping Scale of Carver, NR: SMD = -0.11 (CI = -0.62, 0.4)
Author, year: Lewis et al., 2015 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., military base	Number enrolled: 891 Subjects: Army Population description: Army soldiers stationed at Fort Bragg prior to deployment; 95% male, average age = 23.82 (SD = 5, 4.39) Inclusion criteria: None; entire platoons enrolled. Exclusion criteria: None	PreSTINT (Predeployment Stress Inoculation Training) employs battle breathing training and biofeedback in multimedia stress environment.	• Physiological arousal, low-frequency heart rate variability, postintervention: SMD = 0.15 (CI = 0.02, 0.29) • Physiological arousal, heart period, postintervention: There was no significant difference in baseline-to-baseline changes for heart period • Physiological arousal, respiratory sinus

Study Details	Participants	Intervention/Treatment	Outcome
			arrhythmia, postintervention: There was no significant difference in baseline-to-baseline changes for respiratory sinus arrhythmia
Author, year: McCaslin et al., 2018 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base	Number enrolled: 25 Subjects: Army, Navy, Air Force, Marine Corps, other: veterans Population description: 88% male; 60% Caucasian; mean age = 33.5; 56% Air Force, 16% Army, 16% Marine Corps, 12% Navy Inclusion criteria: Active duty military personnel and veterans who served within the past 5 years recruited from an Air Force base, VA hospital, and community Exclusion criteria: None	Deployment Anxiety Reduction Training (DART) is a one-session intervention to deliver stress-mitigation skills to military personnel following an operational stressor.	Utility and acceptability, DART Acceptability Questionnaire, postintervention: Participants generally found that the DART techniques are easy to understand, thought the techniques would be helpful, and would be likely to use them
Author, year: McCraty et al., 1999; McCraty and Atkinson, 2012 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., other: police station	Number enrolled: 65 Subjects: Law enforcement Population description: 64 police officers; 85% male; mean age = 39 Inclusion criteria: Participants were recruited from police stations in Santa Clara County, Calif. Exclusion criteria: None	HeartMath self-management training was compared with a waiting list control group. HeartMath consists of several techniques to that teach emotional and stress management and physiological control while promoting positivity. Data were collected at baseline, during a scenario day before HeartMath training, and on the second scenario day after training. Heart rate and blood pressure were measured.	- Global negative emotion, Personal and Organizational Quality Survey, 1 month: SMD = -0.31 (CI = -0.83, 0.21) - Anger, Personal and Organizational Quality Survey, 1 month: SMD = -0.17 (CI = -0.68, 0.35) - Distress, Personal and Organizational Quality Survey, 1 month: SMD = -0.24 (CI = -0.76, 0.28) - Depression, Personal and Organizational Quality Survey, 1 month: SMD = -0.5 (CI = -1.02, 0.02) - Sleeplessness, Personal and Organizational Quality Survey, 1 month: SMD = -0.1 (CI = -0.61, 0.41) - Anxiety, Personal and Organizational Quality Survey, 1 month: SMD = 0.16 (CI = -0.36, 0.67) - Social function, Program Impact Assessment (semistructured interview), 1 month: In comparison to the control group, trained officers were significantly more likely to interact with their families with greater patience and understanding - Physiological arousal, heart rate/blood pressure, postintervention: There was

Study Details	Participants	Intervention/Treatment	Outcome
			little difference in the physiological measures between the trained participants and the control group.
Author, year: McKibben et al., 2009 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., military base	Number enrolled: 1,760 Subjects: Army Population description: 97% male; 55% White, 27% African American, 11% Hispanic; age breakdown: 2% ages 18–19, 49% ages 20–24, 27% ages 25–29, 20% ages 30–39, and 3% ages 40 or older Inclusion criteria: U.S. soldiers from an infantry division who returned from deployment to Iraq in 2003 or 2004 Exclusion criteria: Not described	This educational training describes the signs and symptoms of stress reactions and actions soldiers can take to reduce the negative effects of stress.	- PTSD (caseness), PCL > 50, 12 months, RR = 0.41 (CI = 0.33, 0.49) - Percent desired to remain, single item, 12 months: RR = 1.4 (CI = 1.18, 1.66) - PTSD, PCL, 12 months: Receipt of stress management training was significantly related to lower reported PTSD symptoms after controlling for combat exposure - Retention intention, single item, 12 months: Receipt of SMT was significantly related to retention intentions after controlling for combat exposure - Marital satisfaction, questionnaire, 12 months: Receipt of SMT was significantly related to marital satisfaction after controlling for combat exposure
Author, year: Millegan, Delaney, and Klam, 2016 Study design: Case series or case study Region of origin: U.S. Setting: Ship	Number enrolled: Not reported Subjects: Navy Population description: Not described Inclusion criteria: Sailors on a U.S. Navy ship experiencing psychological distress and suicidal ideation Exclusion criteria: None	SPRINTs were deployed to sites of military disaster to assist the sailors in mitigating mental health issues by teaching resiliency self-care through meditation.	A qualitative case study found that resiliency self-care was a feasible tool for service members and helped them have a healthy recovery
Author, year: Milstein, Robinson, and Espinosa, 2015 Study design: Case series or case study Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 299 Subjects: Army National Guard Population description: Not described Inclusion criteria: Soldiers recruited through VA grant Exclusion criteria: None	Warrior Spirit Mission Homefront is an intervention that facilitates discussion among service members about their experience among their peers via prompts on conversational cards.	Satisfaction, questionnaire, postintervention: Overall, participants reported significantly positive satisfaction ratings (skewness = -0.994; standard error = 0.146).
Author, year: Mishkind et al., 2012 Study design: Case series or case study Region of origin: U.S. Setting: U.S. military base (Guam)	Number enrolled: 28 Subjects: Army Population description: 24 sponsor recipients and 4 family members; reserve components or veterans, with the majority being Polynesian, male, and military officers or dependents; mean age = 42 Inclusion criteria: Beneficiaries who had a clinical visit at the relocatable telehealth	A relocatable telehealth center was designed to provide access to care and deliver services at any location because of its mobility.	Satisfaction, questionnaire, postintervention: 96.4% were satisfied with the quality of care received

Study Details	Participants	Intervention/Treatment	Outcome
	center in American Samoa Exclusion criteria: None		
Author, year: Moldjord and Hybertsen, 2015 Study design: Case series or case study Region of origin: Europe Setting: Middle East, in theater	Number enrolled: 8 Subjects: Air Force Population description: 7 pilots and 1 system operator Inclusion criteria: Military aircrew members deployed from Norwegian Bell 412 to Norwegian Aeromedical Detachment Exclusion criteria: None	Holistic debrief is a debriefing process that uses self-reflective questions to help team members better understand their reactions and emotions. After trainings or missions, operational debriefing was conducted for any staff and then the holistic debrief was for aircrew members only in a private setting.	• Praised overall by the commanders, although group participation was dependent on type of mission and crew member willingness to initiate discussion
Author, year: Moore and Krakow, 2007 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 11 Subjects: Army Population description: Not described Inclusion criteria: U.S. Army soldiers deployed to Iraq who experienced severe nightmares and were exposed to a traumatic event in the past 30 days Exclusion criteria: None	Imagery rehearsal therapy was delivered 4 times a week in 1-hour sessions.	• Insomnia, measure not reported, 1 month: Insomnia showed a 34% decrease in severity ($p = 0.06$) • Nightmare count, 1 month: The mean number of nightmares decreased 44% at the 1-month follow-up compared with the mean at intake ($p = 0.01$) • PTSD symptoms, 1 month: The mean posttraumatic stress symptom scores decreased 41% at the 1-month follow-up compared with the mean at intake ($p = 0.02$)
Author, year: Mulligan et al., 2012 Study design: Cluster RCT Region of origin: Europe Setting: Europe, in theater	Number enrolled: 2,443 Subjects: UK Army, Royal Navy, Royal Air Force, Royal Marines Population description: UK Armed Forces: Royal Navy, including the Royal Marines; the British Army; and the Royal Air Force; 98.9% male, 43.9% under age 25 Inclusion criteria: Not applicable Exclusion criteria: Not applicable	Battlemind briefing was compared with standard stress control. Battlemind aims to help participants recognize the cognitive and behavioral strategies that helped them be effective during deployment and discusses how these individuals can adapt these skills to prevent problems arising in the transition to the home environment.	• PTSD, PCL-C, 6 months: SMD = 0 (CI = -0.1, 0.1) • Alcohol use, AUDIT, 6 months: SMD = -0.1 (CI = -0.2, 0.0) • Stigma about help-seeking, 8-item scale, 6 months: SMD = -0.07 (CI = -0.17, 0.03) • Mental disorders, GHQ-12 ≥ 4, 6 months: adj. OR = 0.84 (CI = 0.57, 1.23) • Depression, PHQ-9, 6 months: adj. OR = 1.12 (CI = 0.71, 1.77) • Sleep problems, 3-item measure, 6 months: adj. incidence rate ratio = 0.95 (CI = 0.90, 1.01) • Satisfaction, usefulness, and relevance;

Study Details	Participants	Intervention/Treatment	Outcome
			questionnaire; 6 months: Ratings of satisfaction, usefulness, and relevance did not differ between the arms
Author, year: O'Hare and Beer, 2018 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 67 Subjects: Law enforcement Population description: U.S. military and law enforcement members who attended trainings led by the private company Accentus-Ludus; trainees: mean age = 47, 94% male, mean job experience = 19.7 years, 56% from U.S. and 37.5% from Europe; controls: mean age = 43, 100% male Inclusion criteria: Previous trainees who were contacted via email by the authors; control participants were recruited via emails sent to contacts in police stations and military organizations. Exclusion criteria: None	Critical incident situational awareness training (SAT) was compared with controls (no intervention). During SAT, vision skills, sensory cue acuity skills, state management, skills, pattern-recognition skills, information processing and decisionmaking skills are developed in an immersive learning environment that incorporates stress inoculation.	• Performance, perceived abilities during stress/threat, 5 years: SMD = 0.51 (CI = 0.01, 1.00) • Performance, perceived abilities during nonstress times, 5 years: SMD = -0.12 (CI = -0.6, 0.37) • Training impact, perceived training impact during stress, 5 years: SMD = 1.17 (CI = 0.43, 1.91) • Training impact, perceived training impact during nonstress times, 5 years: SMD = 1.16 (CI = 0.42, 1.90) • Stress, Perceived Stress Scale, 5 years: SMD = 0.39 (CI = -0.11, 0.89) • Anxiety, STAI-trait anxiety, 5 years: SMD = 0.25 (CI = -0.26, 0.77)
Author, year: Parish, 2008 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: Estimated at more than 5,000 Subjects: U.S. Army, Navy, Air Force, civilian contractors, third-country nationals, Iraqi civilians Population description: 95% Army, 5% Navy or Air Force, civilian contractors, third country nationals, or Iraqi civilians Inclusion criteria: Service members who participated in treatment at the Witmer Wellness Center, Iraq, during duty Exclusion criteria: None	The wellness center provides dialectical behavioral therapy while personnel participate in duty. Individual and group treatment sessions are offered.	• Return to duty, during deployment: The wellness center has maintained a return-to-duty rate exceeding 99%, with only 5 medical evacuations for soldiers who required a higher level of care, and 0 incidents or negative outcomes that resulted from any treatment or programmatic process
Author, year: Parsloe et al., 2014 Study design: Case series or case study Region of origin: Europe Setting: Europe, at home	Number enrolled: 138 Subjects: UK Army, Royal Air Force Population description: 90% Army, 10% Royal Air Force; 97% male; 63% junior rank Inclusion criteria: Participants were recruited after rest and recuperation while awaiting departure for duty at the Royal Air Force terminal Exclusion criteria: None	Rest and recuperation (R&R) is the 10–14 days a military member is at home after duty. A survey is administered to examine the effectiveness of R&R on the mental health of military personnel.	• Alcohol misuse (caseness), AUDIT ≥ 8, postintervention: Compared with previous studies, fewer participants met the criterion for a case (13% versus 22%) • Mental health (caseness), GHQ-12 ≥ 4, postintervention: Compared with previous studies, fewer participants met the criterion for a case (17% versus 20%) • PTSD (caseness), PCL-C ≥ 50, postintervention: Compared with previous

Study Details	Participants	Intervention/Treatment	Outcome
			studies, fewer participants met the criterion for a case (3% versus 4%)
Author, year: Pincus and Benedek, 1998 Study design: Case series or case study Region of origin: U.S. Setting: Europe, in theater	Number enrolled: 135 Subjects: Army Population description: 85% were male, with 62% married, 32% single, and 6% divorced; the most common rank was that of E-4 specialist Inclusion criteria: Peacekeepers in Kosovo admitted to restoration unit. Exclusion criteria: Not applicable	A restorative unit provided a holding place for 3 to 7 days to allow crises to resolve. Coping skills and stress-management training were provided. For a soldier deemed at risk for suicide or homicide, a unit escort was required for safety.	• Marital/relationship problems, NR, 1 year: RR = 0.5 (CI = 0.36, 0.70) • Suicide ideation/plans, NR, 1 year: RR = 0.50 (CI = 0.36, 0.70) • Returned to duty, 1 year: 85%
Author, year: Pinna et al., 2017; Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018; Snyder et al., 2016 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., unclear setting	Number enrolled: 336 Subjects: Army National Guard and Reserve Population description: Parent mean age = 35.97, 48.2% male, 92.6% European American, 88.7% married, mean years together = 9.7, mean children per family = 2.22. Inclusion criteria: Families were required to have at least one child (ages 4–12) living with them and at least one parent serving in Iraq or Afghanistan Exclusion criteria: None	ADAPT is an intervention to improve parent stress and child adaptation in military families. The participants met in groups with facilitators for 14 sessions, 2 hours each.	• Satisfaction, participant satisfaction survey, postintervention: Mean satisfaction scores for individual sessions ranged from 3.37 to 3.59, and mean = 3.44 (SD = 0.48) across all sessions • Engagement, attendance, postintervention: 70.66% (SD = 27.16%) of the total sessions were attended by at least one parent within the family • Engagement in online supplemental mindfulness exercises, 6 months: 44.6% of the parents engaged with the exercises • Parental emotion socialization, Coping with Children's Negative Emotions Scale, 6 months: The ADAPT condition significantly predicted increased supportive emotion socialization time 2 ($B = 0.21$, $SE = 0.10$, $p < 0.05$, Cohen's $d = 0.13$) and decreased nonsupport • PTSD, PCL-M, 24 months: SMD = -0.18 (CI = $-0.38, 0.03$) • PTSD (clinical level), PCL-M > 40, 12 months: RR = 0.70 (CI = 0.47, 1.06) • PTSD (clinical level), PCL-M > 40, 24 months: RR = 0.41 (CI = 0.25, 0.68)
Author, year: Piver-Renna, 2009 Study design: Case series or case study	Number enrolled: Varies by program; predeployment soldier readiness processing, $N = 11,565$; postdeployment reverse soldier readiness processing, $N =$	This social work outreach program provides continual behavioral health education and counseling awareness	• Return to duty: After consultation with outreach program staff, 62% returned to duty with no follow-up needed, 28% returned to duty with follow-up, 3% were

Study Details	Participants	Intervention/Treatment	Outcome
Region of origin: U.S. Setting: U.S. military base, not in theater	2,874; mental health referrals, $N = 410$ Subjects: Army Population description: Soldiers at Fort Sill, Oklahoma; no demographic data reported Inclusion criteria: Retrospective evaluation of Outreach Program activities delivered to active duty personnel, National Guard, and Reserve during deployment phases assigned to a military base Exclusion criteria: None	services. Services include primary prevention, secondary prevention (screenings, consultations, formal sensing sessions, informal sensing sessions), and tertiary prevention (referrals, short-term supportive counseling, traumatic event management and crisis intervention).	released to behavioral staff officer, and 7% were taken to emergency room - Satisfaction: Surveyed soldiers rated the program 4.52 on "overall experience" on a scale of 1 to 5 - Help-seeking stigma: Surveyed soldiers' response to "leadership might treat me differently" = 2.59 on a scale from 1 (strongly disagree) to 5 (strongly agree)
Author, year: Posard, Hultquist, and Segal, 2013 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., military base	Number enrolled: Unclear Subjects: Army Population description: Junior-rank members, NCOs, and commissioned officers. Of the junior rank members, 38% were Caucasian and majority are male, and on average completed some postsecondary education. Of the NCOS, more than 90% were male. Inclusion criteria: A part of an active duty U.S. Army artillery bridge Exclusion criteria: Warrant officers	Changing the schedule of a typical day of duty was an attempt to improve psychosocial outcomes.	- Quality of sleep, questionnaire, postintervention: $SMD = -1.00$ ($CI = -1.11, -0.89$) - Work-family conflict, work-family conflict index, postintervention: $SMD = -1.08$ ($CI = -1.19, -0.97$)
Author, year: Potter et al., 2009 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 57 Subjects: Army Population description: 87% male, 13% female; 63% White, 21% Black, 11% Hispanic, 5% other; mean age = 26.29; mean years of service = 5.4; mean deployments = 1.53 Inclusion criteria: Army soldiers who went to the Combat Stress Control Restoration Center in Iraq in June and July 2007 Exclusion criteria: Army soldiers who entered but did not complete the program	A two-day rehabilitation program is based on the PIES principles, including relaxation training, two individual counseling sessions, and many support group sessions.	- Interpersonal relations, Outcome Questionnaire-45, postintervention: $SMD = -0.34$ ($CI = -0.8, 0.11$) - Social roles, Outcome Questionnaire-45, postintervention: $SMD = -0.41$ ($CI = -0.86, 0.05$) - PTSD (avoidance), PCL-M, postintervention: $SMD = -0.52$ ($CI = -1.04, 0.00$) - PTSD (reexperiencing), PCL-M, postintervention: $SMD = -0.37$ ($CI = -0.89, 0.14$) - PTSD (arousal), PCL-M, postintervention: $SMD = -0.62$ ($CI = -1.14, -0.10$) - Symptom distress, Outcome Questionnaire-45 (OQ-45), postintervention: $SMD = -0.48$ ($CI = -0.94, -0.02$) - Symptom distress, interpersonal

Study Details	Participants	Intervention/Treatment	Outcome
			difficulties, social roles, Outcome Questionnaire-45, postintervention: SMD = -0.5 (CI = -0.96, -0.04) PTSD, PCL-M, postintervention: SMD = -0.56 (CI = -1.08, -0.04)
Author, year: Pruitt, Bernheim, and Tomlinson, 1991 Study design: Case series or case study Region of origin: U.S. Setting: U.S., Pentagon	Number enrolled: 64 Subjects: Army Population description: U.S. Army active duty soldiers stationed at the Pentagon who had elevated blood pressure; demographic data not provided Inclusion criteria: Elevated blood pressure Exclusion criteria: Not described	The 6-month Fit to Win program provided health screening, stress-management education, and physical fitness programs.	- Systolic blood pressure, postintervention: SMD = -0.68 (CI = -1.04, -0.33) - Diastolic blood pressure, postintervention: SMD = -0.62 (CI = -0.98, -0.27) - Systolic blood pressure, 1 month: SMD = -0.83 (CI = -1.19, -0.47) - Diastolic blood pressure, NR, 1 month: SMD = -1.22 (CI = -1.60, -0.84) - Distress, Symptom Checklist-90, postintervention: Perception of stress was significantly improved
Author, year: Pyne et al., 2019 Study design: Cluster RCT Region of origin: U.S. Setting: U.S., military base	Number enrolled: 600 Subjects: Army Population description: 72.2% from a cavalry battalion, 27.8% from an aviation battalion; mean age = 28.7; 98.1% male; 44.6% had prior combat zone exposure. Inclusion criteria: Army National Guard members from an aviation and an infantry battalion deploying within a year, were 18–60, were willing to provide the name and number of a close family or friend, and were not taking any beta blockers or benzodiazepines Exclusion criteria: Prescribed antidepressants, stimulants, or antihypertensives	Two types of resilience training—heart rate variability biofeedback or cognitive bias modification for interpretation—were compared with a control. An individual practice session followed by distribution of an app on a mobile device. Additional app practice was encouraged three times a week. Control group didn't have additional resilience training; they received a mobile device, but without any apps.	- PTSD, PCL-M, 12 months, heart rate variability biofeedback versus no intervention: SMD = 0.01 (CI = -0.30, 0.32) - PTSD, PCL-M, 12 months, Cognitive Bias Modification for Interpretation (CBM-I) versus no intervention: SMD = 0.11 (CI = -0.20, 0.42)
Author, year: Rabb, Baumer, and Wieseler, 1993 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base	Number enrolled: 3,636 Subjects: Army soldiers, civilian family members Population description: Not described Inclusion criteria: Army Reserve members who served in Operations Desert Shield and Desert Storm and their families Exclusion criteria: None	Stress-management teams provided outreach and counseling services to service members and their families in three phases: predeployment, deployment, and soldier homecoming and maintenance.	- Adjustment, phone call, postintervention: 95% of the service members contacted reported that they were adjusting well to civilian life 5% reported financial problems, marital discord, child-adjustment problems, housing problems, legal concerns (e.g., child custody), isolation, depression, PTSD symptoms, unresolved military pay and promotion matters, medical bills, poor

Study Details	Participants	Intervention/Treatment	Outcome
			unit morale, or employment concerns
Author, year: Ralph et al., 2017 Study design: Case series or case study Region of origin: Canada Setting: Canada, unclear	Number enrolled: 36 Subjects: Canadian military personnel Population description: 35 males and 1 female; ages of 23–45; 89% noncommissioned Regular Force members, with 78% having 6–15 years of military experience; 95% were deployed at least once in the past five years, and 68% were previously in combat Inclusion criteria: Canadian Armed Forces military members participating in Conduct After Capture training Exclusion criteria: None	Conduct After Capture training is an intervention that is conducted across 4 days, with three phases: didactic, practical, and recovery/debriefing. The didactic phase is educational and consists of lectures and role-playing. The practical phase is a realistic simulated captivity experience that involves exposing the participants to stressful situations while trying to avoid exploitation from imitation captors. In the recovery/debriefing phase, the participants are given feedback and may ask questions about their experience.	• Dissociation, Clinician-Administered Dissociative States Scale, postintervention: SMD = 0.76 (CI = 0.28, 1.24) • General fatigue, Multidimensional Fatigue Inventory, postintervention: SMD = 1.60 (CI = 1.06, 2.13) • Depression/dejection, Profile of Mood States, postintervention: SMD = 0.18 (CI = -0.29, 0.64) • Tension/anxiety, Profile of Mood States, postintervention: SMD = -0.66 (CI = -1.14, -0.19) • PTSD (reexperiencing), PSS, postintervention: SMD = -0.03 (CI = -0.50, 0.43) • PTSD (arousal), PSS, postintervention: SMD = 0.08 (CI = -0.38, 0.54) • Physiological arousal, salivary cortisol, postintervention: SMD = -1.13 (CI = -1.63, -0.63) • PTSD, PSS, postintervention: There was no significant effect of time on overall symptoms reported • PTSD (avoidance), PSS, postintervention: There was no significant effect of time on the avoidance subscale
Author, year: Rapley, 2017 Study design: Case series or case study Region of origin: U.S. Setting: U.S. military base, not in theater	Number enrolled: 183 Subjects: Navy Population description: Active duty submariners attached to 1 of 10 submarines assigned to Submarine Squadron 6, Norfolk, Virginia; mean age = 27.2; 82% White Inclusion criteria: Active duty submarine forces who were seen by Embedded Mental Health Program providers Exclusion criteria: None	Embedded Mental Health Program providers address crises resulting from life transitions, operational stress-related injuries, and psychiatric illness.	• 12% decrease in Code 2 losses (loss of personnel for psychological reasons) in first year ($p < 0.01$)

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Roger and Hudson, 1995 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, unclear	Number enrolled: 147 Subjects: Law enforcement Population description: Mean age of experimental group = 28.81, mean age of control group = 26.64, 90% male Inclusion criteria: Police officers from the North Yorkshire Police in England; no other criteria stated Exclusion criteria: None	Stress-management training that focuses on emotional rumination, emotional control, and attention control. Experimental group attended 1-day stress-management training and control group attended job related training.	• Absenteeism days, 11 months: SMD = -0.67 (CI = -1.00, -0.34) • Adaptive coping, Coping Styles Questionnaire: There was a significant group × time interaction • Absenteeism, secondary absenteeism days: The average secondary absenteeism for basic plus follow-up training group, basic training group, and the control group were 0 days, 1 day and 1.33 days, respectively
Author, year: Rona et al., 2017 Study design: Cluster RCT Region of origin: Europe Setting: Europe, military base	Number enrolled: 10,190 Subjects: Army, Marine Corps Population description: Screening group: 95% male, 46% other rank, 47% NCO, 8% commissioned officer, 87% Army, 13% Royal Marines; 65%; Control group: 96% male, 46% other rank, 46% NCO, 7% commissioned officer; 81% Army, 19% Royal Marines Inclusion criteria: Royal Marines and Army who recently returned from deployment in Afghanistan Exclusion criteria: Reservists, platoon members who did not deploy, platoon members who deployed but relocated before randomization, and platoons created for deployment and separated afterward	A screening group was compared with a control group. All participants took a computerized assessment regarding mental disorders. After the assessment, the screening group had the choice to view custom advice on seeking treatment, and the control group was presented generic mental health advice.	• PTSD (caseness), PCL-C ≥ 50, 10–24 months: RR = 0.95 (CI = 0.82, 1.09) • Depression or anxiety, PHQ-9 ≥ 6 or GAD-7 scale ≥ 15, 10–24 months: RR = 0.97 (CI = 0.80, 1.19) • Alcohol use, AUDIT ≥ 5 on alcohol dependence or ≥ 10 on alcohol harm, 10–24 months: RR = 0.99 (CI = 0.86, 1.13) • Any mental health disorder (PTSD, anxiety, or depression), PCL-C ≥ 50 or PHQ-9 ≥ 6 or GAD-7 scale ≥ 15, 10–24 months: RR = 0.95 (CI = 0.83, 1.09) • Functional impairment, Short Form–36 = most of the time or all of the time, 10–24 months: RR = 0.97 (CI = 0.81, 1.15) • Any health visit in the previous 12 months, questionnaire, 10–24 months: RR = 0.95 (CI = 0.92, 0.99) • Medical service use in the previous 12 months, questionnaire, 10–24 months: RR = 0.95 (CI = 0.91, 0.99) • Welfare service use in the previous 12 months, questionnaire, 10–24 months: RR = 0.93 (CI = 0.82, 1.05) • Mental health service use in the previous 12 months, questionnaire, 10–24 months: RR = 0.92 (CI = 0.81, 1.05) • Antidepressant use in the previous 12 months, questionnaire, 10–24 months: RR = 1.14 (CI = 0.86, 1.53) • Sleeping pill use in the previous 12

Study Details	Participants	Intervention/Treatment	Outcome
			months, questionnaire, 10–24 months: RR = 1.10 (CI = 0.93, 1.30)
Author, year: Roy, Highland, and Costanzo, 2015 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 144 Subjects: “Service members” Population description: Not described Inclusion criteria: Experiencing subthreshold PTSD symptomology within five years of returning from Iraq or Afghanistan or exposure to a traumatic event that resulted in a significant amount of death Exclusion criteria: None	Guided Education and Training via Smart Phones (GETSmart) to promote resilience is delivered via smart phone applications that teach resiliency, CBT principles, trauma coping skills, etc. In the resilience-enhanced group, participants had a 90-minute video chat introduction to CBT techniques and apps that help improve resiliency. The control group has a similar, but shortened, introduction. Study staff sent reminder texts to every participant each day for 6 weeks. Texts to the resilience-enhanced group specified apps and exercises the participants should try. Texts to the control group did not contain any specifics; however, they still suggest the same apps along with an inspirational quote.	- PTSD, postintervention: PCL scores significantly improved in the intervention group from baseline to postintervention and from baseline to 3-month follow-up, while the degree of improvement did not reach significance in the control group - Satisfaction, NR, postintervention: Preliminary result (approximately 10% of the overall targeted study sample) indicates uniformly high compliance and satisfaction with the intervention
Author, year: Russell et al., 2014 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 1,132 Subjects: Army: California Army National Guard Population description: 40% ages 18–24, 24% 25–29, 23% 30–39, 14% older than 40; 88.9% male; 63.9% junior rank; 57% some postsecondary education. Inclusion criteria: Service members in the 12 selected units of the California Army National Guard Exclusion criteria: None	Compared soldiers experiences and perceptions in units with embedded behavioral health care providers while deployed versus units without them.	- Depression, PHQ-9, cross-sectional: SMD = 0.07 (CI = –0.05, 0.19) - Anxiety, GAD-7, cross-sectional: SMD = 0.06 (CI = –0.05, 0.18) - PTSD, PCL, cross-sectional: SMD = 0.08 (CI = –0.04, 0.19) - Alcohol misuse, AUDIT, cross-sectional: SMD = 0.06 (CI = –0.05, 0.18) - Stigma, 7-item scale, cross-sectional: SMD = 0.02 (CI = –0.10, 0.14) - Barriers to care, 5-item scale, cross-sectional: SMD = 0.01 (CI = –0.11, 0.13) - Close relationship impairment, single item

Study Details	Participants	Intervention/Treatment	Outcome
			from the Functional Impairment Scale, cross-sectional: SMD = 0.10 (CI = -0.02, 0.22) Behavioral health care utilization, questionnaire, cross-sectional: The soldiers in embedded behavioral health care provider units were more likely to have reported using some form of care than were soldiers in non-embedded behavioral health care provider units
Author, year: Saltzman et al., 2011; Lester et al., 2012; Saltzman et al., 2016 Study design: Case series or case study Region of origin: U.S., Asia Setting: U.S., Asia military base, not in theater	Number enrolled: 488 Subjects: Navy, Marine Corps, civilian family members Population description: 51.2% self-referred and 42.6% received a referral; mean deployments = 4.51 since first child was born; civilian parents = 97% female; 95.6% couples were married; mean parent age = 34.39 years; children: 61% ages 3–7, 55% male Inclusion criteria: Participants at a selected military bases in North Carolina; Hawaii; Okinawa, Japan; Mississippi; Washington; 4 California sites, and 2 Virginia sites Exclusion criteria: None	The FOCUS program was designed to improve the nature and functionality of at-risk struggling family relationships due to stress and trauma after the deployment of a family member. The intervention takes place over 6 to 8 sessions that meet individually with the parents and the children to discuss concerns and then as a family to learn issue-related skills.	- Anxiety, Brief Symptom Inventory anxiety, postintervention: SMD = -0.47 (CI = -0.60, -0.34) - Depression, BSI depression, postintervention: SMD = -0.66 (CI = -0.80, -0.53) - Distress, BSI global severity index, postintervention: SMD = -0.59 (CI = -0.72, -0.45) - Family adjustment, Family Assessment Device, postintervention: SMD = -0.35 (CI = -0.48, -0.22) - Functioning, Global Assessment of Functioning, postintervention: SMD = 0.52 (CI = 0.39, 0.65)
Author, year: Schneider et al., 2016 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: Europe, other: Deployment Transition Center in Ramstein, Germany	Number enrolled: 3,143 Subjects: Air Force Population description: Deployment Transition Center group: mean age = 26.8; 91.9% male; 77.4% White; mean deployment time = 197 days; mean total deployments = 2.48; 42% 2T1 vehicle operations, 24.4% 3P0 security forces, 20.3% 3E8 explosive ordnance disposal, 6.7% 2T3 vehicle maintenance, and 6% 1C4 tact Inclusion criteria: Air Force members sent to the Deployment Transition Center and those who were not and ended deployment between July 2010 and December 2011 Exclusion criteria: None	Third-location decompression programs take place elsewhere from the soldier's home country and deployment country to let crews relax and calm down before returning home. The U.S. Air Force Deployment Transition Center was created for Air Force members in specific careers that are typically exposed to a lot of combat.	- Social function—difficulty getting along with others because of recent emotional problems, Postdeployment Health Reassessment, 90 to 180 days postdeployment: SMD = -0.11 (CI = -0.18, -0.04) - Alcohol consumption frequency, Postdeployment Health Reassessment, 90 to 180 days postdeployment: SMD = 0.08 (CI = 0.01, 0.15) - Number of drinks per occasion, Postdeployment Health Reassessment, 90 to 180 days postdeployment: SMD = 0.03 (CI = -0.04, 0.10) - Binge drinking frequency, Postdeployment Health Reassessment,

Study Details	Participants	Intervention/Treatment	Outcome
			90 to 180 days postdeployment: SMD = 0.00 (CI = -0.07, 0.07) • Low interest or pleasure in activities, Postdeployment Health Reassessment, 90 to 180 days postdeployment: SMD = -0.25 (CI = -0.32, -0.18) • Feelings of sadness, depression, or hopelessness, Postdeployment Health Reassessment, 90 to 180 days postdeployment: SMD = -0.32 (CI = -0.39, -0.25) • Sleep disturbance, Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.70 (CI = 0.58, 0.83) • Social function—concerning, serious conflicts with others, Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.54 (CI = 0.45, 0.66) • PTSD (nightmares/intrusive thoughts), Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.56 (CI = 0.45, 0.70) • PTSD (avoidance), Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.89 (CI = 0.69, 1.13) • PTSD (hypervigilance), Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.64 (CI = 0.53, 0.78) • PTSD (detachment), Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.60 (CI = 0.48, 0.75) • Referral request—desire to talk with a health provider, Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 1.06 (CI = 0.86, 1.31) • Referral request—desire to receive

Study Details	Participants	Intervention/Treatment	Outcome
			information or assistance for stress, emotional, or alcohol concerns; Postdeployment Health Reassessment; 90 to 180 days postdeployment: RR = 0.53 (CI = 0.36, 0.78) • Referral request—desire to receive assistance for family/relationship concerns, Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.53 (CI = 0.31, 0.90) • Referral request composite, Postdeployment Health Reassessment, 90 to 180 days postdeployment: RR = 0.8 (CI = 0.67, 0.97) • Any mental health diagnosis within 6 months, official medical records, 6 months postdeployment: RR = 1.25 (CI = 1.00, 1.55) • Anxiety diagnosis within 6 months, official medical records, 6 months postdeployment: RR = 2.43 (CI = 1.37, 4.34) • Mood disorder diagnosis within 6 months, official medical records, 6 months postdeployment: RR = 0.85 (CI = 0.45, 1.61) • Adjustment disorder diagnosis within 6 months, official medical records, 6 months postdeployment: RR = 1.27 (CI = 0.89, 1.81) • Stress disorder diagnosis within 6 months, official medical records, 6 months postdeployment: RR = 1.13 (CI = 0.76, 1.69)
Author, year: Shalev et al., 1998 Study design: Case series or case study Region of origin: Middle East Setting: Middle East	Number enrolled: 41 Subjects: Israeli Defense Forces Population description: Mean age = 19.4 Inclusion criteria: Infantry soldiers of the Israel Defense Force who were involved with combat Exclusion criteria: None	Historical group debriefing takes place immediately after exposure to a traumatic combat event with everyone involved. It focuses on validating the situation, cognitive restructuring, and	• Anxiety, STAI-State, postintervention: SMD = -0.36 (CI = -0.81, 0.09)

Study Details	Participants	Intervention/Treatment	Outcome
		peer support.	
Author, year: Sharpley et al., 2008 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, military base, not in theater	Number enrolled: 735 Subjects: UK Royal Navy and Marines Population description: Attendees: 92% male, 48% ages 25–34, 58% Royal Navy; nonattendees: 95% male; 41% ages 25–34; 71% Royal Navy Inclusion criteria: Royal Navy and Royal Marines service members who served in the 2003 Iraq War Exclusion criteria: Army and Royal Air Force service members, reservists, and personnel who did not deploy	Participants who attended stress-educational briefing sessions were compared with those who did not before going to war.	- PTSD, PCL-C $\geq$ 18 symptoms, postdeployment: RR = 0.61 (CI = 0.24, 1.55) - Common mental disorder, GHQ-12, postdeployment: RR = 0.86 (CI = 0.61, 1.20) - Fatigue case, NR, postdeployment: RR = 1.05 (CI = 0.82, 1.34) - Severe alcohol misuse, AUDIT $\geq$ 16, postdeployment: RR = 1.13 (CI = 0.85, 1.50) - Problems at home, NR, during deployment: RR = 0.99 (CI = 0.72, 1.36) - Problems at home, NR, postdeployment: RR = 1.13 (CI = 0.83, 1.53) - Marital satisfaction, NR, postdeployment, RR = 1.02 (CI = 0.99, 1.06)
Author, year: Shipherd, Salters-Pedneault, and Fordiani, 2016 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., other: off-post location not described	Number enrolled: 1,533 Subjects: Army Population description: Training as usual: 91.6% male, 61.8% Caucasian, 88.5% E-1–E-9, mean age = 28.39; psychoeducation for intrusive cognition: 91.1% male, 59.4% Caucasian, 92.4% E-1–E-9, mean age = 28.23; control: 89.4% male, 62.6% Caucasian, 92% E-1–E-9, mean age = 29; reset: 90.1% male, 63.4% Caucasian, 88.5% E-1–E-9 Inclusion criteria: Army members recruited from Fort Drum who were at least 18 years old, could speak and read English, and returned from the Global War on Terror within the last 3–12 months Exclusion criteria: None	4 interventions examined coping styles for intrusive cognition: training as usual, psychoeducation for intrusive cognition, psychoeducation with change-based skills training (control), and psychoeducation with acceptance-based skills training (reset). Except for training as usual, the interventions were delivered through workshops and exercises.	- PTSD (intrusive cognitions), experience of intrusions, 1 month, acceptance-based skills training versus training as usual: SMD = -0.29 (CI = -0.43, -0.14) - PTSD (intrusive cognitions), experience of intrusions, 1 month, acceptance-based skills training versus change-based skills training: SMD = -0.12 (CI = -0.27, 0.02) - PTSD (intrusive cognitions), experience of intrusions, 1 month, acceptance-based skills training versus psychoeducation-only training: SMD = -0.22 (CI = -0.36, -0.08) - PTSD, PCL-C, 1 month, acceptance-based skills training versus training as usual: SMD = -0.15 (CI = -0.29, -0.01) - PTSD, PCL-C, 1 month, acceptance-based skills training versus change-based skills training: SMD = -0.02 (CI = -0.16, 0.13) - PTSD, PCL-C, 1 month, acceptance-

Study Details	Participants	Intervention/Treatment	Outcome
			based skills training versus psychoeducation-only training: SMD = -0.12 (CI = -0.27, 0.02) • Depression or anxiety, Depression Anxiety Stress Scales (DASS-21), 1 month, acceptance-based skills training versus training as usual: SMD = -0.15 (CI = -0.29, -0.01) • Depression or anxiety, Depression Anxiety Stress Scales (DASS-21), 1 month, acceptance-based skills training versus change-based skills training: SMD = -0.01 (CI = -0.15, 0.14) • Depression or anxiety, Depression Anxiety Stress Scales (DASS-21), 1 month, acceptance-based skills training versus psychoeducation-only training: SMD = -0.16 (CI = -0.30, -0.01) • Perceived success and credibility of training, Expectancy of Therapeutic Outcome Questionnaire, 1 month: No significant differences between intervention 1 and intervention 2
Author, year: Sipos et al., 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: Europe, military base	Number enrolled: 307 Subjects: U.S. Army Population description: 69.3% E-5 rank and higher; 60.9% married; 87.6% male; 22% ages 18–24, 24% 25–29, 35% 30–39, 18% above 40; mean years in military = 9.81. Inclusion criteria: Army members who were part of the headquarters element of a unit available 4 months after being stationed in Iraq for a year Exclusion criteria: None	Video teleconferencing and in-person behavior health meetings were compared.	• Behavioral health interview satisfaction, 4-item scale, 4 months postdeployment: SMD = 0.18 (CI = -0.07, 0.42) • PTSD, PCL, 4 months postdeployment: SMD = 0.01 (CI = -0.24, 0.26) • Depression, PHQ, 4 months postdeployment: SMD = -0.05 (CI = -0.30, 0.20) • Anxiety, GAD-7, 4 months postdeployment: SMD = -0.04 (CI = -0.29, 0.21) • Alcohol problems, 8-item scale including AUDIT-C, 4 months postdeployment: SMD = -0.07 (CI = -0.31, 0.18) • Stigma, 6-item scale, 4 months postdeployment: SMD = 0.07 (CI = -0.17, 0.32) • Barriers to care, 6-item scale, 4 months postdeployment: SMD = 0.1 (CI = -0.15,

Study Details	Participants	Intervention/Treatment	Outcome
			0.35)
Author, year: Sipos et al., 2014 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: Europe, in theater	Number enrolled: 393 Subjects: Army Population description: Front-loaded reintegration: 86% male, 60.7% married, 45% NCOs, 32% E-1–E-4, 22% officers, 22% ages 18–24, 24% 25–29, 36% 30–39, 18% older than 40; standard reintegration: 78% male, 58.68% married, 52.9% NCOs, 29.75% Inclusion criteria: Army members from the headquarters element of the unit in U.S. Army Europe who received reintegration training during theater and were available 4 months after being stationed in Iraq for a year Exclusion criteria: None	Instead of the standard 7 half-days of reintegration process, a unit administered the reintegration training in the war zone, before returning home. Participants who received this training were compared with those who received standard training.	- PTSD, PCL, 4–5 months postdeployment: Redeployment group did not predict differences in PTSD symptoms - Risk behavior, 8-item scale, 4–5 months postdeployment: Soldiers in the standard reintegration group reported slightly more risk behaviors than those receiving front-loaded reintegration - Aggression, 4-item scale, 4–5 months postdeployment: Redeployment group did not predict differences in aggression - Alcohol misuse, Two-Item Conjoint Screen for Alcohol modified version, 4–5 months postdeployment: Redeployment group did not predict differences in alcohol misuse - Marital satisfaction, Norton Quality of Marriage Index abbreviated version, 4–5 months postdeployment: Redeployment group did not predict differences in marital satisfaction - Satisfied with reintegration process before leaving Iraq, 12-item scale, 4–5 months postdeployment: 63.6% reported agreeing or strongly agreeing with the statement, “I was satisfied with the reintegration process before leaving Iraq” - Satisfied with reintegration process before block leave, 12-item scale, 4–5 months postdeployment: 63.7% reported agreeing or strongly agreeing with the statement, “I was satisfied with the reintegration process before block leave”
Author, year: Six and Delahaij, 2011 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe military base,	Number enrolled: Experimental: $N = 51$; control, $N = 141$ Subjects: Navy Population description: Dutch Navy recruits undergoing basic training; no demographic data reported.	Resilience XL’s aim is to foster self-efficacy and self-determination to cope with the stress of basic training. A long-term goal is to enhance resilience. The control group is	- Occupational: Resilience training was significantly associated with an increase in perceived value of future job compared with the control group - Satisfaction: Perceived value of training

Study Details	Participants	Intervention/Treatment	Outcome
not in theater	Inclusion criteria: All Navy recruits attending basic training at one location Exclusion criteria: None	basic training as usual.	did not differ significantly between groups
Author, year: Solomon, Shklar, and Mikulincer, 2005 Study design: Cohort study (comparing 2 or more groups) Region of origin: Middle East Setting: Middle East, in-theater treatment versus rear-echelon treatment	Number enrolled: 429 Subjects: Israeli Defense Forces Population description: Mean age = 47; 93% married Inclusion criteria: Israel Defense Forces who battled in the Lebanon War Exclusion criteria: None	20-year longitudinal study with three groups: front-line treatment group (soldiers who received treatment after the diagnosis of combat stress), rear-echelon treatment group (soldiers who received treatment in military hospitals but were later a combat stress casualty), and the comparison group (soldiers who experienced combat stress casualties but did not receive treatment or a diagnosis).	- PTSD intensity, PTSD Inventory, 20 years: SMD = -0.26 (CI = -0.53, 0.02) - PTSD (intrusion), PTSD Inventory, 20 years: SMD = -0.26 (CI = -0.53, 0.01) - PTSD (avoidance), PTSD Inventory, 20 years: SMD = -0.20 (CI = -0.47, 0.08) - PTSD (hyperarousal), PTSD Inventory, 20 years: SMD = -0.26 (CI = -0.53, 0.02) - PTSD (intrusion), Impact of Event Scale, 20 years: SMD = -0.24 (CI = -0.51, 0.03) - PTSD (avoidance), Impact of Event Scale, 20 years: SMD = -0.05 (CI = -0.32, 0.22) - Distress, SCL-90-R Global Severity Index, 20 years: SMD = -0.21 (CI = -0.48, 0.06) - Interpersonal functioning, Problems in Social Functioning questionnaire, 20 years: SMD = -0.25 (CI = -0.52, 0.03) - Occupational functioning, Problems in Social Functioning questionnaire, 20 years: SMD = -0.23 (CI = -0.50, 0.04) - PTSD rate, PTSD Inventory, 20 years: RR = 0.74 (CI = 0.50, 1.09)
Author, year: Start, Allard, and Toblin, 2017 Study design: Case series or case study Region of origin: U.S. Setting: U.S., other: Military Treatment Facilities	Number enrolled: 246 Subjects: Army Population description: Military treatment facility staff; 16% officers and 84% enlisted; no other demographics reported. Inclusion criteria: Soldiers and Department of Army civilians working at military treatment facilities who participated in either MRT certification or received a two-hour RTHS module Exclusion criteria: None	A 3-day workshop trains and certifies MRT trainers and also has a resilience training module required for all military treatment facility staff to bolsters resilience by preventing compassion fatigue and burnout.	90% of MRT trainers felt that the module was useful and relevant to health care staff; 46% of trainers felt that staff were receptive to training
Author, year: Stetz et al., 2007 Study design: Cohort study (comparing 2 or more groups)	Number enrolled: 25 Subjects: Army Population description: Army medics: 77% White, 54% with 5 years or less of	During stress inoculation training using virtual reality, participants receive feedback on their psychological,	Anxiety, Multiple Affect Adjective Check List-Revised, postintervention: The results of post hoc comparisons using test procedures indicated that participants in

Study Details	Participants	Intervention/Treatment	Outcome
Region of origin: U.S. Setting: U.S., military base	experience Inclusion criteria: Soldiers attending the Flight Medic Course in Fort Rucker, Alabama, and medics working at the medical clinic at Fort Rucker Exclusion criteria: None	physiological, and biochemical stress levels and practice coping strategies (e.g., combat breathing).	the virtual-reality-only condition (mean = 60; SD = 20; $p < 0.05$) experienced a greater level of posttreatment anxiety than participants in the combined coping training + virtual reality (mean = 48; SD = 5.5). Dysphoria, Multiple Affect Adjective Check List–Revised, postintervention: Results of post hoc comparisons also indicate that participants in the virtual-reality-only condition (mean = 64; SD = 28.4; $p < 0.10$) exhibited a greater level of posttreatment dysphoria
Author, year: Stetz et al., 2009 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., military base	Number enrolled: 60 Subjects: Army Population description: Soldiers at a U.S. base; 72% White, 65% male, 60% under the age of 33, 59% had children Inclusion criteria: Not described Exclusion criteria: Not described	Participants watch videos explaining how to practice both progressive muscle relaxation and controlled breathing. In the mornings, this group would practice these techniques while watching a video displayed on a screen. During each of those 3 nights, they would watch the same video watched earlier in the day, but via a portable play station. The control group received no intervention.	Usability, focus group, postintervention: Half of the sample ($n = 29$) considered practicing these techniques after this study
Author, year: Stetz et al., 2011 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., other: Ryder Trauma Center	Number enrolled: 60 Subjects: Army forward surgical team Population description: 66% male, 70% White, 66% married, 51% under 35 with at least one child (55%) Inclusion criteria: 3 forward surgical teams underwent predeployment training at Ryder Trauma Center, body temperature between 98.2 and 98.6°F, little to no PTSD symptomology Exclusion criteria: None	All participants were briefed on stress-management techniques (progressive muscle relaxation and controlled breathing) before the study. 3 7-minute relaxing virtual reality videos were utilized to guide the experimental group in progressive muscle relaxation and controlled breathing. The experimental group watched 1 video 3 mornings in a row and then the same video again in the evening to practice progressive muscle relaxation	- Anxiety, STAI-State Anxiety, postintervention: SMD = -0.71 (CI = $-1.23, -0.18$) - Anxiety, STAI-State Anxiety, post-first simulation, SMD = -0.67 (CI = $-1.20, -0.15$) - Anxiety, STAI-State Anxiety, post-second simulation, SMD = -0.40 (CI = $-0.91, 0.11$)

Study Details	Participants	Intervention/Treatment	Outcome
		and controlled breathing. The experimental group took part in 2 stressful virtual reality situations involving combat injuries and deaths. The first was before the stress-management briefing and the second was posttreatment.	
Author, year: Stoller et al., 2012 Study design: RCT—individuals randomized Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 70 Subjects: Army, Air Force Population description: Mean age = 31.8, 71.4% Air Force, 68.6% male Inclusion criteria: Military personnel deployed to Forward Operating Base Warrior, Kirkuk, Iraq Exclusion criteria: Unable to participate because of redeployment or operational requirements, took yoga during the month before the onset of the study, pregnant women	3 weeks of sensory-enhanced hatha yoga were compared with control group that did not receive any form of yoga.	• Anxiety, STAI-State Anxiety, 3 weeks: SMD = -1.11 (CI = -1.62, -0.61) • Anxiety, STAI-Trait Anxiety, 3 weeks: SMD = -1.13 (CI = -1.63, -0.62)
Author, year: Trousselard et al., 2015 Study design: RCT—individuals randomized Region of origin: Europe Setting: Europe, military base	Number enrolled: 180 Subjects: Army Population description: 100% male between the ages of 18 and 25, majority Caucasian Inclusion criteria: New military firefighters were recruited from the French Army's Paris unit; all participants were male, did not have an endocrine disease, did not experience any recent major life stressors, had no ailments, and did not take any medications for inflammation Exclusion criteria: Endocrine disease, recent major life stressors, ailments, medications for inflammatory diseases, medications that could influence heart rate	CardioBioFeedback was compared with Tactics to Optimize the Potential and a control. CardioBioFeedback monitors pulse and provides feedback, signaling to the user that their emotion needs regulated. The Tactics to Optimize the Potential intervention teaches goal-oriented coping mechanisms to control stress and promote relaxation. All groups took one placebo pill a day during the 2-month intervention period.	• Stress, PSS, 6 months: SMD = 0.12 (CI = -0.27, 0.52) • Negative mood, Profile of Mood States, 6 months, SMD = -0.34 (CI = -0.74, 0.06) • Stress, PSS, 12 months: SMD = 0.06 (CI = -0.33, 0.46) • Negative mood, Profile of Mood States, 12 months: SMD = -0.32 (CI = -0.72, 0.07) • Stress, PSS, postintervention: The Tactics to Optimize the Potential group had a higher decrease than the controls ($p = 0.05$) and tended to differ from the CardioBioFeedback group ($p = 0.09$) • Negative mood, Profile of Mood States, postintervention: The decrease was larger in the Tactics to Optimize the Potential group than in the control group ($p = 0.04$) and larger in the CardioBioFeedback group than in the control group ($p = 0.05$) • Physiological arousal, IgA, postintervention, IgA changes tended to

Study Details	Participants	Intervention/Treatment	Outcome
			differ between groups ($F = 2.29$; $P = 0.09$), with a tendency to a smaller decrease for Tactics to Optimize the Potential and CardioBioFeedback programs than for the control group.
Author, year: Tuckey and Scott, 2014 Study design: RCT—individuals randomized Region of origin: Australia/New Zealand Setting: Australia/New Zealand, unclear	Number enrolled: 122 Subjects: First responders Population description: No demographic information Inclusion criteria: Australian volunteer fire service Exclusion criteria: Not applicable	CISD sessions were led by a consultant mental health professional, which lasted approximately 90 minutes. Stress-management education sessions consisted of a 90-minute workshop (a PowerPoint presentation integrated with group discussion) led by a consultant mental health professional and assisted by a peer. The session consisted of information about how to recognize and manage stress.	- PTSD, Impact of Events Scale–Revised, postintervention, CISD versus no intervention: $SMD = 0.15$ ($CI = -0.48, 0.78$) - PTSD, Impact of Events Scale–Revised, postintervention, CISD versus stress-management education: $SMD = -0.10$ ($CI = -0.68, 0.48$) - Distress, Kessler-10, postintervention, CISD versus no intervention: $SMD = 0.20$ ($CI = -0.44, 0.83$) - Distress, Kessler-10, postintervention, CISD versus stress-management education: $SMD = -0.21$ ($CI = -0.79, 0.37$) - Alcohol use: How many standard alcoholic drinks in the previous 7-day period, postintervention, CISD versus no intervention: $SMD = -1.31$ ($CI = -2.01, -0.60$) - Alcohol use: How many standard alcoholic drinks in the previous 7-day period, postintervention, CISD versus stress-management education: $SMD = -0.62$ ($CI = -1.21, -0.03$)
Author, year: U.S. Army Surgeon General and Headquarters, Department of the Army, G-1, 2003 Study design: Case series or case study Region of origin: U.S. Setting: Middle East, in theater	Number enrolled: 756 Subjects: Army Population description: Demographics not reported Inclusion criteria: Army soldiers in OIF, 2002 to 2003 Exclusion criteria: None	This examined the entire OIF health care system for behavioral health.	- Suicide risk—evacuees: $RR = 0.22$ ($CI = 0.14, 0.34$) - Homicide risk—evacuees: $RR = 0.33$ ($CI = 0.15, 0.76$) - Interest in receiving help, OIF Soldier Well-Being Survey, during deployment: 15% of soldiers reported interest in receiving help - Traumatic stress, OIF Soldier Well-Being Survey, during deployment: 15.2% of surveyed soldiers screened positive for traumatic stress

Study Details	Participants	Intervention/Treatment	Outcome
			• Depression, OIF Soldier Well-Being Survey, during deployment: 6.9% of surveyed soldiers screened positive for depression • Anxiety, OIF Soldier Well-Being Survey, during deployment: 7.3% of surveyed soldiers screened positive for anxiety • Adjustment disorder, OIF Soldier Well-Being Survey, during deployment: 33% among evacuees returned to duty after follow-up; 33% among evacuees failed to follow up after return to home station • Barriers to care, OIF Soldier Well-Being Survey, during deployment: Among soldiers who screened positive for depression, anxiety, or traumatic stress, 26% reported that it would be too difficult to get to the location of behavioral health • Suicide rate, during deployment: The OIF suicide rate for the period January to October 2003 was 15.6 suicides per 100,000 soldiers and compares to the average annual rate of 11.9 per 100,000 for the 8-year period • Return to duty, during deployment: 97% of service members seen in forward-deployed behavioral health units returned to duty, while only 11% of soldiers treated in Kuwait were returned to duty; only 3.6% of behavioral health evacuees were returned to duty • Use of mental health services, during deployment: Of the soldiers who screened positive for depression, anxiety, or traumatic stress, only 27% reported receiving help at any time during the deployment from a behavioral health professional, or general medicine • Distress, OIF Soldier Well-Being Survey, during deployment: soldiers reported currently having severe (7%) or moderate (16%) stress, emotional, or family

Study Details	Participants	Intervention/Treatment	Outcome
			problem Perceived stigma, OIF Soldier Well-Being Survey, during deployment: 58% of soldiers reported that the unit leadership would treat them differently; 49% reported that the unit would have less confidence in them
Author, year: Vaughan et al., 2015 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., military bases, in theater	Number enrolled: 2,523 Subjects: Marine Corps Population description: 70% E-1–E-3, 22% over age 25, 70% Caucasian, 75% sought another Marine for social support, 30% married Inclusion criteria: Active duty or reserve Marines ranked O-6 or lower scheduled for deployment to Iraq or Afghanistan between 2010 and 2011 Exclusion criteria: None	OSCAR was compared with no intervention. OSCAR is a stress-management program that integrates mental health professionals into units to catch signs of combat stress and provide early intervention. The program is based on COSC principles and practices.	- Stress, customized measure, 3 months postdeployment: RR = 1.02 (CI = 0.93, 1.12) - Probable PTSD, PCL-C, 4 months postdeployment: RR = 1.20 (CI = 0.97, 1.48) - Probable major depressive disorder, PHQ-8, 5 months postdeployment: RR = 1.26 (CI = 1.01, 1.57) - High-risk drinking, AUDIT-C, 6 months postdeployment: RR = 1 (CI = 0.83, 1.21) - General health, Short Form-12, 7 months postdeployment: RR = 1.25 (CI = 0.98, 1.60) - Occupational impairment, Health Performance Questionnaire, 8 months postdeployment: RR = 0.92 (CI = 0.79, 1.07) - Attitudes toward stress response and recovery, customized measure, 3 months postdeployment: RR = 0.98 (CI = 0.88, 1.10)
Author, year: Wald et al., 2016 Study design: RCT—individuals randomized Region of origin: Middle East Setting: Middle East, military base, not in theater	Number enrolled: 719 Subjects: Israeli Defense Forces Population description: Mean age = 19; 8 sessions of attention bias modification therapy: 46% sergeant, 41% first sergeant, 6% cadet, 1.4% corporal; 4 sessions of attention bias modification therapy: 43% sergeant, 48% first sergeant, 3.5% cadets, 3% corporal; attention control training: 47% sergeants, 42% first sergeants, 7% cadets; no training: 52% sergeant Inclusion criteria: Soldiers between 18 and 27 years old and part of an infantry brigade	The conditions were 8 sessions of attention bias modification therapy (ABMT), 4 sessions of ABMT, 4 sessions of ACT, and no training. ABMT is a computer-delivered intervention that fixates attention away from threat-related stimuli with targets. Attention control training randomly assigns targets to neutral and threat-related stimuli. Sessions last	- PTSD; PCL-M; 6 months postintervention; attention bias modification training, 8 sessions, versus no intervention: SMD = -0.04 (CI = -0.24, 0.17) - PTSD; PCL-M; 6 months postintervention; attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: SMD = 0.00 (CI = -0.21, 0.21) - PTSD; PCL-M; 6 months postintervention; attention bias modification training, 8 sessions, versus attention control training, 4 sessions: SMD = -0.17 (CI = -0.38,

Study Details	Participants	Intervention/Treatment	Outcome
	Exclusion criteria: Soldiers with dyslexia or reading issues	10 minutes; intervention lasted 6 weeks.	0.03) - PTSD; PCL-M; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus no intervention: SMD = 0.23 (CI = 0.02, 0.44) - PTSD; PCL-M; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: SMD = 0.12 (CI = -0.09, 0.32) - PTSD; PCL-M; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus attention control training, 4 sessions: SMD = 0.06 (CI = -0.14, 0.27) - PTSD; PCL-M; 4 months postcombat (12 months); attention bias modification training, 8 sessions, versus no intervention: SMD = 0.07 (CI = -0.14, 0.28) - PTSD; PCL-M; 4 months postcombat (12 months); attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: SMD = 0.20 (CI = 0.00, 0.41) - PTSD; PCL-M; 4 months postcombat (12 months); attention bias modification training, 8 sessions, versus attention control training, 4 sessions: SMD = 0.21 (CI = 0.01, 0.42) - Depression; PHQ-9; 6 months postintervention; attention bias modification training, 8 sessions, versus no intervention: SMD = -0.02 (CI = -0.23, 0.19) - Depression; PHQ-9; 6 months postintervention; attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: SMD = -0.02 (CI = -0.23, 0.18) - Depression; PHQ-9; 6 months postintervention; attention bias

Study Details	Participants	Intervention/Treatment	Outcome
			modification training, 8 sessions, versus attention control training, 4 sessions: SMD = -0.12 (CI = -0.33, 0.09) • Depression; PHQ-9; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus no intervention: SMD = 0.09 (CI = -0.12, 0.29) • Depression; PHQ-9; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: SMD = 0.02 (CI = -0.18, 0.23) • Depression; PHQ-9; 10 days postcombat (8 months); attention bias modification training, 8 sessions, versus attention control training, 4 sessions: SMD = -0.07 (CI = -0.28, 0.14) • Depression; PHQ-9; 4 months postcombat (12 months); attention bias modification training, 8 sessions, versus no intervention: SMD = 0.02 (CI = -0.19, 0.22) • Depression; PHQ-9; 4 months postcombat (12 months); attention bias modification training—8 sessions versus Attention bias modification training—4 sessions, SMD = 0.13 (CI = -0.08, 0.34) • Depression; PHQ-9; 4 months postcombat (12 months); attention bias modification training, 8 sessions, versus attention control training, 4 sessions: SMD = 0.11 (CI = -0.1, 0.32) • PTSD; CAPS; 4 months postcombat; attention bias modification training, 8 sessions, versus no intervention: RR = 0.74 (CI = 0.32, 1.71) • PTSD; CAPS; 4 months postcombat; attention bias modification training, 8 sessions, versus attention bias modification training, 4 sessions: RR = 2.31 (CI = 0.73, 7.38)

Study Details	Participants	Intervention/Treatment	Outcome
			PTSD; CAPS; 4 months postcombat; attention bias modification training, 8 sessions, versus attention control training, 4 sessions: RR = 1.29 (CI = 0.49, 3.40)
Author, year: Wald et al., 2017 Study design: RCT—individuals randomized Region of origin: Middle East Setting: Middle East, military base	Number enrolled: 130 Subjects: Israeli Defense Forces Population description: Not described Inclusion criteria: Israel Defense Forces from an infantry brigade preparing for deployment Exclusion criteria: None	In attention bias modification training (ABMT), the experimental group, participants were taught how to fixate their attention on a threat. In the attention control training (ACT), the control group, participants did not change their attention when a threat arose. During a 16-minute session, participants were shown on a screen with a threat-related word and a neutral word that contained the same number of letters. Next, the words disappeared and 1 or 2 dots replaced the screen. The participants had to identify how many dots they saw. In the ABMT condition, the dots always replaced the threat words and in the ACT condition, the dots randomly replaced the words.	- PTSD, PCL, 2 months: SMD = 0.19 (CI = -0.20, 0.59) - Depression, PHQ-9, 2 months: SMD = -0.12 (CI = -0.52, 0.28)
Author, year: Warner et al., 2007 Study design: Case series or case study Region of origin: U.S. Setting: U.S., Middle East, in theater and predeployment at military base	Number enrolled: 2,170 Subjects: Army soldiers and their civilian families Population description: Not described Inclusion criteria: Soldiers who were a part of Task Force Baghdad and their families Exclusion criteria: None	Before deployment, division mental health organized educational lectures on stress and suicide and provided pamphlets to soldiers and their families. During deployment, soldiers were screened with the postdeployment health assessment and then evaluated by a mental health professional. The soldiers who screened positive for mental health problems had the option for treatment while still in theater and were	- Behavioral health admissions, NR, postintervention: RR = 0.77 (CI = 0.54, 1.11) - Suicidal ideations, attempts, and gestures; NR; postintervention: RR = 0.46 (CI = 0.27, 0.81) - Driving under the influence, NR, postintervention: RR = 0.72 (CI = 0.54, 0.94) - Mental health treatment utilization, NR, postintervention: Of the moderate- and high-risk soldiers, 71.9% accepted follow-up mental health treatment upon return to home station

Study Details	Participants	Intervention/Treatment	Outcome
		considered at risk. After deployment, soldiers participated in a 10-day decompression phase that consisted of physical training and education related to marital issues, stress, and suicide. They also took the assessment again.	
Author, year: Watson and Andrews, 2018 Study design: Cohort study (comparing 2 or more groups) Region of origin: Europe Setting: Europe, other: police facility	Number enrolled: 859 Subjects: Law enforcement Population description: TRiM forces: 55% male, 80% White British, 35% served 6–10 years; non-TRiM: 58% male, 80% White British, 32% served 6–10 years Inclusion criteria: 3 UK police forces that utilize TRiM intervention after traumatic events versus 2 non-TRiM forces that had no standardized process for managing posttrauma support Exclusion criteria: None	TRiM is a peer-led intervention that takes place after trauma exposure. Peers are provided with a basic understanding of trauma psychology and are trained to carry out risk assessments. 3 police forces that used TRiM were compared with 2 that did not use TRiM.	- Barriers to care, Stigma and Barriers to Care Questionnaire, cross-sectional: SMD = -0.44 (CI = $-0.61, -0.27$) - Self-stigma, Military Stigma Scale, cross-sectional, SMD = -0.20 (CI = $-0.37, -0.03$) - PTSD, PCL-C, cross-sectional: The TRiM group reported significantly fewer posttraumatic stress symptoms ($p < 0.001$) than the non-TRiM group
Author, year: Wee, Mills, and Koehler, 1999 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 42 Subjects: First responders Population description: Emergency medical services personnel; no demographic data Inclusion criteria: Emergency medical technicians providing service in South Central Los Angeles during the civil disturbance in 1992 Exclusion criteria: None	CISD was examined.	PTSD, Frederick Reaction Index–Adults, 2–3 months: SMD = -0.48 (CI = $-1.00, 0.04$)
Author, year: Wesemann et al., 2016 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., unclear	Number enrolled: 67 Subjects: Army Population description: Mean age = 28.46, mean period of service = 9.19 years Inclusion criteria: Member of medical military unit Exclusion criteria: Not applicable	The CHARLY intervention included awareness and acceptance of mental injuries, psychoeducation, protective mindset, coping strategies (such as relaxation), and distancing techniques, as well as constructive communication in the peer group.	- Mental distress, Global Severity Index, postintervention: SMD = -0.43 (CI = $-0.98, 0.13$) - Mental distress, Global Severity Index, 7 months: SMD = -0.41 (CI = $-0.97, 0.14$) - PTSD, PSD, 7 months: CHARLY had significantly lower PTSD score after deployment ($t[34] = -2.032, p = 0.028$)

Study Details	Participants	Intervention/Treatment	Outcome
Author, year: Williams et al., 2010 Study design: Case series or case study Region of origin: U.S. Setting: U.S., Naval Medical Center	Number enrolled: 396 Subjects: Navy Population description: 24% officers and 76% enlisted; mean ages were 41.1 (SD = 9.2) and 29.5 (SD = 7.9), respectively; 55% female, 62.3% White Inclusion criteria: All active duty members at a naval medical center in Virginia were invited Exclusion criteria: None	Stress Gym is an online CBT-based self-help intervention managing stress by developing an awareness of stress in interpersonal relationships, stress associated with dealing with specific health issues, and maladaptive responses to stress.	- Stress Gym Feasibility Questionnaire, postintervention: The majority of military personnel found the user interface acceptable - Perceived stress, numeric rating scale, postintervention: The rating of perceived stress was significantly reduced from baseline to post-website use
Author, year: Williams et al., 2013 Study design: Case series or case study Region of origin: U.S. Setting: U.S., other: military treatment facility	Number enrolled: 129 Subjects: Army, Marine Corps Population description: 124 nurses and 5 patients; nurses: 61% active duty, 6% reserves, 24.6% government, 8.5% contract, 34% worked in surgical, 20.5% intensive care unit, 12.8% operating room, 32.5% oncology, psychiatry, or cardiology; patients: mean age = 35; mean service time = 14.5 years Inclusion criteria: Patients with combat injuries recruited from U.S. medical treatment facilities Exclusion criteria: Patients with injuries or disabilities that did not allow them to complete the intervention	Stress Gym is a website intervention developed to help military members cope with stress and depression. Nurses' and patients' recommendations on the treatment were examined.	- Usability, Evaluation Questionnaire, postintervention: Both the nurses and combat-wounded patients scored high on the evaluation, agreeing with the ease of use, understanding, content, format, motivation, and intent to use the intervention - Perceived stress, analog scale, postintervention: Of the three patients who provided their perceived stress levels at the completion of Stress Gym, two patients indicated a decrease by 2 points (5 to 3; 7 to 5), and one patient indicated no change (4 to 4) - Depression, PHQ-2, postintervention: Patients scored a mean of 3.80 (SD = 2.59) and a median of 4, with scores ranging from 0 to 6, indicating depressive symptoms that could meet criteria for major depressive disorder - PTSD, Short Screening Scale for Post-Traumatic Stress, postintervention: Patients scored a mean of 5.50 (SD = 1.00) and a median of 6.00, with scores ranging from 4.00 to 6.00, indicating positive screening for symptoms of PTSD
Author, year: Wilson et al., 2001 Study design: RCT—individuals randomized Region of origin: U.S. Setting: U.S., other: police department and clinic off-site	Number enrolled: 62 Subjects: Law enforcement Population description: Officers: 79% male; 75% Caucasian, 16% Hispanic, 5% African American, 2% other; 33% military experience; 100% high school graduates; mean age = 36.8; mean years in police	Eye movement desensitization and reprocessing was compared with a stress-management program. Eye movement desensitization and reprocessing participants attended 3 2-hour sessions.	- Stress, SUDS, postintervention: SMD = -1.48 (CI = -2.05, -0.91) - Trait anger, State-Trait Anger Inventory, postintervention: SMD = -0.62 (CI = -1.14, -0.11) - Trait anger, State-Trait Anger Inventory,

Study Details	Participants	Intervention/Treatment	Outcome
from police department	department = 10; 5% deputy chief and commander, 3% lieutenant, 13% sergeants Inclusion criteria: Police officers at the Colorado Springs Police Department and their significant others, ability to identify stressors associated with their career field Exclusion criteria: No significant other to participate, already attending therapy for work related stress, or not willing to commit to the time involved to complete the study	Managing Job Stress program participants attended 6 1-hour sessions involving videotape instruction and a workbook.	6 months: SMD = -1.20 (CI = -1.75, -0.65) • State anger, State-Trait Anger Inventory, postintervention, SMD = 0.12 (CI = -0.38, 0.62) • State anger, State-Trait Anger Inventory, 6 months, SMD = -0.58 (CI = -1.09, -0.07) • Job Stress Survey Scale, postintervention: SMD = -0.83 (CI = -1.35, -0.30) • Marital Adjustment Test, postintervention: SMD = 0.87 (0.34, 1.4) • PTSD, Posttraumatic Stress Diagnostic Scale, postintervention: SMD = -0.54 (CI = -1.05, -0.03) • PTSD (diagnosis), number diagnosed with PTSD, postintervention: RR = 0.44 (CI = 0.04, 4.60) • PTSD (diagnosis), number diagnosed with PTSD, 6 months: RR = 0.30 (CI = 0.03, 2.74) • Police Stress Inventory, postintervention: No significant effects were noted • Psychological functioning and distress, Global Severity Index, postintervention: No significant effects were noted
Author, year: Wright State University, 2015 Study design: Case series or case study Region of origin: U.S. Setting: U.S., military base, not in theater	Number enrolled: 500 Subjects: Air Force Population description: Active duty Air Force, not described Inclusion criteria: Participants 18 years and older who are active duty and either married or in a committed relationship Exclusion criteria: Participants who cannot speak or understand English or with psychological disorders, including alcohol dependence, dissociative disorder, brain injury, psychotic disorder, or at risk for committing self-harm	Marriage Checkup has 3 30-minute sessions with the internal behavioral health consultants. The first session is devoted to relationship history and strengths, the second session to relationship concerns, and the third session to couple feedback and relationship-building skills. Participants in the experimental group were placed on a 7-month wait list before participating in Marriage Checkup, and the	• Satisfaction, Marriage Checkup Evaluation-Couple, 1 month: Couples were satisfied with their Marriage Checkup experience immediately postcheckup (4.05 on a 5-point scale) • Satisfaction, Marriage Checkup Evaluation-Couple, postintervention: Couples were satisfied with their Marriage Checkup experience immediately postcheckup (4.33 on a 5-point scale) • Relationship satisfaction, Couples Satisfaction Index, 2 weeks: Relationship satisfaction was significantly improved ($B = 0.54, p = 0.003$) • Intimacy, Intimate Safety Questionnaire, 2

Study Details	Participants	Intervention/Treatment	Outcome
		those in the control group will receive treatment immediately.	weeks: intimacy was significantly improved ($B = 0.43, p < 0.017$) - Distress, Center for Epidemiologic Studies Depression Scale–Short, 2 weeks: Distress was significantly improved ($B = 0.75, p < 0.001$) - Relationship satisfaction, Couples Satisfaction Index, 2 months: Relationship satisfaction was significantly improved ($B = 0.55, p = 0.004$) - Intimacy, Intimate Safety Questionnaire, 2 months: Intimacy was significantly improved ($B = 0.47, p = 0.014$) - Distress, Center for Epidemiologic Studies Depression Scale–Short, 2 months: Distress was significantly improved ($B = 0.58, p = 0.003$)
Author, year: Young, 2012 Study design: Cohort study (comparing 2 or more groups) Region of origin: U.S. Setting: U.S., other: police headquarters	Number enrolled: 38 Subjects: Law enforcement Population description: Police officers in a midsize town in the U.S. Southwest; 86% male, 89% White Inclusion criteria: Not described Exclusion criteria: None	CISM weekly debriefings were examined.	- PTSD (intrusion, avoidance, hyperarousal), Impact of Event Scale–Revised, postintervention: No significant difference between the two groups - Depression, Beck Depression Inventory, postintervention: No significant difference between the two groups - Usability, questionnaire, postintervention: All officers in the treatment group found the meetings helpful and thought that they should be continued
Author, year: Zimmerman and Weber, 2000 Study design: Case series or case study Region of origin: Canada Setting: Canada, other: retreat center	Number enrolled: 31 Subjects: Canadian military chaplains Population description: Mean age = 44; 100% male; 29 from Canada, 2 from U.S. Inclusion criteria: Chaplains part of United Nations or North Atlantic Treaty Organization peacekeeping missions in the 1990s Exclusion criteria: Participating in PTSD interventions	Care for the Caregivers is delivered after deployment and uses principles of adult education to inform participants of the potential negative side effects of traumatic experiences and PTSD characteristics.	- Qualitative: Positive feedback given on personal and professional benefits - All attendees reported that the program was a valuable use of their time
Author, year: Zimmermann et al., 2015 Study design: Cohort study (comparing 2 or more groups)	Number enrolled: 260 Subjects: German Bundeswehr Population description: Treatment group: 88.5% male, 65.3% NCOs, mean age =	A 3-week treatment program aims to help soldiers quickly recover from deployment stress and prevent mental	- PTSD, PTSS-10, postintervention: $SMD = 0.20$ ($CI = -0.09, 0.50$) - Satisfaction, questionnaire, postintervention: The treatment success

Study Details	Participants	Intervention/Treatment	Outcome
Region of origin: Europe Setting: Europe, other: hospital	35.9; control: 97% male; 48% NCOs; mean age = 29.3 Inclusion criteria: Soldiers who completed treatment program Exclusion criteria: Soldiers not demonstrating any symptoms of stress, or have a psychiatric disorder, or score above 35 on the Posttraumatic Stress Scale 10 (PTSS-10)	health issues. The control group consisted of soldiers who filled out a PTSS-10, but did not participate in the treatment.	was rated good to very good, whereas the treatment program as a whole was rated very good to excellent

Appendix C. List of Excluded Studies

- Acheson, D. T., M. A. Geyer, D. G. Baker, C. M. Nievergelt, K. Yurgil, and V. B. Risbrough, "Conditioned Fear and Extinction Learning Performance and Its Association with Psychiatric Symptoms in Active Duty Marines," *Psychoneuroendocrinology*, Vol. 51, January 2015, pp. 495–505. Not an intervention for stress control.
- Addis, N., and C. Stephens, "An Evaluation of a Police Debriefing Programme: Outcomes for Police Officers Five Years After a Police Shooting," *International Journal of Police Science and Management*, Vol. 10, 2008, pp. 361–373. Study design.
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Appendix D. Risk-of-Bias Items, Controlled Trials

Study	Randomization Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
Adler et al., 2008	Low	Low	Some concerns	High	Low	High	Outcome assessors were probably aware of the intervention received; the assessment probably could have been and probably was influenced by knowledge of the intervention
Adler et al., 2015	Low	Some concerns	Low	Low	Low	Some concerns	Method of randomization not reported
Arnetz et al., 2009	Some concerns	Low	Low	Low	Low	Some concerns	Very small N; no information on method of randomization or allocation
Baddeley and Pennebaker, 2011	Low	Low	High	Low	Low	High	Outcome data were not available for all participants; missingness could probably depend on the true value; no information on whether outcome assessors were aware of the intervention received; no information on whether the assessment could have been influenced or likely was influenced by knowledge of the intervention
Biggs et al., 2016	Some concerns	Low	Some concerns	High	Low	High	Control group knew it had no intervention

Study	Randomiza- tion Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
Bouchard et al., 2012	Low	Low	Low	Low	Low	Low	Outcome not likely affected by missing data or knowledge of assignment; ITT used
Cacioppo et al., 2015	Some concerns	Low	Some concerns	Some concerns	Low	Some concerns	Baseline imbalances suggest a problem; the assessment probably could have influenced and probably was likely influenced by knowledge of the intervention
Castro et al., 2012; Adler et al., 2009	Some concerns	Low	Some concerns	Some concerns	Low	Some concerns	High dropout, which authors claim as typical of military studies; good attempts to adjust for in analyses
Cigrang, Todd, and Carbone, 2000	Low	Low	Low	Low	Low	Low	No issues
Crane et al., 2019	Low	Low	Low	Low	Low	Low	No issues
Garner, 2008	Low	Low	High	Some concerns	Low	High	No information on missing values and how they were addressed
Greenberg et al., 2010; Greenberg et al., 2009; Greenberg et al., 2011	Low	Low	High	Some concerns	Low	High	Potential bias resulting from missing data was not addressed; no ITT; no comparison of baseline characteristics of groups
Haase et al., 2016	Low	Low	Some concerns	High	Low	High	Outcome assessors were aware of the intervention received; assessment probably could have been influenced by

Study	Randomiza- tion Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
							knowledge of the intervention
Hourani et al., 2011	High	Low	Some concerns	Some concerns	Low	High	Baseline differences suggest a probable problem; outcome assessors were probably aware of the intervention received; assessment could probably have been and probably likely was influenced by knowledge of the intervention
Hourani et al., 2016	Some concerns	High	High	Some concerns	High	High	No ITT, possibly biased analysis
Hourani et al., 2018	Some concerns	Some concerns	Some concerns	Low	Low	High	Many concerns, primarily f/u rate = 32% in intervention group, 28% in control group
Ireland, Malouff, and Byrne, 2007	Low	Low	Low	High	Low	High	Outcome assessors were probably aware of the intervention received; the assessment probably could have been and probably likely was influenced by knowledge of the intervention

Study	Randomiza- tion Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
Johnson et al., 2014	Low	High	Low	Low	Low	High	Both participants and personnel were probably aware of the intervention, deviations probably arose due to the trial context; deviations probably affect the outcome and probably were not balanced between groups; outcome data were not available for all participants; there is probably no evidence that the result is not biased
Joyce et al., 2019	Low	Low	Low	Low	Low	Low	No major issues
Kritikos, DeVoe, and Emmert- Aronson, 2019	Some concerns	Low	Low	Some concerns	Low	Some concerns	Outcome assessor aware of intervention
Lewis et al., 2015	Some concerns	Some concerns	High	Some concerns	Low	High	The measurement or ascertainment of the outcome probably differed between the two groups
McCraty et al., 1999; McCraty and Atkinson, 2012	Low	Low	High	High	Low	High	Outcome data were not available for all participants; missingness could depend on the true value
Mulligan et al., 2012	Some concerns	Some concerns	Low	Low	Low	Some concerns	Deviation of trial context
Pinna et al., 2017; Zhang, Rudi, et al., 2018; Zhang, Zhang, et al., 2018; Snyder et al., 2016	Some concerns	Low	High	Low	Low	High	Missing data could lead to bias

Study	Randomiza- tion Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
Pyne et al., 2019	High	High	Low	Low	Low	High	Poor 12-month follow-up rate, no ITT
Rona et al., 2017	Low	Low	Low	Some concerns	Low	Some concerns	Participants' knowledge of intervention could affect outcome assessment
Roy, Highland, and Costanzo, 2015	Some concerns	Low	Low	Low	Low	Some concerns	Small N; baseline PCL significantly higher in intervention group
Shipherd, Salters-Pedneault, and Fordiani, 2016	Low	Low	Some concerns	Some concerns	Some concerns	Some concerns	Both participants and personnel probably were aware of the intervention; outcome data were not available for all participants; missingness probably could depend on the true value; outcome assessors were probably aware of the intervention received; assessment probably could have been influenced by knowledge of intervention, but was not likely influenced by knowledge of intervention; result was probably selected from multiple outcome measurements
Stetz et al., 2009	Some concerns	Low	Low	Low	Low	Some concerns	Did not report baseline characteristics by group so unable to assess possible bias

Study	Randomiza- tion Process	Deviations from Intervention Intent	Missing Data	Outcome Measurement	Selection of Reported Outcome	Overall	Overall Comments
Stetz et al., 2011	Low	Low	Low	High	High	High	Outcome assessors were probably aware of the intervention received; the intervention probably could have been and probably likely was influenced by the outcome of the intervention; the trial was probably not analyzed fully in accordance with a prespecified plan
Stoller et al., 2012	Some concerns	Low	Low	High	Low	High	Knowledge of intervention could bias self-reported outcome assessment
Trousselard et al., 2015	Low	Low	High	High	Low	High	Outcome data were not available for all participants; missingness could depend on the true value
Tuckey and Scott, 2014	Some concerns	Some concerns	High	Low	Low	High	25% lost to f/u, no ITT
Wald et al., 2016	Low	Low	Low	Low	Low	Low	Evidence that the result is not biased
Wald et al., 2017	Low	Low	Low	Low	Low	Low	No issues; outcome assessors probably were not aware of the intervention received
Wesemann et al., 2016	Low	Some concerns	Some concerns	Some concerns	Low	Some concerns	79% completion, no ITT
Wilson et al., 2001	Low	Low	Low	Low	Low	Low	No apparent issues in randomization, assessment, and analysis

NOTE: f/u = follow-up; ITT = intention to treat.

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