# Prolonged Exposure Therapy for Veterans With Post Traumatic Stress Disorder

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**Abstract**

Posttraumatic stress disorder (PTSD) is the mental health condition that is triggered by the experience of a traumatic event and results in mental and physical health problems as well as interpersonal and social problems (Foa, Gillihan, and Bryant, 2013). There are currently many psychological treatments for individuals with PTSD. Although the literature covers a wide variety of therapies, this review will focus on prolonged exposure therapy (PE) for treatment of veterans with PTSD. This review will be broken down into five categories which are: manualized PE, PE with the presence of a traumatic brain injury, PE delivered via telehealth, PE with veterans who expressed a treatment preference for PE, and PE with active duty military personnel. All studies found prolonged exposure therapy as an effective treatment for veterans with PTSD.

# Prolonged Exposure Therapy for Veterans with Post Traumatic Stress Disorder

## Introduction

Humans have always been exposed to traumatic events such as natural disasters, sexual abuse and war. War takes a particularly strong physical and emotional toll on soldiers. In 1761, Austrian physician Josef Leopold wrote about the feeling of "nostalgia" amongst soldiers. He described the feeling as missing home, feeling sad, sleep problems, and anxiety (U.S. Department of Veterans Affairs, 2016). During World War I, these same symptoms were renamed "shell shock" due to soldiers' exposure to the blasts of artillery shells during combat. During this time, treatment was varied but typically consisted of a few days of rest and then soldiers were sent back to combat. During World War II, shell shock was renamed Combat Stress Reaction (CSR).

In 1952, the American Psychiatric Association (APA) published the first Diagnostic and Statistical Manual of Mental Disorders (DSM-I). The DSM is intended to be a standardized classification of mental disorders used by mental health professionals. The first DSM included "gross stress reaction" to explain symptoms resulting from traumatic events. In 1980, the APA added Post Traumatic Stress Disorder (PTSD) to the DSM-III (U.S. Department of Veterans Affairs, 2016). In the current edition, the DSM-V, PTSD appears in a new chapter titled "Trauma and stress related disorders". This new classification is a revision to previous editions, which classified PTSD as an anxiety disorder.

The DSM-V reports the following eight criteria that must be met in order to receive a diagnosis of PTSD. A PTSD diagnosis requires that an individual have been exposed to a stressor such as death, threatened death, actual or perceived serious injury, or threatened or actual sexual violence. This exposure may be direct, indirect, or witnessing the stressor in person

(Criterion A). There are four clusters of symptoms that accompany a PTSD diagnosis: intrusion symptoms, avoidance symptoms, negative alterations in cognitions and mood, and alterations in arousal and reactivity (Criteria B, C, D, and E). Diagnosis requires that the symptoms be present for more than one month (Criterion F) and there must be significant symptom-related distress or functional impairment (Criterion G). Additionally, disturbance must not be due to medication, substance abuse, or other illness (Criterion H).

The primary treatment for PTSD is psychotherapy and may be used in addition to drug therapy. Types of psychotherapy include cognitive behavioral therapy, eye movement desensitization and reprocessing therapy (EMDR) and stress inoculation training. Drugs used may be antidepressants or antianxiety medication to keep symptoms under control. One of the most effective forms of treatment is cognitive behavioral therapy, particularly exposure therapy. Research supporting exposure therapy makes it an excellent candidate for PTSD treatment (Rauch et al., 2009).

One of the most commonly used cognitive behavioral exposure therapies is Prolonged Exposure (PE) Therapy (Foa et al., 2013). PE significantly has been shown to reduce PTSD symptoms such as general anxiety, depression, guilt and anger (Rauch et al., 2009). Patients learn to extinguish fear responses to memories of trauma through exposure and learn new responses to previously fearful stimuli. This is done at a comfortable pace for patients, often 8-15, 90-minute sessions with a therapist (U.S. Department of Veterans Affairs, 2016).

The two primary components of PE are imaginal exposure and *in vivo* exposure. During imaginal exposure patients are asked to talk about memories or feelings they have relating to the trauma repeatedly. By emotionally engaging with the traumatic memory patients are able to reevaluate their beliefs towards the trauma and build a new perspective. The presumption is that

this will extinguish their fear response. The *in vivo* component involves gradually and systematically exposing patients to real life situations that may cause them distress but are safe. For example, a solider that experienced a roadside bomb while in combat may have difficulty riding in a car without having a stress reaction. The therapist may have the patient start out by being the passenger in a car driving on a back road and build to the patient driving him or herself down the freeway during rush hour traffic. This exposure to previously stressful stimulus lessens the control that the trauma has on one's life by extinguishing the fear response. A second component of PE is psychoeducation, which is intended to teach patients about PE and PTSD. Stress management skills such as breathing techniques are taught to patients to help them manage distress.

This literature review will examine the use of prolonged exposure therapy with veterans who served either in Operation Enduring Freedom or Operation Iraqi Freedom (also known as Operation New Dawn) in addition to Veterans that have served in other theatres such as the Vietnam War. While the majority of the studies reviewed primarily include veterans, one study investigates the use of PE therapy with active duty military personnel.

**Historical Context**

The Vietnam War occurred from 1954 to 1973 in South Vietnam, North Vietnam, Cambodia and Laos (historynet.com). At the time, Vietnam was split into two, with a communist government in the north and a democratic government in the south. North Vietnam launched a guerilla campaign against the South with hopes of uniting the country under communist rule. In order to stop the spread of communism, the United States Government sent 540,00 troops to help train the Army of the Republic of Vietnam (historynet.com). The U.S. and other members of the Southeast Asia Treaty Organization joined forces with the Republic of South Vietnam to fight

against the communist forces. The U.S. had the largest foreign military presence and had a total of 58,200 casualties and another 300,000 wounded (historynet.com). The Republic of South Vietnam was ultimately taken over by communist forces in North Vietnam.

Shortly after the terrorist attacks on the World Trade Towers in New York and the Pentagon in Virginia that occurred on September 11, 2001, President George W. Bush demanded that leaders in Afghanistan surrender Osama bin Laden and any other al Qaeda leaders taking refuge within their country (Torreon, 2015). The denial of this request resulted in the U.S. invading Afghanistan, which is known as Operation Enduring Freedom (OEF). Operations began on October 7, 2001 in Afghanistan with the goal of stopping the Taliban from providing a safe haven to Osama bin Laden and al Qaeda. While OEF was underway President George W. Bush expanded forces into Iraq. Operation Iraqi Freedom (OIF) began March 19, 2003 with several goals including ending the reign of Saddam Hussein and eliminating Iraq's weapons of mass destruction (Spring, 2003).

On September 1, 2010, President Obama renamed OIF Operation New Dawn (OND), to better depict the goals of the troops: to provide assistance to Iraqi military forces to protect their own country in the future. On December 15, 2011, the last U.S. troops left Iraq signifying the end of the war in Iraq. On December 28, 2014, President Obama declared the end of OEF, although more than 13,000 troops had been expected to stay in Afghanistan through 2015 (Torreon, 2015).

Since the beginning of the war in Afghanistan in 2001, more than 1.8 million U.S. troops have served in OEF/OIF with 37% having been deployed at least twice with multiple deployments being an important risk factor (Litz and Shlenger, 2009). Exposure to long periods of threat and hazardous combat is associated with OEF/OIF deployment and may result in an

increased risk for OEF/OIF veterans to be at risk for mental health problems, such as PTSD (Hoge et al., 2004). The Office of Veterans Affairs (VA) reports that 10-18% of OEF/OIF veterans with combat exposure have probable PTSD following deployment (ptsd.va.gov, 2015).

The VA produces a report four times a year about the prevalence of PTSD amongst OEF/OIF/OND veterans and the use of the VA medical facilities. Based on the VA's electronic patients records as of March 31, 2015, 405,915 OEF/OIF/OND veterans were seen for PTSD following their return to the U.S. Approximately 20% of veterans report problems such as PTSD, depression, and/or alcohol abuse (Sripada et al., 2013). With the large number of soldiers experiencing PTSD, there is an urgent need to determine which therapies are most effective in treating PTSD and to train therapists accordingly. The Institute of Medicine (IOM) recognized exposure therapies as the treatment approach with the most efficacy data for the treatment of PTSD (IOM, 2007).

## Literature Review

A large number of studies evaluated the use of prolonged exposure therapy with veterans. After searching relevant databases such as PILOTS and EBSCO, 14 articles were identified that fit search criteria as shown in Appendix A. The search occurred between January 2015 and February 2016. Articles included were dated from 2001 until 2016. Participants of the studies included but were not limited to Vietnam, Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn veterans. Studies chosen included but were not limited to the use of prolonged exposure therapy.

It is estimated that up to 13% of U.S. military personnel returning from Iraq and Afghanistan are affected with PTSD and have a reduced quality of life in result (Eftekhari et al., 2013). Mental Health Services in the Veterans Affairs Health Administration established a

national policy requiring that all VA medical centers provide access to certain evidence based therapies, including PE (Eftekhari et al., 2013). This has led to a nationwide rollout of training in PE for clinicians in the VA system. As of March 1, 2012, more than 1500 mental health staff have been trained in the largest PE training program in the nation (Eftekhari et al., 2013). The training program includes a 4-day experiential PE training workshop and then clinicians use PE with a minimum of two patients while receiving consultation from instructors (Eftekhari et al., 2013).

**Manualized PE**

In the largest evaluation to date of the effectiveness of prolonged exposure therapy (PE) within veterans, Eftekhari et al. (2013) investigated the effectiveness of this national implementation of PE therapy for veterans with posttraumatic stress disorder (PTSD). In this study, 1931 veterans were treated by 804 clinicians who had previously participated in the VA PE training program. Participants were either Vietnam veterans or OEF/OIF/OND veterans. Measures were administered both at the beginning and the end of treatment and included the PTSD Checklist (PCL-M) (Weathers, Huska, and Keane, 1991) and the Beck Depression Inventory II (BDI-II) (Beck, Steer, and Brown, 1996).

Eftekhari et al. (2013), found clinically and statistically mean reductions in PTSD symptoms. The percentage of patients screening positive for PTSD from pre-treatment to post-treatment decreased from 87.6% to 46.2% (Eftekhari et al., 2013). Reductions in PCL scores were significant with an overall effect size of d=1.21 (Eftekhari et al., 2013). Additionally, it was found that 45.6% of veterans displayed a reduction of BDI-II scores of at least 30% (Eftekhari et al., 2013). A major limitation of this study, however, is the lack of a control group. With no control group there is no group with which to compare the effects of PE treatment.

In a similar study, Rauch et al. (2009) researched prolonged exposure therapy for PTSD in a Veterans Health Administration (VHA) PTSD clinic. Ten veterans (5 OEF/OIF and 5 Vietnam) diagnosed with chronic PTSD were treated with PE in a VHA clinic. All ten patients met the Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, and Perry 1997) criteria for a diagnosis of PTSD prior to therapy.

A modified version of the standard PE manual written by Edna Foa was used for this study. Sessions were reduced from 90 to 80 minutes in length and wording was changed to fit the current sample (Rauch et al., 2009). Measures used were the PDS and the BDI-II.

Results show a significant reduction in PTSD symptoms. PDS score reduction was clinically and statistically significant with an effect size of d=2.19 (Rauch et al., 2009). Furthermore, 50% of participants no longer met PDS criteria for a diagnosis of PTSD (Rauch et al., 2009). BDI-II score reduction was also significant with an effect size of d=1.31 (Rauch et al., 2009). Regarding OEF/OIF veterans 60% had PDS scores below 15 post-treatment (Rauch et al., 2009). Both OEF/OIF and Vietnam veterans showed significant reductions in symptoms from pre- to post-treatment suggesting that both groups respond well to PE. Limitations to this study include a small sample size and the use of self-report data instead of clinically administered interviews. The small sample size of this study may have produced false-positive results or over estimated the effect size.

In a similar study, Tuerk et al. (2011) researched prolonged exposure therapy for combat-related posttraumatic stress disorder with veterans having served in Afghanistan and Iraq. Sixty-five OEF/OIF veterans received PE therapy at an urban VA medical facility. All veterans were diagnosed with combat-related PTSD and measures of PTSD and depression were collected pre- and post-treatment, as well as every two weeks during treatment (Tuerk et al., 2011).

To measure effects of treatment, two dependent variables were used. The PTSD Checklist-Military Version (PCL-M) and the BDI-II. Forty-three of the 65 veterans (66%) met criteria to be considered treatment completers. Results show a significant reduction in both PTSD symptoms and depression. Reduction in PCL-M scores was significant with an effect size of d=2.07 (Tuerk et al., 2011). Reduction in BDI-II scores was also significant with an effect size of d=1.25 (Tuerk et al., 2011). Also, results show that 74% of the treatment completer sample no longer met criteria for PTSD post treatment.

There are several limitations to this study including lack of assessment of patient and therapist compliance with manualized PE protocol. In addition, veterans were not administered the CAPS post treatment to further asses their PTSD diagnosis. Finally, this study did not have a control group with which to compare results.

Trauma-potentiated starter is another symptom related to PTSD. E.J. Robinson-Andrew et al. (2013) investigated changes in trauma-potentiated startle with treatment of posttraumatic stress disorder in combat veterans. Startle response is defined as the contraction of skeletal, facial, and neck muscles (E.J. Robison-Andrew et al., 2013). This independent variable was included because patient-reported startle response is considered to be a “hallmark” symptom of PTSD (E.J. Robison-Andrew et al., 2013).

In this study, 36 OEF/OIF veterans diagnosed with PTSD were recruited for participation from an outpatient PTSD clinic in the VA healthcare system. Prior to treatment patients were evaluated using the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998) and the Clinician Administered PTSD Scale (CAPS; Blake, Weathers, Nagy, and Kaloupek 1995). Patients were then randomly assigned to 12, 80-minute sessions of either prolonged exposure therapy or present centered therapy (PCT). PCT is a non-exposure based therapy that

consists of (a) altering present maladaptive relation patterns/behaviors, (b) providing psycho-education regarding the impact of trauma on the client's life, and (c) teaching the use of problem solving strategies that focus on current issues (Mcdonagh et al., 2005; Classen et al., 2011; Schnurr et al., 2003).

Participants were required to complete major assessments (approximately 3 hours) pre-, mid-, and post-treatment. This assessment consisted of an interview, symptom-based questionnaires, psychological assessment, salivary cortisol collection, and EMG was used to measure startle response (E.J. Robison-Andrew et al., 2013).

Of the 36 eligible participants, 17 met the criteria to be considered a treatment completer (47%). Results suggested that patients experienced an increase in startle response at the mid-treatment assessment followed by a decrease at the post-treatment assessment (E.J. Robison-Andrew et al., 2013). Limitations to this study include a small sample size that may have contributed to a lack of significant effects and the lack of a control group to compare results to.

In a similar study, Jeffreys et al. (2014) investigated the use of cognitive processing therapy (CPT) and prolonged exposure (PE) therapy in a Veterans Health Administration (VHA) specialty clinic. CPT is a 12-session treatment which focuses on altering cognitions related to five main traumatic themes including safety, trust, power and control, esteem, and intimacy (as cited in Resick et al., 2008). In the current study, CPT was given in 60-minute sessions individually and 90-minute sessions when delivered in a group environment. PE was delivered in 10-15 90-minute sessions.

In this study, charts of patients who were diagnosed with military related PTSD were reviewed in a specialty VHA PTSD clinic beginning in January 2006 and ending in January of 2011. A total of 263 charts were chosen for review after having been identified as completing

treatment and having PTSD Checklist (PCL) values available 1-month pre-assessment and 1-month post assessment. Of the 263 charts reviewed, 178 patients received CPT and 85 received PE. Participants were either Vietnam veterans or OEF/OIF/OND veterans. In the current study most Vietnam veterans received CPT and most OEF/OIF/OND veterans received PE.

Measures used within this were the PCL, the Clinician Administered PTSD Scale (CAPS) and the Mini Neuropsychiatric Interview (MINI). The mean PCL score for patients who received CPT at pre-treatment was 64.49 and at post-treatment was 53.12. The mean PCL score for patients who received PE at pre-treatment was 56.67and at post-treatment was 32.76. Although both CPT and PE showed significant reduction in PCL scored, PE reduced scores significantly more than CPT (Jeffreys et al., 2013). Another result of the study showed than being an OEF/OIF/OND veteran and receiving PE therapy resulted in a greater decrease in post-treatment PCL scores (Jeffreys et al., 2013).

Yoder et al. (2012) investigated the use of prolonged exposure therapy for combat-related PTSD among veterans of different wars. A total of 112 veterans participated in the study, including veterans from the Vietnam War (n=34), the first Persian Gulf War (n=17), and the wars in Afghanistan and Iraq (n=61). Participants were patients receiving outpatient treatment at a Veterans Affairs Medical Center (VMAC) between September 2008 to August of 2010 (Yoder et al., 2012).

Measures used in this study were several self-report measures including demographics, the PCL-M, a life events checklist, the CAPS and a semi-structured clinical interview. In this study, non-completers were defined as veterans who completed fewer than 6 sessions. Of the 18 non-completers, 26% were OEF/OIF/OND veterans.

Results of this study indicate similar rates of improvement for Vietnam veterans and OEF/OIF/OND veterans, while Gulf War veterans had a lower treatment effect size and their symptoms declined at a significantly lower rate (Yoder et al., 2012). This may be due to the different combat experiences of Gulf War Veterans (Yoder et al., 2012). Reduction in PCL-M scores for OEF/OIF veterans was significant with an effect size of d= 3.05 (Yoder et al., 2012). Reduction in BDI-II scores for OEF/OIF veterans was significant with an effect size of d= 1.27 (Yoder et al., 2012).

The overall effect size for all three groups was d=2.73 making this one of the largest effectiveness studies to date (Yoder et al., 2012). Although there was a high rate of improvement for OEF/OIF/OND veterans, this group of veterans had the lowest completion rate at 74% (88% Gulf War and 97% Vietnam) (Yoder et al., 2012). Limitations to this study include confounding factors that may have influenced the results including number of sessions completed, patient comorbidity, and therapist and patient compliance with manualized PE protocol.

Many clinicians are interested in the efficacy of prolonged exposure therapy delivered in a group setting. Smith et al. (2015) investigated the use of prolonged exposure therapy for veterans with PTSD in a group setting. With a growing number of veterans in need of treatment for PTSD there is increased interest in group therapy as a way to deliver treatment efficiently (Smith et al., 2015). A hybrid treatment of group and individual therapy was used in the current study. Therapy was 12 weeks in length and consisted of 12 one-hour group sessions and approximately five one-hour individual sessions.

Participants in this study were patients who were enrolled in treatment at a PTSD clinic in a Midwestern Veterans Affairs hospital and patients had previously indicated interest in group therapy. A total of 67 veterans participated in the study and were split into 12 groups for the

group portion of therapy, 67.2% of participants were Vietnam veterans and 23.9% were OEF/OIF/OND veterans. On average the groups consisted of 5 or 6 members (Smith et al., 2015).

Measures used in the current study were the CAPS, the MINI, the BDI-II and a semi structured diagnostic interview. Of the 67 veterans, 49 fit the criteria to be a completer (73.13%). Smith et al (2015) found a significant reduction in both CAPS scores and BDI-II scores. In addition, reduction in CAPS scores was significant with an effect size of d=1.37 Reduction in BDI-II scores was significant also with an effect size of d=0.79. Limitations of this study include the lack of a control group to compare results and the potential for selection bias due to participants choosing to participate in group therapy (Smith et al., 2015).

**TBI and PE therapy**

Some clinicians fear that although PE is an effective treatment for PTSD, it may not be a suitable treatment choice for patients that have a history of a traumatic brain injury (TBI). OEF/OIF veterans are sustaining TBI's at an unprecedented rate due to style of warfare (Wolf, Strom, Kehle, and Eftekhari, 2012). They are participating in combat that involves more blast injuries from improvised explosive devices. Also OEF/OIF veterans have an increased survival rate from TBI's than previous veteran populations due to advances in medical interventions. An mTBI is the result of an injury to the head that results in symptoms such as a self-reported period of confusion, disorientation, dysfunction of memory, seizures, or impaired consciousness.

Sripada et al. (2013) published a study that investigated the use of prolonged exposure therapy for veterans with PTSD with and without a history of an mTBI. This study was broken up into two similar studies. In study 1, charts of 51 veterans receiving PE therapy for PTSD in a

VHA clinic were reviewed. In study 2, secondary data from a randomized controlled trial of 22 VA veterans receiving either PE or present centered therapy (PCT) for PTSD was reviewed.

Study 1 consisted of 51 veterans diagnosed with PTSD, 11 of which were classified as positive for an mTBI (22%). TBI was defined as the presence of a TBI in the patient's computerized patient record system (CPRS). Before therapy began, patients were given psychiatric assessments such as the Mini-International Neuropsychiatric Interview (MINI) and the Clinician Administered PTSD Scale (CAPS). PE therapy was typically given in 8-15 90-minute sessions although in the current study the length of treatment varied by patient. To measure effects of treatment the PTSD Checklist-Specific Version (PCL-S) was used.

Forty veterans (78%) met the criteria as treatment completers. The results of this study showed significant reductions in PTSD symptoms with both samples. PCL-S score reduction was significant with an effect size of d=1.13 (Sripada et al., 2013). With regards to the subsample of patients with an mTBI, reduction in PCL-S scores were also significant with an effect size of d=2.22 (Sripada et al., 2013).

Study 2 consisted of 22 veterans diagnosed with PTSD, eight of whom were classified as positive for an mTBI (36%). The same definition for mTBI was used as study 1 (Sripada et al., 2013). All patients were randomly assigned to receive either PE or PCT therapy. To measure effects of treatment the Clinician Administered PTSD Scale (CAPS) was used.

Results of the study showed a significant reduction in PTSD symptoms with both samples. Reduction in CAPS scores were significant with an effect size of d= 1.85 (Sripada et al., 2013). With regards to the subsample of patients with an mTBI, reduction in CAPS scores were also significant with an effect size of d=1.51 (Sripada et al., 2013). This study also

demonstrated that PE was a more effective treatment for PTSD plus mTBI than PCT (Sripada et al, 2013). A limitation to both of these studies is the small sample size.

In a similar study Wolf et al. (2012) investigated the use of prolonged exposure therapy with Iraq and Afghanistan veterans with a diagnosis of PTSD and a mild to moderate TBI. Participants were 10 veterans diagnosed with chronic PTSD and history of a documented TBI. Treatment was initiated after the period of expected recovery from TBI had passed. Treatment consisted of 8-18 sessions of manualized PE. It is important to note that very few modifications to the treatment manual were used. Measures used were the CAPS, clinical interviews, neuropsychological evaluation/neuroimaging, posttraumatic stress disorder checklist and the BDI-II.

Results show a significant reduction in both PTSD symptoms and depression. Reduction of PCL-M scores was significant with an effect size of d=3.64 (Wolf et al., 2012). Reduction of BDI-II scores was also significant with an effect size of d=1.82 (Wolf et al., 2012). Participants showed a 100% reduction in PTSD symptoms based on PCL-M scores and a 90% reduction in depression based on BDI-II scores (Wolf et al., 2012). There are several limitations to this study. First is a small sample size that consisted solely of 10 OEF/OIF male combat veterans. Second is that no severe case of TBI were included, only mild to moderate TBI's.

**PE Therapy Delivered via Telehealth Technology**

There is currently a growing interest in the ability to use advances in technology as a way to improve the accessibility of mental health services. There are many advantages to the use of telehealth technology including a decrease in patient costs, provider costs, and an increase in system coverage for a provider (Gros, Yoder, Tuerk, Lozano, and Acierno, 2011). Telehealth consists of one- on-one video conferencing between a healthcare provider and patient. Two

studies have been identified that investigate the effectiveness of PE therapy given via telehealth technology.

Tuerk, Yoder, Ruggiero, Gross and Acierno (2010) investigated PE therapy for PTSD delivered via telehealth technology. This study compared effectiveness of PE therapy delivered in person and via telehealth technology. Participants include 47 veterans (72% OEF/OIF) that received a PTSD diagnosis according to the PTSD Diagnosis Structured Clinical Interview for the DSM-IV (SCID-IV). Of the 47 participants, 12 lived outside the VAMC metropolitan area and were given the option of telehealth. All 12 offered telehealth accepted this treatment.

Treatment via telehealth was given at participants local veterans affairs community based outpatient clinic (VA-CBOC) and both groups received manualized PE. Measures used were administered at the beginning of each odd numbered session and again during the last session. Measures used were the PCL-M and the BDI-II.

The rate of completion for treatment given via telehealth was 75% and 83% for treatment given in person. Of participants that did not complete treatment all were OEF/OIF veterans. Results show a significant reduction in PTSD symptoms and depression. Reduction in PCL-M scores for the telehealth sample was significant with an effect size of d=2.9, as well as for the in person sample with an effect size of d=4.2 (Tuerk et al., 2010). Reduction in BDI-II scores for the telehealth sample was significant with an effect size of d=2.3, as well as for the in person sample with an effect size of d=2.2 (Tuerk et al., 2010). Limitations of this study include the lack of randomization; the patients chose the delivery of treatment (in person versus telehealth technology) and self-report measures were used to measure clinical outcomes rather than clinical interviews.

A similar study Gros et al. (2011) investigated PE therapy for veterans with PTSD delivered via telehealth technology. Participants included 89 veterans of which 45.2% were OEF/OIF veterans and 40.3% were Vietnam veterans. Veterans were given the choice to participant in telehealth treatment or in person treatment. Sixty-two veterans (45.2% OEF/OIF and 40.3% Vietnam) initiated individual exposure therapy via telehealth technology and 27 veterans (48.1% OEF/OIF and 51.9% Vietnam) initiated in person treatment (Gros et al., 2011).

Both treatment delivered via telehealth and in person consisted of manualized PE. Measures used were the Depression Anxiety Stress Scales: 21-Item Version (DASS) (Lovibond and Lovibond, 1995), Illness Intrusiveness Ratings Scale (IIRS) (Devins et al., 1983), the PCL-M and the BDI-II.

Results show a significant reduction in both PTSD symptoms and depression. Reduction of PCL-M scores was significant for the telehealth sample with an effect size of d=1.19, as well as for the in person sample with an effect size of d=3.00 (Gros et al., 2011). Reduction in BDI-II scores for the telehealth sample was significant with an effect size of d=1.13, as well as for the in person sample with an effect size of 2.13 (Wolf et al., 2011). Limitations of the study include the lack of randomization and possible group differences.

**Treatment Preference and Completion among Veterans**

It is reported that 60-75% of OEF/OIF veterans with mental health disorders do not seek mental health care (Hoge et al., 2004). Although the U.S. Department of Veterans Affairs endorses PE as a first-line treatment for veterans with PTSD, there are still only a small number of veterans receiving PE. In 2010 only 1.5% of veterans in outpatient PTSD clinics in New England received at least one session of PE (cited in Shiner et al., 2012). Two studies have been identified that investigate veterans' preference and characteristics of completion of PE therapy.

Research has been done to evaluate treatment preference among veterans. Kehle-Forbes, Polusny, Erbes, and Gerould (2014) investigated the acceptability of prolonged exposure (PE) therapy among U.S. Iraq War Veterans suffering from posttraumatic stress disorder (PTSD). The study consisted of 58 U.S. National Guard Iraq War Veterans that had experienced combat and screened positive for PTSD. Participants were asked if they preferred PE, medication (SSRI), or no treatment. Interviews took place over the phone where a research assistant read a script that described the treatments by explaining the components, treatment rationale, and the risks of each treatment (Kehle-Forbes et al., 2014). Veterans were then asked to choose their preferred treatment and their reasoning behind their choice.

Results of the study showed a preference for PE over the other two options. The majority of participants (53.4%) chose PE with the second most common choice being medication (36.2%) (Kehle-Forbes et al., 2014). When asked why they chose PE the most common answers were the treatments credibility and the belief that the treatment would be the most helpful (Kehle-Forbes et al., 2014). Common barriers for PE were the time it takes to participate in treatment and concern about the relationship with a therapist, particularly trusting someone who had not served in combat (Kehle-Forbes et al., 2014).

In a similar study, Mott et al. (2014) investigated the characteristics of U.S. veterans who begin and complete prolonged exposure (PE) therapy and cognitive processing therapy (CPT) for posttraumatic stress disorder (PTSD). In this study researchers identified all patients (N=796) in a Veterans Affairs (VA) PTSD and anxiety clinic that had chosen to participate in evidence based psychotherapy (EFB) from 2008 to 2012 (Mott et al., 2014). Of the 796 participants only 91 veterans (11.4%) chose PE or CPT (Mott et al., 2014). Examples of other therapies participants may have chosen are supportive psychotherapy, relaxation, and psychoeducation.

Results of the study indicate that participants were more likely to choose PE (8.5%) than CPT (3%) (Mott et al., 2014). The dropout rate for CPT participants was 50% while the dropout rate for PE was 30.9% (Mott et al., 2014). Results of the study also indicated that OEF/OIF/OND veterans were less likely to participate in PE or CPT than veterans from other service eras (Mott et al., 2014). Participants that did chose PE or CPT were more likely to be older, employed, married and non-OEF/OIF/OND (Mott et al., 2014). The major limitation to this study is the use of patient medical records, which relies on the validity of the reports and clinician records. It is evident that the preference among veterans for prolonged exposure therapy makes this a good treatment option for this population.

**PE Therapy for Active Duty Military**

Many first-line trauma-focused therapies, such as PE, that are offered in specialty mental health clinics often do not reach all veterans and active duty services members with PTSD (Cigrang et al., 2015). A solution to this problem may be the use of PE in a primary care setting for both veterans and active duty service members. One study has been identified that investigates the use of PE therapy with active duty military personnel in a primary care setting.

Cigrang et al. (2015) investigated the use of PE with active duty military personnel. The purpose of this study was to determine the long-term effects of PE treatment for a group of active duty military personnel and follow-ups were completed 6 and 12 months post treatment. Participants were 24 active duty military service members who all served in OEF/OIF.

Treatment followed the prolonged exposure for primary care protocol (PE-PC), which was developed specifically for deployment, and combat related PTSD (Cigrang et al., 2015). Treatment consisted of at home workbooks and in person trauma associated emotional processing. Measures used were the PCL-M, the PTSD Symptom Scale: Interview Version

(PSSI-I) (Foa, Riggs, Dancu, and Rothbaum, 1993), the Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, and Williams, 2001; Kroenke, Spitzer, Williams, and Löwe, 2010) and the Behavioral Health Measure (BHM) (Bryan et al., 2014) were administered pre- and post-treatment and again 6 and 12 months post-treatment.

Of the 24 participants, 17 completed treatment (71%) (Cigrang et al., 2015). Results of the study show a significant reduction in PTSD symptoms. Reduction of PCL-M scores was significant with effect sizes of; post treatment d=1.08, 6 months post-treatment d=1.30 and 12 months post treatment d=1.01 (Cigrang et al., 2015). There was also a decrease in participants meeting criteria for PTSD based on the PSS-I from pre-treatment (88%) to post-treatment (47%). Limitations to this study include the small sample size and the lack of a control group to compare effect sizes.

## Discussion

It is estimated that up to 13% of U.S. military personnel returning from Iraq and Afghanistan are affected with PTSD and have a reduced quality of life in result (Eftekhari et al., 2013). Based on the VA's electronic patient records as of March 31st, 2015, 405,915 OEF/OIF/OND veterans were seen for PTSD following their return to the U.S. As a consequence there is a high rate of depression, anxiety and suicide within this population. There are a number of different therapies used to treat PTSD with one of the most effective being prolonged exposure therapy (PE). The Institute of Medicine (IOM) recognized exposure therapies as the treatment approach with the most efficacy data for the treatment of PTSD (IOM, 2007).

Prolonged exposure therapy has been shown to significantly reduce PTSD symptoms such as general anxiety, depression, guilt and anger (Foa et al., 2013). Patients will learn to extinguish fear responses to memories of trauma through exposure and learn new responses to

previously fearful stimuli. PE is an exposure based cognitive-behavioral therapy that consists of three main components. Imaginal exposure is the first component and requires patients to talk about memories or feelings they have towards the trauma repeatedly with a therapist. The second component, *in vivo* exposure, involves gradually and systematically exposing patients to real life situation that may cause them distress but are ultimately safe. The third and final component is psychoeducation, where patients learn about PTSD and PE in order to further understand what they are experiencing.

In this literature review, 14 studies of prolonged exposure therapy with veterans with posttraumatic stress disorder were reviewed. All of the studies found that prolonged exposure (PE) therapy is an effective treatment option for veterans with posttraumatic stress disorder (PTSD). Among the studies reviewed, nine used the posttraumatic checklist (PCL) to measure effectiveness of treatment. The average effect size for reduction of PCL symptoms was d=2.36. Of the studies reviewed, five measured the percentage of participants that no longer met criteria for PTSD post-treatment with the average being 64.04%. The average dropout rate was 33.75%.

Veterans Affairs (VA) has made significant improvements towards increasing veterans' access to care, for example the nationwide PE clinician training program that began in 2007 (Eftekhari et al., 2013). As of March 1, 2012 more than 1,500 mental health professionals had been trained through the largest PE training program in the nation (Eftekhari et al., 2013). Despite this effort, a current challenge is the lack of realized care and use of available services. This may be due to several barriers that still exist including logistical factors (transportation difficulties, distance from a VHA facility, etc) and psychological factors (lack of knowledge about PTSD and symptoms, a military stigma towards therapy, etc.) (Steenkamp and Litz, 2012).

Although almost all VA hospitals in the country now report offering evidence-based treatments including PE, this does not necessarily mean that PE is always offered to veterans (Steenkamp & Litz, 2012). The VA has budgetary restrictions that may restrict veteran's access to intense individualized PE. With more than two million services members having served in Iraq and Afghanistan, the demand for treatment puts considerable strain on current VA resources. It is important to focus on the development of ways to increase veterans' access to evidence-based therapy.

Smith et al., 2015 reported that group therapy is an effective way to administer PE. A benefit to PE in a group setting is increased access to care, allowing more veterans to be engaged in PE at a faster rate. In addition to increased access, some veterans express a preference for group PE over individual therapy. Group therapy also provides support from peers and members may be motivated by the improvement of their peers.

Another way to increase access to PE is to deliver therapy via telehealth. Telehealth consists of one-on-one conferencing between a healthcare provider and a patient. Studies suggest that telehealth is an effective way to deliver PE to veterans, resulting in a decrease in PTSD symptoms, depression, general anxiety and stress with large effect sizes (Gros et al., 2011). There is a high acceptance rate among veterans to participate in PE delivered via telehealth, making this a good option for therapy delivery (Tuerk et al., 2010). This may be due to the patient's fear of being in crowded spaces for example, a hospital lobby, prior to treatment. Also, as a symptom of their PTSD, many veterans may not be comfortable driving for long periods of time to get to the closest VHA hospital, making telehealth a more attractive option for therapy (Tuerk et al., 2010).

In addition to the concern regarding access to care another concern amongst clinicians is the effectiveness of PE with patients who have a history of a traumatic brain injury (TBI). Those concerned worry that cognitive deficits and behavioral disturbances associated with TBI may limit the effectiveness of treatment outcomes due to the possible loss of memories surrounding the trauma (Wolf et al., 2012). This may limit a patient's ability to participate in exposure-based therapies such as PE. Despite these concerns, studies show that PE is effective for patients with PTSD and the presence of a TBI (Sripada et al., 2013). These findings suggest that despite cognitive and behaviors deficits associated with a TBI, PE is an effective therapy that should be considered for use with this population.

Internal validity is a major concern to researchers because it is the basis for experimentation and answers the question, "does the experiment demonstrate causality?" If extraneous or confounding variables are not responsible for changes in the dependent variable then the answer is yes, the experiment proves causality. Confounding variables are variables that change at the same time that the independent variable changes. When there is a change in the dependent variable but confounding variables are present, it is not possible to determine whether the change is a result of the independent variable or confounding variables.

There were some common limitations in the current research. One serious limitation in the studies reviewed was the lack of a control groups. Half of the studies reviewed (7 studies) contained no control group. Without a control group it is impossible to interpret the results. Reduction in symptoms could be due to many factors other than the PE treatment. The lack of randomization to a control group limits the ability to conclude that the observed outcomes are due solely to PE therapy.

It is important for future research to have at least one control group. A better study design would have more than one control group, for example a group receiving PE, a group receiving CBT and a waitlist control group. The waitlist group may also receive treatment halfway through the study. With two control groups, it is possible to compare the results of the experimental group and determine the effectiveness of the treatment.

Another limitation in the current research is the lack of follow-up. The treatment may be effective immediately but to determine if the treatment has positive lasting curative effects, there must be a follow-up. Only one study of the 14 reviewed included follow-up in their study design. Cigrang et al. (2015) investigated the use of PE with active duty military personnel and follow-ups were completed at 6 and 12 months post treatment. Future research should follow this study design.

Many of the studies had small sample sizes, which makes it difficult to generalize findings to a wider and more diverse population. For example, these studies all show that PE is effective for veterans with PTSD however; it is unclear whether PE is the most effective treatment for all populations suffering from PTSD. In order to generalize findings in the future, larger and more diverse samples are needed in future research.

Other potential confounding variables in the studies reviewed are *selection* and *history*. The confounding variable selection occurs when groups under study are not equivalent before experimental manipulations (Graziano and Raulin, 2010). Selection is a confounding variable in many of the studies reviewed because researchers did not always have the ability to randomly select and randomly assign participants to groups. In several of the studies, participants were able to choose which therapy they wanted to receive.

History is the other potential confounding variable that may be present within the studies reviewed. During the course of study, events that are independent of the study may occur that affecting the outcome. In general, threats to internal validity due to history occur in studies that have longer times between pretest and posttest measurements (Graziano and Raulin, 2010). In the studies reviewed, many different events may have occurred that may have affected the outcome. For example, the continuation of war may have an affect on participants because participants may feel that everything they did was for nothing. Also, the rise of ISIS may be an event that has an impact on patient's symptoms.

Given how many veterans there are that currently have PTSD it is striking that there are not better-designed studies to investigate the effectiveness of treatments for this population. One reason may be a difficulty to conduct research with this veteran population. It is important to consider high dropout rates among this population. Eftekhari et al. (2013) reported data on reasons for premature dropout within their study. With a total of 1931 participants in the study, 28% (542 patients) had dropped out. The most frequent reasons behind dropout were improvement in symptom reduction so did not return, experienced increased distress, and other/unknown (Eftekhari et al., 2013). Of the veteran theatres studied, OEF/OIF veterans were most likely to dropout for other/unknown reasons and improvement in symptom reduction however, Vietnam era veterans were more likely to drop out due to increased distress (Eftekhari et al., 2013).

Steenkamp and Litz (2012) reported that a significant number veterans are unwilling, unready or unsuited to complete trauma-focused therapies. All future studies should follow up with the patients who drop out or refuse treatment following the study design of Eftekhari et al.

(2013). That will increase knowledge behind reasons for refusal and dropout, only enhancing understanding of treatment effectiveness.

Although current research does suggest that PE is an effective treatment for veterans with PTSD, it is evident that there is a need for more research studying the effectiveness of treatment. The government should increase their budget towards enhancing this area of research. As the demand for mental health care rises among the veteran population, strain is put on current resources. More research into the effectiveness of these therapies will make it possible for all veterans to receive improved treatment quality.

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**Appendix A: Sources**

| Manualized Prolonged Exposure Therapy | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Study** | **Participants** | **Control Group** | **Intervention Conditions** | **Sessions** | **Treatment Dropout Rate** | **% no longer meeting criteria for PTSD at post-treatment** | **Within subjects pre-post effect sizes** | **Independent Variables** | **Dependent Variables** |
| ***"Effectiveness of National Implementation of Prolonged Exposure Therapy in Veterans Affairs"*** (Eftekhari et al., 2013) | 1,931 Veterans | No | In- person PE | Manualized PE | 28.1% non-completers | Based on PCL scores: 87.6% pre-treatment 46.2% post-treatment | PCL scores: d= 0.87<br><br>BDI-II scores: d= 0.66 | PE therapy | PCL<br>BDI-II |
| ***"Prolonged exposure therapy for combat-realted posttraumatic stress disorder: an examination of treatment effectiveness for veterans of the wars in Afghanistan and Iraq"*** (Tuerk et al., 2011) | 65 OEF/OIF Veterans | No | In- person PE | Manualized PE | 34% non-completers | 32 veterans 49% total sample 74% treatment completer sample (PCL-M scores lower than 44= no longer meet criteria for PTSD) | PCL-M scores: d= 2.07<br><br>BDI-II scores: d=1.25 | PE therapy | PCL-M<br>BDI-II |
| ***"Prolonged Exposure for PTSD in a Veterans Health Administration PTSD Clincic"*** (Rauch et al., 2009) | 10 Veterans 5 OEF/OIF and 5 Vietnam | No | In-person PE | 80 min sessions Modified wording to reflect pop 7-21 sessions (M=12.7) | N/R | 50% total sample 60% OEF/OIF 40% Vietnam (PDS scores lower than 15= no longer meet criteria for PTSD) | PDS scores: total sample d=2.19 OEF/OIF d=2.42 Vietnam d= 1.93<br><br>BDI-II scores: total sample d=1.31 | PE therapy | PDS<br>BDI-II |

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|---|---|---|---|---|---|---|---|---|---|
| " ***Changes in Trauma-potentiated Startle with Treatment of Posttraumatic Stress Disorder in Combat Veterans"*** (Robinson-Andrew et al., 2014) | 36 OEF/OIF Veterans | No | In-person PE (n=8)<br>In-person PCT (n=9) | 80 min sessions<br>12 sessions | 53% non-completers | N/R | CAPS scores:<br>completers m=19.3<br>non-completers m=63.5 | PE therapy<br>PCT therapy | CAPS<br>startle response (EMG) |
| **"*Evaluating treatment of Posttraumtic Stress Disorder with Cognitive Processing Therapy and Prolonged Exposure Therapy in a VHA Specialty Clinic"*** (Jefferys et al., 2014) | 263 Veterans | Yes | In- person PE<br>In- person CPT | CPT:<br>12 sessions<br>60 min sessions individually<br>90 min sessions group<br><br>PE:<br>10-15 90 min sessions | CPT: 32.2 %<br>PE: 44% | N/R | CPT d= 0.96<br>PE d= 2.0 | PE therapy<br>CPT therapy | CAPS<br>MINI |
| **"*Prolonged Exposure Therapy for Combat Related Posttraumatic Stress Disorder: Comparing Outcomes for Veterans of Different Wars"*** (Yoder et al., 2012) | 112 Veterans<br>34 Vietnam<br>17 Persian Gulf War<br>61 OEF/OIF | Yes | In-person PE | Manualized PE | 18 participants non completers<br>12% Gulf War<br>26% OEF/OIF/OND<br>3% Vietnam | N/R | Overall effect size 2.73 across 3 groups<br><br>PCL-M scores:<br>Gulf War d=1.81<br>OEF/OIF/OND d= 3.05<br>Vietnam d= 2.07<br><br>BDI-II scores:<br>Gulf War d=1.42<br>OEF/OIF/OND d= 1.27<br>Vietnam d= 1.91 | PE therapy<br>Different Era Veterans | PCL-M<br>BDI-II |

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|---|---|---|---|---|---|---|---|---|---|
| "***Prolonged Exposure for PTSD in a Veteran Group: A Pilot Effectiveness Study***" (Smith et al., 2015) | 67 veterans<br>67.2% Vietnam<br>23.9% OEF/OIF | No | Hybrid treatment: group and individual PE | 12 weeks:<br>12, 1 hour group sessions (in vivo)<br>5, 1 hour individual sessions (imaginal) beginning at week 6 | 26.87 % non-completers | N/R | CAPS scores:<br>d= 1.37<br><br>PCL-C scores:<br>d= 1.00<br><br>BDI-II scores:<br>d= 0.79 | Hybrid PE therapy | CAPS<br>PCL-C<br>BDI-II |
| **Traumatic Brain Injury and Prolonged Exposure Therapy** | | | | | | | | | |
| **Study** | **Participants** | **Control Group** | **Intervention Conditions** | **Sessions** | **Treatment Dropout Rate** | **% no longer meeting criteria for PTSD at post-treatment** | **Within subjects pre-post effect sizes** | **Independent Variables** | **Dependent Variables** |
| "***Mild Traumatic Brain Injury and Treatment Response in Prolonged Exposure for PTSD***" (Sripada et al., 2013) | Study 1:<br>51 Veterans<br>37% Vietnam<br>33% Persian Gulf<br>32% OEF/OIF<br>11 positive mTBI<br><br>Study 2:<br>22 veterans<br>81% Iraq and 33% Afghanistan (w/ some both locations)<br>8 positive mTBI | Yes | Study 1:<br>In- person PE<br><br>Study 2:<br>In- person PE<br>In- person PCT | Study 1:<br>90 min sessions<br>8-15 weekly (current study length varied by patient)<br><br>Study 2:<br>10-12 sessions PE or PCT (randomly assigned) | Study 1:<br>22% non-completers<br><br>Study 2:<br>N/R | N/R | Study 1:<br>PCL-S Scores total sample<br>d=1.13<br>w/ mTBI d= 2.22<br><br>Study 2:<br>CAPS scores total sample<br>d=1.85<br>w/ mTBI d=1.51<br>PE d=2.9<br>PCT d=0.8 | Study 1:<br>PE therapy<br><br>Study 2:<br>PE therapy<br>PCT therapy | Study 1:<br>PCL-S<br><br>Study 2:<br>CAPS |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **#15 "*A preliminary examination of prolonged exposure therapy with Iraq and Afghanistan veterans with a diagnosis of posttraumatic stress disorder and mild to moderate traumatic brain injury."*** (Wolf et al., 2012) | 10 OEF/OIF Veterans w/ mild to moderate TBI | No | In- person PE | 8-18 session 120 min sessions | N/R | Reduction in PTSD (PCL-M)= 100%<br><br>Reduction in depression (BDI-II)= 90% | PCL-M scores d=3.64<br><br>BDI-II scores: d= 1.82 | PE therapy | PCL-M<br>BDI-II |
| **Prolonged Exposure Therapy Delivered via Telehealth Technology** | | | | | | | | | |
| **Study** | **Participants** | **Control Group** | **Intervention Conditions** | **Sessions** | **Treatment Dropout Rate** | **% no longer meeting criteria for PTSD at post-treatment** | **Within subjects pre-post effect sizes** | **Independent Variables** | **Dependent Variables** |
| ***"A Pilot Study of Prolonged Exposure Therapy for Posttraumatic Stress Disorder Delivered via Telehealth Technology"*** (Tuerk et al., 2010) | 47 Veterans<br>72% OEF/OIF | Yes | In- person PE (n=35)<br>PE delivered via telehealth (n=12) | weekly 90 min sessions | In-person PE: 17%<br>Telehealth PE: 25% | N/R | In-person scores:<br>PCL d=4.2<br>BDI-II d= 2.2<br><br>Telehealth scores:<br>PCL d= 2.9<br>BDI-II d=2.3 | In- person PE<br>Telehealth PE | PCL<br>BDI-II |
| **"*Exposure Therapy for PTSD Delivered to Veterans via Telehealth: Predictors of Treatment Completion and Outcome and Comparison to Treatment Delivered in Person"*** (Gros et al., 2011) | 89 Veteran<br>45.2% OEF/OIF<br>40.3 % Vietnam | Yes | In-person PE<br>PE delivered via telehealth | 12 weekly sessions<br>60-90 min sessions | In- person PE: Not assessed<br>Telehealth PE: 39%<br>25% Vietnam<br>75% OEF/OIF/OND | N/R | In-person scores:<br>PCL d= 3.00<br>BDI-II d=2.13<br><br>Telehealth scores:<br>PCL d=1.19<br>BDI-II d= 1.13 | In- person PE<br>Telehealth PE | PCL<br>BDI-II |

## Treatment Preference and Completion Among Veterans

| Study | Participants | Control Group | Intervention Conditions | Sessions | Treatment Dropout Rate | % no longer meeting criteria for PTSD at post-treatment | Within subjects pre-post effect sizes | Independent Variables | Dependent Variables |
|---|---|---|---|---|---|---|---|---|---|
| "***Acceptability of Prolonged Exposure Therapy Among U.S. Iraq War Veterans with PTSD Symptomology"*** (Kehle-Forbes et al., 2014) | 58 U.S OIF National Guard veterans | Yes | Phone interview | N/A | N/R | N/R | N/A | N/A | N/A |
| ***"Characteristics of U.S Veterans who Begin and Complete Prolonged Exposure and Cognitive Processing Therapy for PTSD"*** (Mott et al., 2014) | 796 total sample<br>91 Veterans chose PE or CPT | Yes | In- person PE (8.5%)<br>In- person CPT (3%) | Manualized PE and CPT | PE: 30.9 %<br>CPT: 50% | N/R | N/A | PE therapy<br>CPT therapy | Completion rates |

## Prolonged Exposure Therapy for Active Duty Military

| Study | Participants | Control Group | Intervention Conditions | Sessions | Treatment Dropout Rate | % no longer meeting criteria for PTSD at post-treatment | Within subjects pre-post effect sizes | Independent Variables | Dependent Variables |
|---|---|---|---|---|---|---|---|---|---|
| "***Treatment of active duty military with PTSD in primary care: A follow-up report"*** (Cigrang et al., 2015) | 24 active duty military | No | In-person PE | 4-6 sessions 30 min sessions | 33% | 50% | PCL-M scores:<br>posttreatment d= 1.08<br>6 month d= 1.30<br>1 year d= 1.01<br><br>PSS-I scores:<br>posttreatment d= 1.17<br>6 month d= 1.45<br>1 year d= 0.95 | PE therapy | PSS-I<br>PCL-M<br>PHQ-9<br>BHM |