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Pre-deployment programmes for building resilience in military and frontline emergency service personnel (Protocol)

Doody CB, Robertson L, Uphoff N, Bogue J, Egan J, Sarma KM

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TABLE OF CONTENTS

[Intervention Protocol]

Pre-deployment programmes for building resilience in military and frontline emergency service personnel

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ABSTRACT

This is a protocol for a Cochrane Review (Intervention). The objectives are as follows:

To assess the effectiveness of pre-deployment programmes for building resilience in military and front-line emergency service personnel.

BACKGROUND

Traumatic responses to critical events are determined, at least in part, by pre-exposure resilience. This Cochrane Review will synthesise the evidence on pre-deployment resilience-building interventions among first-responders and military personnel. The review is part of a wider programme of research requested by, and being completed in collaboration with, the Irish military (Defence Forces Ireland, DFI). It is intended that the research team will use the findings to design and pilot a novel pre-deployment resilience-building programme for military personnel being deployed on humanitarian and peacekeeping missions abroad.

The project team is comprised of clinical and forensic psychologists and intervention methodologists based at the National University of Ireland Galway, who work closely with DFI. The work is being overseen by a steering group comprised of military personnel (psychologists and employee-assistance staff) and subject matter experts.

Description of the condition

This Cochrane Review will assess the evidence on programmes that strive to increase the resilience of military and front-line emergency service personnel to critical incident traumas experienced in the line of duty. Military personnel on humanitarian, peacekeeping, and combat duties, and front-line emergency service personnel may be exposed, both as actor and observer, to extreme violence, human suffering, and other critical incident traumas (CITs). The World Health Organization (WHO) defines a CIT as an event outside the range of normal experience; one that is sudden and unexpected, makes you lose control, involves the perception of a threat to life, and can include elements of physical or emotional loss (WHO 2006). CITs may elicit emotional states including fear, helplessness, despair, and other symptoms, including disturbing flashbacks, sleep difficulties, nightmares, memory loss, depression, and a sense of numbness. Such responses are recognised as 'acute stress responses' if they persist for less than three months from exposure to the traumatic event, with one definition proposing the

symptomatology should occur within one month of the traumatic event (HSE 2012).

These acute emotional experiences can, for some, have enduring effects and lead to the development of Post-Traumatic Stress Disorder (PTSD). Systematic reviews of prevalence rates for PTSD in post-deployment military personnel suggest that rates can vary, ranging from between 1.4% and 31% for all deployed forces, with the number being significantly higher within front-line units compared to support units (Sundin 2010).

Research conducted with US soldiers returning from the Afghan War found that approximately 7% to 13.5% developed PTSD (Hines 2014). More variable rates have been reported for veterans of the Iraq War, where 4% to 17% of US veterans met the criteria for PTSD (Richardson 2010). The prevalence appears to be higher among Vietnam War veterans, where rates as high as 30.9% have been reported (Fisher 2014). These rates contrast with those in the general non-military population, where a lifetime prevalence is estimated to be below 5.6%, with women twice as likely as men to experience PTSD (Frans 2005). High rates of PTSD have also been reported among emergency service personnel. For example, PTSD rates are an estimated four to six times higher among law enforcement personnel than the civilian community in the UK (Green 2008)

One question that arises for those tasked with supporting such personnel is: what can be done to reduce susceptibility to negative psychological outcomes in the wake of a CIT? Attention has turned to the concept of 'resilience'. Resilience is a dynamic process where an individual displays positive adaptation despite the experience of significant stress adverse situations (Luthar 2000; Richardson 2010). This adaptive response is, in turn, based on a range of factors that include but are not limited to social support, locus of control, and ability to emotionally regulate (Luthar 2000; Smith 2013; Stainton 2018). When an individual is exposed to severe adversity, such as witnessing human suffering during humanitarian or peacekeeping missions, resilience has been shown to have protective value against the harmful short-term impacts of psychological trauma and safeguard against the development of PTSD and other negative outcomes (Horn 2016).

Importantly, resilience is dynamic rather than static (Leppin 2014). Theoretically, it should be possible to 'build' resilience prior to being exposed to critical events and thus significantly reduce susceptibility to PTSD and acute trauma following such events (e.g. as discussed in Stainton 2018). This supposition has led to the development of resilience-building programmes. This Cochrane Review seeks to identify and synthesise such programmes where they have been delivered to military personnel, or other emergency or first responder personnel, or both. One example of such a programme was a resilience-building programme for Swedish police officers, which appears to have had positive outcomes for programme participants (Arnetz 2009). Similarly, a mindfulness-based resilience building programme for first responders in California appears to have had positive impacts on decision-making and judgement under stressful conditions (McCraty 2012). Mindfulness-based resilience building has also been shown to contribute general well-being i.e. reductions in sleep disturbance, aggression, and perceived stress levels (Christopher 2016). These programmes have also targeted factors that have been shown to be directly implicated in increased risk of PTSD development. For example, reduced heart rate reactivity when exposed to stressful events (Arnetz 2009), and burnout which is closely related to PTSD symptomatology in emergency medical service personnel (Collopy 2012) .

Description of the intervention

As scientific understanding of psychological trauma has improved, resilience-building programmes have become mainstream in modern militaries and front-line response services worldwide. During an initial scoping exercise completed to inform this protocol document, it was clear that approaches to building resilience to trauma among military and emergency service personnel have adopted a number of different therapeutic orientations. For example, these include cognitive behavioural therapy (CBT; Southwick 2015; Horn 2016), behaviour therapy (e.g. stress exposure therapy) (Fava 2009), and biofeedback techniques (Reivich 2011), and are delivered through different media such as group-based (Padesky 2012), individual (Cohn 2010), and online (Castro 2006; Gonzalez 2014).

One example of a current pre-deployment resilience building programme is the US Navy's Stress Resilience Training System (STRS) (Rose 2013). The SRTS integrates cognitive therapy and biofeedback training (Reivich 2011). It is delivered via a tablet or computer (Cohn 2010). This approach appears to be effective in building resilience in military personnel (de Vissier 2016). The programme involves both psychoeducation and skills-based elements, the latter taking the form of heart rate variability (HRV) controlled games. HRV is defined as a physiological measure associated with autonomic nervous system activity. High HRV relates to a high level of variation in the intervals between heartbeats. This is associated with better stress resilience (Cohn 2010). Progress in the programme's activities is dependent on the participant achieving the required standard of HRV control (Cohn 2010). The programme consists of a 6 to 8 week training phase incorporating student guided interaction and, in some cases, a weekly 1-hour mentor session provided over the phone (Smith 2013)

The Master Resilience Training (MRT) is a second example. The MRT key part of the US Army's pre-deployment programme known as Comprehensive Soldier Fitness (de Vissier 2016). The MRT is a 10-day intensive mindfulness-based programme whereby non-commissioned officers, the junior leaders in the military, are taught techniques and skills for building resilience in the soldiers they lead prior to deployment (de Vissier 2016). The programme builds resilience through teaching mindfulness competencies, such as self-awareness and self-regulation, that facilitate effective coping in the face of stressful situations. The pro-

gramme also incorporates aspects of CBT to help build 'mental toughness', along with modules based on identifying individual strengths and relationship building skills (Cornum 2011). Trials of the Comprehensive Soldier Fitness programme and, more specifically, the MRT have found that participants exhibited better post-programme resilience scores than soldiers who did not receive the programme (Lester 2011a).

Also pertinent to this review are the resilience programmes utilised by emergency and front-line agencies, such as the police, fire service, and non-governmental organizations (NGOs) involved in humanitarian work. Such responders can be subjected to comparable CITs to those experienced by military personnel. A promising pre-trauma exposure resilience-building programme has been developed and tested on Swedish police, using a methodology akin to exposure therapy (Arnetz 2009). Traditionally, exposure therapy approaches have long been used in the treatment of psychological trauma and PTSD. However, this has typically been implemented after symptoms present post-deployment (Arnetz 2009). The programme in question utilizes the key technique of exposure therapy, i.e. stress-evoking image exposure, and marrying these with effective professional skills development to build resilience. Arnetz and colleagues argue that enhancement of stress-specific adaptive responses reduces adverse psychological and physiological outcomes (such as overactivation of amygdala-hypothalamic-pituitary axis, which has been shown to be a predictor of PTSD) (Arnetz 2009). A randomised controlled trial (RCT) of this intervention found that police officers who received the intervention reported significantly less negative mood than officers in the control group. A recent evaluation of this resilience-building programme found that benefits lasted up to two years post-training (Arnetz 2009).

How the intervention might work

We anticipate that this review will identify interventions that target a range of different factors implicated in resilience. However, to illustrate how these interventions might work, we focus here on two approaches that emerged from the scoping exercise; approaches largely in-line with CBT and those based on mindfulness.

CBT seeks to build resilience to CITs by shaping the way people think about, interpret, and respond to life events. CBT in the context of PTSD involves education about normal responses to trauma, relaxation training, and identification and modification of cognitive distortions (Kar 2011). For example, the Penn Resiliency Programme (PRP) is a resilience-building programme that harnesses CBT techniques. The PRP was designed for high schools in the USA with a target demographic aged from 13 to 18 years of age. The PRP consists of 80 hours or more of classroom learning time; during this time six key competencies are taught: self-awareness, self-regulation, optimism, mental agility, strength of character, and connection (Reivich 2011). This learning is divided into four distinctive modules, each with its own focus, ranging from communication strategies to CBT-style instruction, which involve standard CBT practices such as challenging negative thoughts and developing more adaptive, positive-thinking strategies when faced with adversity (Reivich 2011). Importantly, the US Army's Comprehensive Soldier Fitness programme incorporates a resilience-building programme, known as MRT, which is based on the PRP (de Vissier 2016).

Mindfulness-based interventions have also been used to enhance resilience. Typically these involve the use of mindfulness principles, such as moment-to-moment awareness and meditation, to help the individual emotionally regulate and manage stress during CITs. There is evidence that such approaches can enhance the ability of medical patients to cope with their illnesses (e.g. Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn 2003)). Specifically, mindfulness may be protective against PTSD development as higher levels of mindfulness allow greater cognitive flexibility, higher level processing of thoughts and emotions, and increased emotional regulation; with emotional dysregulation being a significant predictor of PTSD (Smith 2011). Mindfulness Mind Fit Training or M-FIT is one example of a programme that has adopted and adapted programmes such as MBSR for military personnel. In a study by Stanley 2011, a detachment of the United States Marines Corps receiving M-FIT received 24 hours of direct classroom-based instruction and associated 'homework' in mindfulness. Those who engaged more with the programme reported greater self-reported mindfulness and lower subjective stress (Stanley 2011).

Why it is important to do this review

While the programme of work is focused on the field of military pre-deployment services, this systematic review will be relevant to other agencies and services where front-line staff may be exposed to CITs. A constant issue for many public service institutions, particularly military and emergency services, is adequate funding. As such, this review will provide invaluable guidance to these organisations by providing a clear evaluation of the efficacy of current resilience-building programmes and, as a result, facilitate effective resource allocation to effective programmes.

This review is part of a larger body of research being completed at the request of, and in collaboration with, the Irish military. It is intended that the review, in conjunction with complementary studies (e.g. qualitative research with military personnel on deployment), will contribute towards the design of a novel pre-deployment training programme that can enhance the resilience of military personnel to critical incidents.

As a precursor to designing the novel programme for the Irish military, and in line with the Medical Research Council's (MRCs) guidance on developing complex interventions, this review will synthesise the intervention/pre-deployment psychological training literature. Most literature on trauma in the military relates to post-deployment interventions (Lester 2011b), and there is no com-

prehensive and up-to-date synthesis of pre-deployment military resilience-building programmes. This reflects practice, where the emphasis is on post-exposure rather than preparatory programmes (Lester 2011b).

A similar review, focused on the stress control literature and operational procedures to limit the occurrence of PTSD amongst military populations, investigated the interventions utilised by the US, UK , and UN forces (Hourani 2011). The review concluded that the most promising avenues for PTSD prevention lie in the domains of pre-trauma exposure strategies and stress reduction training methodologies. However, the review was limited to military samples, excluding emergency service resilience programmes (Hourani 2011). This Cochrane Review will build upon Hourani 2011 by including new programmes developed since 2011 and by broadening the scope to include emergency service resilience programmes. Another systematic review on a similar topic, pre-trauma PTSD prevention intervention, reported that as of 2012 seven interventions of suitable quality were tested in trials (Skeffington 2012). The review cited the significant lack of knowledge to support the future development of PTSD-focused interventions (Skeffington 2012). Another recent review of resilience building programmes supported a low confidence assertion that resilience-building programmes increase resilience in their participants (Leppin 2014). However, the review did not include any active military or emergency service resilience-building programmes; thereby creating a meaningful gap in the literature which this Cochrane Review will aim to address.

OBJECTIVES

To assess the effectiveness of pre-deployment programmes for building resilience in military and front-line emergency service personnel.

METHODS

Criteria for considering studies for this review

Types of studies

We will include RCTs, cluster-RCTs, and cross-over trials irrespective of their publication status.

Types of participants

Participant characteristics

We will include military personnel, aged 18 years or older, irrespective of rank; front-line responders, such as policing, ambulance, and fire services; and emergency humanitarian workers, as these occupations are also exposed to CITs. The participants will all have been exposed to some form of pre-trauma preventive programme aimed at pre-emptively building resilience levels to CITs.

Comorbidities

We will apply no restrictions on the basis of comorbidity.

Setting

We will apply no restrictions on the basis of setting.

Types of interventions

Experimental

Any intervention designed to build pre-deployment resilience in military or emergency service personnel.

Comparator

Comparator interventions or control conditions will include any other intervention (including attention and psychological placebo comparators), no intervention, or usual care. Comparator interventions may also include experimental interventions compared against one another, e.g. Battlemind training compared against MRT. However, it is unclear whether or not such trials currently exist in the literature.

Types of outcome measures

Primary outcomes

- Resilience: defined by resilience levels from pre-intervention to post-intervention, measured on standardised psychological scales including: Connor-Davidson Resilience Scacle (CD-RISC) (Connor 2003), the Resilience Scale (RS) (Wagnild 1993), the Resilience Scale for Adults (RSA) (Hjemdal 2011), Dispositional Resilience Scale-15 (DRS-15) (Bartone 2007), and the Brief Resilience Scale (BRS) (Smith 2008), among others.
- PTSD prevalence e.g. PTSD-8 (Hansen 2010), Clinically Administered PTSD Scale (CAPS-1) (Weathers 2001).

Secondary outcomes

We will include the following.

- Acute Stress Disorder e.g. ASDS scale (Bryant 2000).
- Depression e.g. Center for Epidemiological Studies Depression Scale (CES-D) (Radloff 1977).
- Social Support e.g. Personal Resource Questionnaire (PRQ) (Brandt 1981).
- Coping skill e.g. Ways of Coping Checklist (WCCL) (Lazarus 1984).
- Emotional flexibility e.g. the Emotional Flexibility Scale (Fu 2018).
- Self-efficacy e.g. the Self-Efficacy Scale (Sherer 1982).
- Social functioning e.g. the Social Adaptation Self-evaluation Scale (Bosc 1997).
- Subjective levels of aggression e.g. the Aggression Questionnaire (Buss 1992).
- Quality of sleep e.g. Pittsburg Sleep Quality Index (PSQI) (Buysse 1989).
- Quality of life: Quality of Life scale (QLS) (Heinrichs 1984).

Timing of outcome assessment

We will record outcome measurement pre- and post-intervention, as the interventions are expected to take immediate effect. If appropriate, we may categorise outcome measures into short-term (less than 3 months' post-intervention), medium-term (3 to 6 months' post-intervention), and long-term (1 year post-intervention).

Hierarchy of outcome measures

If studies use multiple measures for one outcome, then the measure we deem to have the highest reliability and validity will be the measure included in the review. For PTSD the CAPS assessment, Weathers 2001, is considered the gold standard for assessment of PTSD by the US Veterans Association (Watson 2002). For resilience there is no firm consensus on a gold standard measure; CD-RISC, Connor 2003, is the most cited and a methodological review of resilience scales gave it a high psychometric rating (Windle 2011). Therefore, we will give these priority in this review. Where there is uncertainty in specific measures, we will confirm the best measure by discussion, emphasising reliability and validity ratings.

Search methods for identification of studies

We conducted an initial scoping exercise to access the current level of research conducted in the area of military resilience building and appraise whether there was justification for a full Cochrane Review. We identified five key studies (Arnetz 2009; Cohn 2010; Cornum 2011; Reivich 2011; Rose 2013); from these, we devised a comprehensive list of search terms for use in several scientific search engines.

Electronic searches

The studies will be identified through searching of established electronic databases.

Cochrane, Common Mental Disorders Controlled Trials Register (CCMDCTR)

The Cochrane Common Mental Disorders Group (CCMD) has a specialised register of RCTs: the CCMDCTR (current to June 2016). This register contains over 40,000 reference records (reports of RCTs) for depression, anxiety, bipolar disorder, eating disorders, self-harm, and other mental disorders within the scope of this group. The CCMDCTR is, in part, a studies-based register with over 50% of reference records tagged to c12,500 individually PICO-coded study records. Reports of trials for inclusion in the register are collated from (weekly) generic searches of MEDLINE, Embase, and PsycINFO; quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL); and review-specific searches of additional databases. Reports of trials are also sourced from international trials registries, drug company websites, and handsearching of key journals, conference proceedings, and other (non-Cochrane) systematic reviews and meta-analyses.
Details of CCMD's core search strategies (used to identify RCTs) can be found on the CCMD website, with an example of the core MEDLINE search displayed in Appendix 1.
The CCMD Group's Information Specialist will conduct searches on the CCMDCTR, together with supplementary searches of the following databases, using relevant subject headings, keywords and search syntax appropriate to each resource.

- The Cochrane Library (current issue)
- OVID PsycINFO (all available years)
- OVID MEDLINE (1946 onwards) (Appendix 2)
- Ovid Embase (1974 onwards)
- Web of Science Core Collection (1900 onwards)
- Proquest PILOTS: Published International Literature On Traumatic Stress (all available years)
- WoS Conference Proceedings Citation Index- Science (CPCI-S) --1990-present

We will search the international trial registries, namely ClinicalTrials.gov (https://clinicaltrials.gov/) and the WHO International Clinical Trials Registry Platform (ICTRP) (http://apps.who.int/trialsearch/) for unpublished or ongoing trials.
We will not apply any restriction on date, language, or publication status.

Searching other resources

Grey literature

We will use a robust and broad search strategy when searching the grey literature. We will search the following databases for grey literature.

- Google Scholar
- OpenGrey
- The British Library Electronic Theses Online Service (EThOS)
- DART - Europe e-theses Portal
- Networked Digital Library of Theses and Dissertations (NDLTD)
- PQDT Open - open access dissertations and theses
- Proquest Dissertations & Theses Global

Handsearching

We will handsearch abstracts from the following conferences from 2013 to 2018;

- The Military Health System Research Symposium (MHSRS)
- The British Psychological Society Military Psychology conference,
- Division 19 Society for Military Psychology APA Convention,
- The International Applied Military Psychology Symposium, 7
- The International Conference on Buiding Resilience (ICBR).

Reference lists

We will assess the reference lists of all included studies and relevant systematic reviews (both Cochrane and non-Cochrane) to identify additional studies not captured in the original searches (e.g. unpublished or in-press citations).

Correspondence

We will contact trial authors and subject experts for information on unpublished or ongoing studies, or to request additional trial data.

Data collection and analysis

Selection of studies

Two review authors (CD and KS) will independently assess the titles and abstracts of papers identified by the literature search, based on the predefined inclusion criteria. These will be coded as either 'retrieve' (eligible or potentially eligible/unclear) or 'do not retrieve'. We will assess the full-text of papers coded as 'retrieve'. We will resolve any disagreement through consensus or, if required, will consult a third review author (SC). We will identify and exclude duplicate records and will collate multiple reports that relate to the same study so that each study, rather than each report, is the unit of interest of the review. We will list all studies excluded after full-text assessment and their reasons for exclusion in a 'Characteristics of excluded studies' table. We will present the study selection process in a PRISMA flow chart.

Data extraction and management

Two review authors (CD and KS) will independently extract data from the included studies using a data extraction form pre-piloted on at least one included study. We will develop the intervention and comparator sections of the form using the TIDieR checklist (Hoffman 2014). Any discrepancies will be resolved by discussion or by consulting a third review author (SC). One review author (CD) will enter data into Review Manager 5 (RevMan 2014), and a second review author (KS) will check data entry. We will double-check that data is entered correctly by comparing the data presented in the systematic review with the study reports. Information collected on the data extraction form will include the following.

- Methods: author, year of publication, study design, number of study centres and geographic location, study setting (army base, psychologists office, etc.), type of profession targeted in the study, recruitment strategy.
- Participants: standard demographic and descriptive statistics such as number, age, gender, length of service in military/ emergency response, nationality, inclusion and exclusion criteria.
- Intervention details: name of intervention, rationale/theory, materials used, procedures used, modes of delivery (individual/ group), who delivers intervention (training), location, duration/ frequency, and any other facets deemed notable (tailoring of intervention, modifications).
- Comparator details: type of comparator (intervention, no treatment), name of intervention, rationale/theory, materials used, procedures used, modes of delivery (individual/group), who delivers intervention (training), location, duration/ frequency, and any other facets deemed notable (tailoring of intervention, modifications).
- Outcomes: We will list the outcomes and measurement tools for each outcome measured in the trial.
- Notes: funding for trial and notable conflicts of interest of study authors.

We will also endeavour to contact each author of the selected relevant studies to obtain manuals on their intervention and to gather additional information on the programmes.

Main comparisons

- Experimental intervention versus control or no intervention.
- Experimental intervention versus experimental intervention.

Assessment of risk of bias in included studies

Two review authors (CD and KS) will independently assess the risk of bias for each included study following the guidance of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We will use the Cochrane tool for assessing risk of bias in RCTs according to the following domains.

- Random sequence generation (selection bias).
- Allocation concealment (selection bias).
- Blinding of participants and personnel (performance bias).
- Blinding of outcome assessment (detection bias).
- Incomplete outcome data (attrition bias).
- Selective outcome reporting (reporting bias).
- Other bias.

We will judge each potential source of bias as either high, low, or unclear and will provide a supporting quotation from the study report together with a justification for our judgement in the 'Risk of bias' table. We will summarise the 'Risk of bias' judgements across different studies for each of the domains listed.
We will address any disagreements through discussion and will consult a third review author (SC) if necessary. In the case of military resilience programmes, it may be the case that programme design and evaluation is undertaken either internally by military personnel or through third parties where funding is provided by military. This may create an additional risk of bias in these cases, which we will consider carefully.

Measures of treatment effect

Dichotomous

As recommended in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), we will calculate a risk ratio (RR) and its 95% confidence interval (CI) for dichotomous data, as the concept of risk is considered more familiar to the expected reader of this review, than the concept of odds. For statistically significant results, we will calculate the number needed to treat for an additional beneficial outcome (NNTB) or the number needed to treat for an additional harmful outcome (NNTH) and 95% CIs.

Continuous

Where trials have used similar scales and outcome measures for comparison, we will pool data by calculating the mean difference (MD) and 95% CIs.

We anticipate that outcome measures for military resilience programmes will be diverse. As such, we will use standardised mean difference (SMD) values, effect sizes (Cohen's *d*), and their 95% CIs for treatment effect measurement.

Unit of analysis issues

Cluster-randomised controlled trials

We will include cluster-RCTs in this review (e.g. organisation by platoon or company). Failing to adjust for the effects of clustering may result in underestimating standard errors and P values. For example, soldiers in the same unit are likely to be more similar to each other, due to shared experience and training style, than soldiers assigned at random (Higgins 2011; Kahan 2016). Where research has not controlled for clustering effects, we will contact the study authors for participant data to allow the analysis of intra-cluster correlation coefficient (ICC), allowing the variance within and between clusters to be assessed (McLaughlin 2014).
If we are unable to contact the study authors, or if they cannot provide the required information, we will use an estimate of the ICC provided by relevant studies in a similar population or by expert opinion. We will then conduct sensitivity analyses to assess the impact of varying ICC estimates on the results.

Cross-over trials

Trials employing a cross-over design will be included in the review, but only data from the first active treatment phase will be included and analysed to prevent any cross-over effects between phases.

Dealing with missing data

We will contact investigators or study sponsors in order to verify key study characteristics and obtain missing numerical outcome data where possible (e.g. when we identify a study as an abstract only). We will document all correspondence with trial authors and report which trial authors responded to our information requests. Similarly, if standard deviations (SDs) are missing, we will attempt to obtain these data by contacting trial authors. If SDs are not available from trial authors, we will calculate from P values, t-values, confidence intervals or standard errors, if these are reported in the trials.

Dichotomous Data

We will deal with missing dichotomous data through an intention-to-treat (ITT) analysis, where we will assume that dropouts in the active treatment group have positive outcomes and those in the control group have negative outcomes (best-case scenario), and that dropouts in the active treatment group have negative outcomes and those in the control group have positive outcomes

(worst-case scenario). We will perform a sensitivity analysis to assess how sensitive the results are to reasonable changes in assumptions made. We will address the potential impact of missing data in the discussion section or our review

Continuous Data

Where available we will give greater priority to data where principled statistical methods have been used to deal with missing data (e.g. mixed effects models, multiple imputation). If these data are not available, we will use last observation carried forward or completer data where reported. We will perform a sensitivity analysis to assess how sensitive the results are to reasonable changes in assumptions made. We will bear in mind that, due to the unacknowledged uncertainty of imputed values and results, CIs may be too narrow; we will address this in the discussion section of the review.

Assessment of heterogeneity

We will use Chi^2 tests and I^2 statistics to assess heterogeneity. A forest plot will also be created to graphically display heterogeneity. Thresholds for interpreting the I^2 statistic value are as follows (Higgins 2011).

- 0% to 40%: might not be important.
- 30% to 60%: may represent moderate heterogeneity.
- 50% to 90%: may represent substantial heterogeneity.
- 75% to 100%: considerable heterogeneity.

In the event of significant heterogeneity, (where the I^2 ws 40% and over , we will investigate probable causes and conduct subgroup analysis for primary outcomes in tandem with the sensitivity analysis, which are both outlined below. If there is substantial heterogeneity between studies, we will discuss the results of studies in a descriptive format, but we will not attempt meta-analysis.

Assessment of reporting biases

If there are fewer than 10 included studies, two review authors (CD and KS) will assess reporting bias narratively using the provided characteristics of the studies. If there are more than 10 included studies, assessment will be formalised by means of funnel plot analysis for asymmetry. An asymmetrical plot may indicate evidence of reporting biases e.g. publication bias. If asymmetry is identified, we will explore possible reasons by considering the likelihood of selective reporting and the possibility that interventions effects are genuinely associated with study size (e.g. because of clinical heterogeneity).

Data synthesis

We will pool data from more than one study if appropriate in a random-effects meta-analysis. We will not synthesise data for meta-analysis if heterogeneity is such that we cannot make valid outcome comparisons. We will produce a narrative 'Summary of findings table' if meta-analysis is unsuitable (Higgins 2011).

Tables and figures

We will enter data into Review Manager 5 (RevMan 2014), and will present this information graphically, so that the area to the left of the line of no effect indicates a favourable outcome for preemptive resilience building.

Subgroup analysis and investigation of heterogeneity

Different therapies may have different effect sizes and acceptability to participants. We plan to explore clinical heterogeneity by examining the characteristics of studies that may be associated with this diversity. The selection of specific areas for subgroup analysis is based on experiences from previous reviews (Helmrich 2017) and a recent meta-analysis where these sub groups (programme sample, delivery format and study design), were found to account for 47.7% of the variance in reported d values (Vanhove 2015). We plan to conduct the following subgroup analyses.

- Setting of programme (e.g. military base, hospital, other).
- Type of comparator (control intervention, no intervention).
- Delivery format (e.g. group, individual, online).
- Type of approach to resilience building (e.g. CBT, stress management); we will develop categories of approaches on the basis of a thematic analysis of the interventions described in the included studies, which will be informed by the HIRED categories (Hunot 2013; Shinohara 2013).
- Length of programme (e.g. number of sessions).

Sensitivity analysis

Where there is unclear or high risk of bias in any domain, we plan to perform a priori sensitivity analysis based on the following criteria.

- Study quality: we will exclude studies at high risk of bias in any domain from our sensitivity analysis.
- We will exclude studies in which missing data were not imputed, as they are at potentially greater risk of bias.

We may identify other issues relating to sensitivity analysis during the review process when we identify discrepancies in individual studies; as such, we will deal with these accordingly.

'Summary of findings' table

We will create a 'Summary of findings table and will include the following primary outcomes: resilience level, PTSD prevalence, ASD, and depression.
We will use the five GRADE considerations (study limitations, consistency of effect, imprecision, indirectness, and publication

bias) to assess the quality of a body of evidence as it relates to the studies that contribute data to the meta-analyses for the prespecified outcomes. We will use the methods and recommendations described in Section 8.5 and Chapter 12 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), and will use GRADEpro software (GRADEpro GDT 2015). We will justify all decisions to downgrade or upgrade the quality of the evidence using footnotes and, where necessary, we will make comments to aid the reader's understanding of the review.

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REFERENCES

Additional references

Arnetz 2009
Arnetz BB, Nevedal DC, Lumley MA, Backman L, Lublin A. Trauma resilience training for police: psychophysiological and performance effects. *Journal of Police and Criminal Psychology* 2009;**24**(1):1–9.

Bartone 2007
Bartone PT. Test-retest reliability of the dispositional resilience scale-15, a brief hardiness scale. *Psychological Reports* 2007;**101**(3 Pt 1):943–4.

Bosc 1997
Bosc M, Dubini A, Polin V. Development and validation of a social functioning scale, the Social Adaptation Self-evaluation Scale. *European Neuropsychopharmacology* 1997; **7**(Suppl 1):S57–70.

Brandt 1981
Brandt PA, Weinert C. The PRQ: a social support measure. *Nursing Research* 1981;**30**(5):277–80.

Bryant 2000
Bryant RA, Harvey AG, Guthrie RM, Moulds ML. A prospective study of psychophysiological arousal, acute stress disorder, and posttraumatic stress disorder. *Journal of Abnormal Psychology* 2000;**109**(2):341–4.

Buss 1992
Buss AH, Perry M. The aggression questionnaire. *Journal of Personality and Social Psychology* 1992;**63**(3):452–9.

Buysse 1989
Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Research* 1989;**28**(2):193–213.

Castro 2006
Castro CA, Hoge CW, Cox AL. Battlemind training: building soldier resiliency. In: Human Dimensions in Military Operations - Military Leaders' Strategies for Addressing Stress and Psychological Support (pp. 42-1 - 42-6). Meeting Proceedings RTO-MP-HFM-134, Paper 42. Neuilly-sur-Seine, France: RTO. 2006. Available from: www.rto.nato.int/abstracts.asp.

Christopher 2016
Christopher MS, Goerling RJ, Rogers BS, Hunsinger M, Baron G, Bergman AL, et al. A pilot study evaluating the effectiveness of a mindfulness-based intervention on cortisol awakening response and health outcomes among law enforcement officers. *Journal of Police and Criminal Psychology* 2016;**31**(1):15–28.

Cohn 2010
Cohn J, Weltman G, Ratwani R, Chartrand D, McCraty R. Stress inoculation through cognitive and biofeedback training. Interservice/Industry Training, Simulation, and Education Conference 2010. 2010; Vol. 10293:1–11.

Collopy 2012
Collopy KT, Kivlehan SM, Snyder SR. Are you under stress in EMS. Understanding the slippery slope of burnout and PTSD. *EMS World* 2012;**41**(10):47–50.

Connor 2003
Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety* 2003;**18**(2):76–82.

Cornum 2011
Cornum R, Matthews MD, Seligman MEP. Comprehensive soldier fitness: building resilience in a challenging institutional context. *American Psychologist* 2011;**66**(1):4–9.

de Vissier 2016
de Visser EJ, Dorfman A, Chartrand D, Lamon J, Freedy E, Weltman G. Building resilience with the Stress Resilience Training System: design validation and applications. *Work* 2016;**54**(2):351–66.

Fava 2009
Fava GA, Tomba E. Increasing psychological well-being and resilience by psychotherapeutic methods. *Journal of Personality* 2009;**77**(6):1903–34.

Fisher 2014
Fisher MP. PTSD in the U.S. military, and the politics of prevalence. *Social Science & Medicine* 2014;**115**:1–9.

Frans 2005
Frans O, Rimmö PA, Aberg L, Fredrikson M. Trauma exposure and post-traumatic stress disorder in the general population. *Acta Psychiatrica Scandinavica* 2005;**111**(4): 291–9.

Fu 2018
Fu F, Chow A, Li J, Cong Z. Emotional flexibility: development and application of a scale in adolescent earthquake survivors. *Psychological Trauma: Theory, Research, Practice, and Policy* 2018;**10**(2):246–52.

Gonzalez 2014
Gonzalez GC, Singh R, Schell TL, Weinick RM. An evaluation of the implementation and perceived utility of the airman resilience training program. *Rand Health Quarterly* 2014;**4**(2):12.

GRADEpro GDT 2015 [Computer program]
McMaster University (developed by Evidence Prime). GRADEpro GDT. Version accessed 23 November 2016. Hamilton (ON): McMaster University (developed by Evidence Prime), 2015.

Green 2008
Green B. Post-traumatic stress disorder in UK police officers. *Current Medical Research and Opinion* 2004;**20**(1): 101–5.

Hansen 2010
Hansen M, Andersen TE, Armour C, Elklit A, Palic S, Mackrill T. PTSD-8: a short PTSD inventory. *Clinical Practice & Epidemiology in Mental Health* 2010;**6**:101–8.

Heinrichs 1984
Heinrichs DW, Hanlon TE, Carpenter Jr WT. The Quality of Life Scale: an instrument for rating the schizophrenic deficit syndrome. *Schizophrenia Bulletin* 1984;**10**(3): 388–98.

Helmrich 2017
Helmreich I, Kunzler A, Chmitorz A, König J, Binder H, Wessa M, et al. Psychological interventions for resilience enhancement in adults. *Cochrane Database of Systematic Reviews* 2017, Issue 2. DOI: 10.1002/14651858.CD012527

Higgins 2011
Higgins JP, Green S, editor(s). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 (updated March 2011). The Cochrane Collaboration, 2011. Available from handbook.cochrane.org.

Hines 2014
Hines LA, Sundin J, Rona RJ, Wessely S, Fear NT. Posttraumatic stress disorder post Iraq and Afghanistan: prevalence among military subgroups. *Canadian Journal of Psychiatry* 2014;**59**(9):468–79.

Hjemdal 2011
Hjemdal O, Friborg O, Braun S, Kempenaers C, Linkowski P, Fossion P. The Resilience Scale for Adults: construct validity and measurement in a Belgian sample. *International Journal of Testing* 2011;**11**(1):53–70.

Hoffman 2014
Hoffman TC, Glasziou PP, Bouttron I, Milne R, Perera R, Moher D, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ* 2014;**348**:g1687.

Horn 2016
Horn SR, Charney DS, Feder A. Understanding resilience: new approaches for preventing and treating PTSD. *Experimental Neurology* 2016;**284**(Pt B):119–32.

Hourani 2011
Hourani LL, Council CL, Hubal RC, Strange LB. Approaches to the primary prevention of posttraumatic stress disorder in the military: a review of the stress control literature. *Military Medicine* 2011;**176**(7):721–30.

HSE 2012
Health Service Executive. Policy for preventing & managing critical incident stress. Document reference no. HSAG 2012/3. Revision no. 1.0. 2012. www.hse.ie/eng/staff/resources/hrppg/policy-for-preventing-and-managing-critical-incident-stressdecember-2012.pdf (accessed 18 March 2018).

Hunot 2013
Hunot V, Moore THM, Caldwell DM, Furukawa TA, Davies P, Jones H, et al. 'Third wave' cognitive and behavioural therapies versus other psychological therapies for depression. *Cochrane Database of Systematic Reviews* 2013, Issue 10. DOI: 10.1002/14651858.CD008704.pub2

Kabat-Zinn 2003
Kabat-Zinn J. Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice* 2003;**10**(2):144–56.

Kahan 2016
Kahan BC, Forbes G, Ali Y, Jairath V, Bremner S, Harhay MO, et al. Increased risk of type I errors in cluster randomised trials with small or medium numbers of clusters: a review, reanalysis, and simulation study. *Trials* 2016;**17**(1):438.

Kar 2011
Kar N. Cognitive behavioral therapy for the treatment of post-traumatic stress disorder: a review. *Neuropsychiatric Disease and Treatment* 2011;**7**:167.

Lazarus 1984
Lazarus RS, Folkman S. Coping and Adaptation. *The Handbook of Behavioral Medicine*. 4. New York: Guilford, 1984.

Leppin 2014
Leppin AL, Bora PR, Tilburt JC, Gionfriddo MR, Zeballos-Palacios C, Dulohery MM, et al. The efficacy of resiliency training programs: a systematic review and meta-analysis of randomized trials. *PLoS One* 2014;**9**(10):e111420.

Lester 2011a
Lester PB, Harms PD, Herian MN, Krasikova DV, Beal SJ. The Comprehensive Soldier Fitness program

evaluation. Report #3: longitudinal analysis of the impact of master resilience training on self-reported resilience and psychological health data. Publications of Affiliated Faculty: Nebraska Public Policy Center. December 2011. https://apps.dtic.mil/dtic/tr/fulltext/u2/a553635.pdf accessed on (11/10/2018).

Lester 2011b
Lester P, Mogil C, Saltzman W, Woodward K, Nash W, Leskin G, et al. Families overcoming under stress: implementing family-centered prevention for military families facing wartime deployments and combat operational stress. *Military Medicine* 2011;**176**(1):19–25.

Luthar 2000
Luthar SS, Cicchetti D. The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology* 2000;**12**(4):857–85.

McCraty 2012
McCraty R, Atkinson M. Resilience training program reduces physiological and psychological stress in police officers. *Global Advances in Health and Medicine* 2012;**1**(5):44–66.

McLaughlin 2014
McLaughlin AE, Macdonald G, Livingstone N, McCann M. Interventions to build resilience in children of problem drinkers. *Cochrane Database of Systematic Reviews* 2014, Issue 8. DOI: 10.1002/14651858.CD011237

Padesky 2012
Padesky CA, Mooney KA. Strengths-based cognitive-behavioural therapy: a four-step model to build resilience. *Clinical Psychology and Psychotherapy* 2012;**19**(4):283–90.

Radloff 1977
Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;**1**:385–401.

Reivich 2011
Reivich KJ, Seligman ME, McBride S. Master resilience training in the U.S. Army. *American Psychology* 2011;**66**(1):25–34.

RevMan 2014 [Computer program]
Nordic Cochrane Centre, The Cochrane Collaboration. Review Manager 5 (RevMan 5). Version 5.3. Copenhagen: Nordic Cochrane Centre, The Cochrane Collaboration, 2014.

Richardson 2010
Richardson LK, Frueh BC, Acierno R. Prevalence estimates of combat-related post-traumatic stress disorder: critical review. *Australian and New Zealand Journal of Psychiatry* 2010;**44**(1):4–19.

Rose 2013
Rose RD, Buckley JC, Zbozinek TD, Motivala SJ, Glenn GE, Cartreine JA, et al. A randomized controlled trial of a self-guided, multimedia, stress management and resilience training program. *Behaviour Research and Therapy* 2013;**51**(2):106–12.

Sherer 1982
Sherer M, Maddux JE, Mercandante B, Prentice-Dunn S, Jacobs B, Rogers RW. The Self-Efficacy Scale: construction and validation. *Psychological Reports* 1982;**51**(2):663–71.

Shinohara 2013
Shinohara K, Honyashiki M, Imai H, Hunot V, Caldwell DM, Davies P, et al. Behavioural therapies versus other psychological therapies for depression. *Cochrane Database of Systematic Reviews* 2013, Issue 10. DOI: 10.1002/14651858.CD008696.pub2

Skeffington 2012
Skeffington PM, Rees CS, Kane R. The primary prevention of PTSD: a systematic review. *Journal of Trauma & Dissociation* 2013;**14**(4):404–22.

Smith 2008
Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The brief resilience scale: assessing the ability to bounce back. *International Journal of Behavioral Medicine* 2008;**15**:194–200.

Smith 2011
Smith BW, Ortiz, JA, Steffen LE, Tooley EM, Wiggins KT, Yeater EA, et al. Mindfulness is associated with fewer PTSD symptoms, depressive symptoms, physical symptoms, and alcohol problems in urban firefighters. *Journal of Consulting and Clinical Psychology* 2011;**79**(5):613.

Smith 2013
Smith BW, Epstein EM, Ortiz JA, Christopher PJ, Tooley EM. The foundations of resilience: what are the critical resources for bouncing back from stress?. In: Prince-Embury S, Saklofske D editor(s). *Resilience in Children, Adolescents, and Adults. The Springer Series on Human Exceptionality*. New York: Springer, 2013:167–87.

Southwick 2015
Southwick SM, Pietrzak RH, Charney DS, Krystal JH. Resilience: the role of accurate appraisal, thresholds, and socioenvironmental factors. *Behavioural and Brain Sciences* 2015;**38**:e122.

Stainton 2018
Stainton A, Chisholm K, Kaiser N, Rosen M, Upthegrove R, Ruhrmann S, et al. Resilience as a multimodal dynamic process. Early Intervention in Psychiatry 2018 Aug 20 Epub ahead of print]. DOI: 10.1111/eip.12726

Stanley 2011
Stanley EA, Schaldach JM, Kiyonaga A, Jha AP. Mindfulness-based mind fitness training: a case study of a high-stress predeployment military cohort. *Cognitive and Behavioral Practice* 2011;**18**(4):566–76.

Sundin 2010
Sundin J, Fear NT, Iversen A, Rona RJ, Wessely S. PTSD after deployment to Iraq: conflicting rates, conflicting claims. *Psychological Medicine* 2010;**40**(3):367–82.

Vanhove 2015
Vanhove AJ, Herian MN, Perez ALU, Harms PD, Lester PB. Can resilience be developed at work? A meta-analytic

review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology* 2015; **89**(2):278–307.

Wagnild 1993
Wagnild GM, Young HM. Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement* 1993;**1**(2):165–78.

Watson 2002
Watson P, McFall M, McBrine C, Schnurr PP, Friedman MJ, Keane T, et al. Best practice manual for posttraumatic stress disorder (PTSD) compensation and pension examinations. Washington, DC: Department of Veterans Affairs. 2002. https://adaa.org/sites/default/files/PTSDManualFinal_VA-NCtrPTSD.pdf accessed on (5/9/2018).

Weathers 2001
Weathers FW, Keane TM, Davidson JR. Clinician-administered PTSD scale: a review of the first ten years of research. *Depression and Anxiety* 2001;**13**(3):132–56.

WHO 2006
World Health Organization. Stress management in emergency deployment. 2006. www.who.int/hac/techguidance/training/predeployment/Stress%20management%20in%20emergency%20development.pdf (accessed 15 March 2018).

Windle 2011
Windle G, Bennett KM, Noyes J. A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes* 2011;**9**:8.

* *Indicates the major publication for the study*

APPENDICES

Appendix 1. OVID MEDLINE-1: CCMD's core search strategy used to inform the specialised register

The search strategy listed below was the weekly OVID Medline search used to inform the Group's specialised register. It was based on a list of terms for all conditions within the scope of the Cochrane Common Mental Disorders Group plus a sensitive RCT filter.

1. *[MeSH Headings]:*
eating disorders/ or anorexia nervosa/ or binge-eating disorder/ or bulimia nervosa/ or female athlete triad syndrome/ or pica/ or hyperphagia/ or bulimia/ or self-injurious behavior/ or self mutilation/ or suicide/ or suicidal ideation/ or suicide, attempted/ or mood disorders/ or affective disorders, psychotic/ or bipolar disorder/ or cyclothymic disorder/ or depressive disorder/ or depression, postpartum/ or depressive disorder, major/ or depressive disorder, treatment-resistant/ or dysthymic disorder/ or seasonal affective disorder/ or neurotic disorders/ or depression/ or adjustment disorders/ or exp antidepressive agents/ or anxiety disorders/ or agoraphobia/ or neurocirculatory asthenia/ or obsessive-compulsive disorder/ or obsessive hoarding/ or panic disorder/ or phobic disorders/ or stress disorders, traumatic/ or combat disorders/ or stress disorders, post-traumatic/ or stress disorders, traumatic, acute/ or anxiety/ or anxiety, castration/ or koro/ or anxiety, separation/ or panic/ or exp anti-anxiety agents/ or somatoform disorders/ or body dysmorphic disorders/ or conversion disorder/ or hypochondriasis/ or neurasthenia/ or hysteria/ or munchausen syndrome by proxy/ or munchausen syndrome/ or fatigue syndrome, chronic/ or obsessive behavior/ or compulsive behavior/ or behavior, addictive/ or impulse control disorders/ or firesetting behavior/ or gambling/ or trichotillomania/ or stress, psychological/ or burnout, professional/ or sexual dysfunctions, psychological/ or vaginismus/ or Anhedonia/ or Affective Symptoms/ or *Mental Disorders/
2. *[Title/ Author Keywords]:*
(eating disorder* or anorexia nervosa or bulimi* or binge eat* or (self adj (injur* or mutilat*)) or suicide* or suicidal or parasuicid* or mood disorder* or affective disorder* or bipolar i or bipolar ii or (bipolar and (affective or disorder*)) or mania or manic or cyclothymic* or depression or depressive or dysthymi* or neurotic or neurosis or adjustment disorder* or antidepress* or anxiety disorder* or agoraphobia or obsess* or compulsi* or panic or phobi* or ptsd or posttrauma* or post trauma* or combat or somatoform or somati# ation or medical* unexplained or body dysmorphi* or conversion disorder or hypochondria* or neurastheni* or hysteria or munchausen or chronic fatigue* or gambling or trichotillomania or vaginismus or anhedoni* or affective symptoms or mental disorder* or mental health).ti,kf.
3. *[RCT filter]:*
(controlled clinical trial.pt. or randomised controlled trial.pt. or (randomi#ed or randomi#ation).ab,ti. or randomly.ab. or (random* adj3 (administ* or allocat* or assign* or class* or control* or determine* or divide* or distribut* or expose* or fashion or number* or place* or recruit* or subsitut* or treat*)).ab. or placebo*.ab,ti. or drug therapy.fs. or trial.ab,ti. or groups.ab. or (control* adj3 (trial* or

study or studies)).ab,ti. or ((singl* or doubl* or tripl* or trebl*) adj3 (blind* or mask* or dummy*)).mp. or clinical trial, phase ii/ or clinical trial, phase iii/ or clinical trial, phase iv/ or randomised controlled trial/ or pragmatic clinical trial/ or (quasi adj (experimental or random*)).ti,ab. or ((waitlist* or wait* list* or treatment as usual or TAU) adj3 (control or group)).ab.)
4. (1 and 2 and 3)
Records were screened for reports of RCTs within the scope of the Cochrane Common Mental Disorders Group. Secondary reports of RCTs were tagged to the appropriate study record.

Appendix 2. Ovid MEDLINE-2: search strategy

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily <1946 onwards>
Search Strategy:
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1 CIVIL DEFENSE/
2 MILITARY PERSONNEL/
3 exp EMERGENCY RESPONDERS/
4 RELIEF WORK/ or RESCUE WORK/
5 (military or soldier* or army or armies).ti,ab,kf,hw.
6 ((armed adj (forces or personnel)) or national guard or civil defense).ti,ab,kf.
7 (marines or navy or naval or seamen? or sailors or submariners or submariners or coast guard* or coastguard*).ti,ab,kf,hw.
8 (airforce? or air force or ((air* or helicopter or flight or plane?) adj3 (crew or pilots))).ti,ab,kf.
9 (pilots or co-pilots).ti,sh.
10 (firefighters or fire fighters or firemen or fire crew).ti,ab,kf,hw.
11 (police* or policing or enforcement officers or ((law or civil) adj enforcement)).ti,ab,kf,hw.
12 (security adj (personnel or service* or staff)).ti,ab,kf.
13 (paramedic? or para-medic? or ((ambulance or ambulatory) adj2 (crew? or personnel or staff or nurs* or team? or technicians))).ti,ab,kf.
14 (peacekeepers or peace keepers or ((humanitarian or peacekeep* or peace keep* or united nations) adj3 (crew? or personn* or staff or nurs* or team? or technicians or volunteers or workers or workforce or work force))).ti,ab,kf.
15 ((aid or disasters or disaster recovery or relief) adj (personnel or team? or volunteers or workers or workforce or work force)).ti,ab,kf.
16 ((emergency or first respon* or frontline or front line or rescue) adj2 (crew? or personnel or staff or nurs* or team? or technicians or volunteers or workers or workforce or work force)).ti,ab,kf.
17 (relief work* or emergency responders).ti,ab,kf.
18 (oxfam or red cross or red crescent).ti,ab,kf,sh.
19 (((medic* or medec*) adj sans frontier*) or doctors without borders).ti,ab,kf.
20 exp UNITED NATIONS/
21 *VOLUNTARY HEALTH AGENCIES/
22 (united nations or humanitarian organi*).ti,ab,kf.
23 or/1-22
24 ADAPTATION, PSYCHOLOGICAL/
25 RESILIENCE, PSYCHOLOGICAL/
26 (resilien* or preparedness).ti,kf.
27 (resilien* adj3 (foster* or improv* or increas* or build* or educat* or psychoeducat* or intervention* or management or program* or curriculum or skill? or train* or therap*)).ti,ab,kf.
28 (stress, psychological/ or occupational stress/ or compassion fatigue/) and (prevention & control or therapy).fs.
29 ((psychotrauma* or psycho-trauma* or (psychological adj (trauma* or distress or stress))) adj3 (prevent* or reduc* or decreas* or risk?)).ti,ab,kf.
30 "trauma and stressor related disorders"/ or adjustment disorders/ or stress disorders, traumatic/ or combat disorders/ or psychological trauma/ or stress disorders, post-traumatic/ or stress disorders, traumatic, acute/
31 (acute stress or ((combat or adjustment or stress) adj disorder?)).ti,ab,kf.
32 (prevent* or reduc* or decreas* or risk?).ti. or prevention & control.fs.
33 (30 or 31) and 32
34 (BattleMind or Comprehensive Soldier or Master Resilience Training or Stress Resilience Training System).ti,ab,kf.

35 ((stress or pretrauma* or pre-trauma*) adj3 (psychotherap* or therap* or training)).ti,ab,kf.
36 (critical incident? adj3 (educat* or psychoeducat* or intervention* or management or program* or skill? or train*)).ti,ab,kf.
37 (coping adj3 (educat* or psychoeducat* or intervention? or program* or skill? or train*)).ti,ab,kf.
38 stress inoculation.ti,ab,kf.
39 (exposure adj (psychotherap* or therap* or training)).ti,ab,kf.
40 (predeployment or pre-deployment or pre-exposure or pretrauma* or pre-trauma* or ((before or prior to) adj3 (service or duty or duties or deploy* or frontline or front line or exposure or war or wars or disaster? or crisis or crises or critical incident?))).ti,ab,kf.
41 or/24-29,33-40
42 controlled clinical trial.pt.
43 randomized controlled trial.pt.
44 (randomi#ed or randomi#ation or randomi#ing).ti,ab,kf.
45 (RCT or "at random" or (random* adj3 (administ* or allocat* or assign* or class* or control* or crossover or cross-over or determine* or divide* or division or distribut* or expose* or fashion or number* or place* or recruit* or split or subsitut* or treat*))).ti,ab,kf.
46 placebo*.ab,ti,kf.
47 trial.ab,ti,kf.
48 ((study or group*) and (control* or placebo or waitlist* or wait* list* or ((treatment or care) adj2 usual))).ti,ab,kf,hw.
49 ((single or double or triple or treble) adj2 (blind* or mask* or dummy)).ti,ab,kf.
50 double-blind method/ or random allocation/ or single-blind method/
51 or/42-50

52 exp animals/ not humans.sh.

53 51 not 52

54 23 and 41 and 53

****

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CD wrote the protocol.

LR and NU contributed to the methodology of the protocol.

JB and JE contributed to the clinical and forensic conceptualisation.

KS contributed to writing the protocol and is the principal investigator.

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