Complementary and Integrative Therapies Available for Treating Veterans With PTSD: An Integrative Review

An Integrative Review

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Kelly A. Greene

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Lynchburg, VA

July, 2023

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Scholarly Project Chair Approval:

Dr. Vickie Moore, RN, DNP, FNP-C July 2023

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Abstract

PTSD is described as the resulting from exposure to threatened or real injury, death, or sexual violence. Its symptoms have four different clusters: avoidance, re-experiencing, hyperarousal, and negative alterations in mood. PTSD is a widespread diagnosis among U.S. military veterans. This is a way of daily life for many veterans, and not all therapy is successful. The Veterans Health Administration (VA) recognizes that conventional therapy is not always appropriate for each veteran with PTSD. The VA has developed the Whole Health approach, which represents a move toward more person-driven health care, which the VA characterizes as proactive, patient driven, and personalized, and includes complementary and integrative health. This integrative review examined, critiqued, and synthesized the current literature to identify the options for complementary and integrative treatments for PTSD in veterans. Complementary and integrative treatments reviewed include yoga, acupuncture, animal-assisted therapies, and other less common therapies. The rate of PTSD diagnoses among veterans in the United States is enormously large , and many of them do not complete their treatment plan. Currently, the use of complementary and integrative treatment for PTSD is limited, but there is good evidence for positive outcomes in the literature to support their initiation.

Keywords: veterans, post-traumatic stress disorder (PTSD), integrative therapies, yoga, equine-assisted therapy, acupuncture

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Dedication

This publication is dedicated to my parents, Debbie and Gary. They have been my driving force and an enormous source of support to me throughout this journey to DNP/FNP with Liberty University. They have sacrificed so much for me to be who I am today, and I would not be here without them. I would also like to extend my gratitude to other family and friends who have been immensely supported in this adventure.

Acknowledgments

Dr. Vickie Moore RN, DNP, FNP-C, was the mentor and chair for this integrative review. This undertaking would not have been possible without her mentorship, cheerleading, and knowledge.

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List of Abbreviations

Animal-assisted therapies (AATs)

Cognitive processing therapy (CPT)

Complementary and integrative health (CIH)

Cumulative Index of Nursing and Allied Health Literature (CINAHL)

Doctor of Nursing Practice (DNP)

Equine-assisted therapy (EAT)

Institutional Review Board (IRB)

Posttraumatic stress syndrome (PTSD)

Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA)

Veterans' Health Administration (VA)

Complementary and Integrative Therapies Available for Treating Veterans with PTSD: An Integrative Review

Posttraumatic stress syndrome, or PTSD, is becoming more widespread among people of all professions, from police to firefighters to nurses, and has been almost ubiquitous among U.S. military veterans. The World Health Organization World Mental Health completed a study spanning 24 countries showing 70.4% of subjects had suffered some distressing incident in their life (English et al., 2022). Between 11% and 20% of veterans that battled in Operation Enduring Freedom and Operation Iraqi Freedom have been diagnosed with PTSD, while only 3.6% of the civilian population has been diagnosed (Doran et al., 2021). Around 15% of Vietnam War veterans and 12% of Gulf War veterans suffer from PTSD. As a result of military sexual trauma, PTSD can also occur, with 23% of women experiencing sexual assault during their military time (National Center for PTSD, n.d.).

Background

PTSD is a psychological reaction to a traumatic experience that can manifest as persistent psychological suffering in response to internal or external stimuli that favor traits of the trauma, undesirable cognitions and mood, dissociative reactions, and increased physiological stimulation (Doran et al., 2021). Persistent symptoms, such as trauma-related nightmares, flashbacks, and intrusive memories, are considered trademark symptoms of PTSD (Assouline et al., 2022). People diagnosed with PTSD are also prone to be identified with bipolar disorder, depression, substance use disorder, or generalized anxiety disorder and to encounter symptoms of psychosis. The comorbid diagnoses are as significant as the initial PTSD diagnosis, as they substantially affect daily functioning, such as by decreasing family unity, causing employment issues, and leading to romantic relationship concerns (Doran et al., 2021).

Existing treatments for PTSD include cognitive processing therapy (CPT), extended exposure therapy, and selective serotonin reuptake inhibitors and other pharmacotherapies (Cushing & Braun, 2018). Exposure-based therapy is the gold-standard treatment for PTSD, but about half of the patients do not gain any relief and many do not complete the full course of treatment. Veterans have demonstrated even lower treatment efficacy and greater dropout rates (Fisher et al., 2021). Selective serotonin reuptake inhibitors are a conventional pharmacological treatment for PTSD. They have strong effectiveness but are linked to adverse side effects and can have adverse interactions with other medications frequently given for PTSD (Youngstedt et al., 2022).

Veteran's opposition to obtaining a formal diagnosis of PTSD, as well as ineffective therapeutic interactions with mental health providers, may decrease their engagement and lead to more dropouts (Whitworth et al., 2019). Studies have found that veterans who start an outpatient treatment plan have a mean dropout rate of 42% compared to a 19.7% rate of the general adult population. Further studies proved that veterans with PTSD had a 68% dropout rate than patients with major depressive disorders (Amsalem et al., 2022).

Not every individual will respond to every treatment positively, so complementary or integrative treatments must be studied and made available. Numerous veterans believe that the existing PTSD treatments are not sufficient. The reasons veterans would like to try self-care practice and would prefer to be drug-free include past failures with conventional treatments and the stigma related to behavioral health and therapies (Cushing & Braun, 2018). A study of outpatient veterans showed that those who were being treated with either prolonged exposure or CPT had an average dropout rate of 38.5% (Edwards-Stewart et al., 2021).

Currently, the Veterans' Health Administration (VA) does not have complementary and integrative health (CIH)-specific policies related to the treatment of PTSD. However, it does have an internal procedure that advises that several CIH methods be offered if considered appropriate by the treatment team as a part of the veteran's care plan. This policy currently covers eight approved CIH methods: guided imagery, meditation, acupuncture, clinical hypnosis, tai chi/qigong, biofeedback, massage therapy, and yoga.

The VA has deployed the Whole Health approach to care, which involves the development of a personalized treatment regimen that considers the patient's body, mind, and mental well-being. This system comprises educational handouts, online tools and apps, podcasts, videos, and the personalized health plan of the patient with a focus on self-care, professional care, and community care (U.S. Department of Veterans Affairs, 2022). As part of the VA Whole Health System, processes have been established to document the use and efficacy of CIH among VA patients (Strauss et al., 2018).

This review will examine what complementary or integrative treatments are available for veterans with PTSD. Prominent themes in the research are yoga therapy, acupuncture, animal-assisted therapies (AATs) focusing on canine and equine therapy, and other therapies.

Defining Concepts and Variables

PTSD

PTSD is conceptually defined as a class of stress- and trauma-related disorders outlined in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. It is a response to actual or threatened injury, death, or sexual violence, and manifests itself in four different ways: hyperarousal, avoidance, re-experiencing, and negative mood shifts. PTSD can have permanent symptomatology and can influence each aspect of a veteran's life, containing social

functioning and physical health (Cushing et al., 2018). It is also usually associated with comorbidities, such as sleep ailments, depressive and anxiety disorders, that jeopardize patients' health and life (Ding et al., 2020). Variables reviewed include complementary and integrative health, yoga, acupuncture, AATs, and other therapies.

Complementary and Integrative Health (CIH)

CIH treatments include activities such as meditation, yoga, and acupuncture. There has been amplified interest in this field over the last decade as evidence shows these nonpharmacological activities have a positive effect on health, especially for pain and some types of mental disorders (Taylor et al., 2022).

Yoga. Yoga is 3000-year-old and is an exercise of mind-body-spirit that blends physical movement with mindful attention to core knowledge of oneself, one's breath, and one's energy. Today in contemporary context, the word yoga refers to "union", as it originated from the Sanskrit root word "yuj," meaning "to yoke" (English et al., 2022).

Acupuncture. An increasing number of patients accept acupuncture as a valid treatment method for mental diseases such as anxiety, depression, and insomnia. There is evidence that acupuncture can relieve PTSD symptoms in a remarkable way (Ding et al., 2020). In acupuncture, longitudinal meridians and transverse pathways that are functionally comparable to internal organs and are found on the skin's surface. (Assouline et al., 2022).

AATs. AATs have been effectively used as a treatment method for children and adults with physical disabilities and psychological challenges. Therapy animals may assist with habituation and rehabilitation, deliver camaraderie and emotional support, or offer physical support (Burton et al., 2018). Equine-assisted therapy (EAT) is classified as an experiential therapy and includes activity in a clinical situation with importance placed on the experience and

the activity. This research will enable change and self-development and aid the patient to adopt coping strategies emotionally, cognitively, and physically (Rosing et al., 2022). This review will cover both canine- and equine-assisted therapies.

Other Therapies. Other therapies that research has found to positively affect PTSD patients include bright light treatment which is daily contact of 30 minutes of 10,000-lux ultraviolet-filtered white light (Youngstedt et al., 2022). Hyperbaric oxygen therapy promotes an environment of healing by increasing the amount of oxygen carried in the blood (Biggs et al., 2021). Music therapy is another treatment found, and is explained as credentialed professionals with approved music therapy programs that use clinically-supported music interventions as part of therapeutic sessions to achieve individualized goals (Gooding & Langston, 2019). Other therapies reviewed in the research include computer-guided therapy, exercise, art, and family-inclusive therapies such as couples therapy and family involvement therapy.

Rationale for Conducting the Review

A 2022 study by Leighton et al showed 6,261 veterans perished by suicide in the United States in 2019, almost double the number of civilian adults (Leighton et al., 2022). The VA is currently moving to a Whole Health System of care. This country's most extensive health care system treats more than nine million patients yearly (Taylor et al., 2022). This review aims to compile evidence on the efficacy of complementary and integrative therapies for PTSD to increase acceptance of these treatments. The lack of acceptance is shown by the earliest acknowledged randomized controlled clinical trial for PTSD using acupuncture (Hollifield et al., 2021). Even though there is a large evidence base revealing the advantages of yoga for healing psychological trauma, qualitative reviews of this topic have not been integrated into research (English et al., 2022).

Though more studies are being conducted that show the positive effects of complementary and integrative treatments for veterans with PTSD, the therapies are still not gaining mainstream popularity as standard treatments or integratives. Even though current evidence-based treatment for PTSD is effective for some people, nonresponse rates have reached 50% and dropout rates have reached 54%. Therefore, it is crucial to recognize and define successful interventions for this disorder (Leighton et al., 2022). Preserving engagement and enhancing outcomes will likely be an outcome of holistic approach therapies (English et al., 2022).

Purpose and Review Question

Reviewing existing literature on complementary and integrative therapies for PTSD and to obtain information on these therapies as they relate to veterans is the purpose of this integrative review. The objective is to show the positive effects of these treatments and to give credence to the use of these treatments as more mainstream therapies. The clinical question for this integrative review is: What complementary and integrative therapies are available for veterans with PTSD?

Formulate Inclusion and Exclusion Criteria

This integrative review consists of evidence and data from peer-reviewed articles published from 2018 to 2023. The studies included in the review focused on current PTSD treatment, PTSD in veterans, integrative therapies for PTSD, acupuncture for PTSD, and yoga for PTSD. The included studies examined PTSD treatment but were not limited to those that focused only on veterans. A specific age range for participants was not applied. Articles excluded were those published before 2018, those that did not show a correlation between the

therapy and PTSD symptoms, and those not published in English. A lack of focus on veterans was not an exclusion criterion, as PTSD treatments are the same for veterans and civilians.

Conceptual Framework

Though the approach recognized by Whittemore and Knafl (2005) was used to reduce bias, improve accuracy, and boost rigor in this review. This integrative review framework comprises five steps: problem identification, literature search, data evaluation, data analysis, and presentation of data. These five steps form a methodical route for assessing evidence about the topic of interest that emphasizes diverse methodologies, rigor, and evidence-level appropriateness. Use of this framework will allow this integrative review to develop nursing science regarding the chosen topic and advise potential evidence-based practice designs.

Problem Identification

Problem identification is the initial stage of any review or research project. During this stage, the samples and variables of interest are established. Starting by establishing the samples and variables will establish a strong foundation for the other review steps (Whittemore & Knafl, 2005). In this IR, the problem identified is the need for additional or integrative therapies for PTSD treatment in veterans.

Literature Search

Comprehensive literature searches are crucial to enhance the rigor of a review because inadequate databases can produce biased and incomplete searches. Problems such as inconsistent search phrases and indexing issues could result in only around half of the literature being captured (Whittemore & Knafl, 2005). The databases searched for this review were the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and Google

Scholar with the keywords of *veterans*, *post-traumatic stress disorder*, *integrative therapies, yoga, equine-assisted therapy,* and *acupuncture*.

Data Evaluation

Once the articles are compiled, the sifting and grading of the evidence they provide starts. Ranking or grading evidence is often done using Melnyk's Levels of Evidence. This researcher used the Whittemore and Knafl (2005) framework as a second step to examine the articles for methodological quality, authenticity, and informational value.

Data Analysis

Data analysis is used for innovative evidence synthesis and unbiased primary sources. This process has three steps, data reduction, display, and comparison, with conclusion and verification occurring after completion of these three steps (Whittemore & Knafl, 2005).

Presentation

The final step of this framework is presentation. In this stage, the information gleaned from the research, any new ideas discovered on the topic, implications for practice, and limitations are listed (Whittemore & Knafl, 2005).

Section Two: Comprehensive and Systematic Search

The original search to start this integrative review followed by Whittemore and Knafl's (2005) framework during the problem identification step. During this search phase, the inclusion and exclusion criteria were developed (Toronto & Remington, 2020). The main nursing database used for the initial search was CINAHL. Boolean phrases and *keywords of veterans, post-traumatic stress disorder*, and *integrative therapies* were used.

The researcher conducted a consultation with the Liberty University Research & Instruction Librarian, Kathryn Eckler. This consultation led to enhanced review rigor, revision to

search strategy, and organization and documentation enrichment. The meeting also helped eliminate inherent bias. The original search sought to answer the question of what complementary and integrative therapies are available for veterans with PTSD.

Search Organization and Reporting Strategies

The initial review was completed to determine what integrative or complementary treatments for PTSD are in use. Initial databases used for this search were CINAHL, PubMed, and Google Scholar, with Medline Ultimate and Psychology and Behavioral Sciences added after the conversation with the librarian. This review was medical in nature but also falls under the psychology umbrella, which is why the Psychology and Behavioral Sciences database was added. The search terms of *veterans, PTSD, treatment, yoga*, and *acupuncture* were applied, with the Boolean phrases of *animal-assisted therapies, integrative medicine, complementary medicine, holistic medicine, integrative therapies, integrative treatment, complementary therapy, yoga therapy, yoga intervention, equine therapy*, and *acupuncture therapy* used.

The researcher conducted a preliminary search via the Liberty University Jerry Falwell Library platform for full-text articles published between 2018 and 2023 printed in the English language. The search utilized the keywords listed above. The search strategy was enhanced by guidance from the Liberty University librarian. CINAHL Ultimate, PubMed Central, Google Scholar, Medline Ultimate, and Psychology and Behavioral Sciences were searched. The exclusion criteria were literature published before 2018, articles not published in the English language, studies that were not peer reviewed, and articles that did not focus on treatment of PTSD. These criteria eliminated 10,812 articles, 23 articles were removed as duplicates, and 468 additional articles were excluded due to nonrelevance, leaving 3,462 articles to be reviewed (Toronto & Remington, 2020).

Terminology

Platform, database, search interface, and search engine have been defined for the purpose of understanding the article search during the integrative review. A *platform* is software utilized by specific database suppliers; the platform may not have the same name as the database. EBSCO is one platform used in the review search, as it houses CINAHL. ProQuest and Ovid were other platforms used, as they house Medline (Toronto & Remington, 2020). A *database* is a searchable electronic compilation of published materials. Each database contains a different set of resources and releases information about those resources. This review utilized CINAHL, PubMed Central, Medline Ultimate, and Psychology and Behavioral Sciences. *Search interface* refers to the actual search page and its features that allow the user to search the specific database. Features usually include advanced and basic searches and an assortment of filters. They also enable the search history to be saved to support the integrative review. *Search engine* describes systems such as Yahoo, Google, Bing, and Google Scholar, which allow the user to search the World Wide Web. They do not disclose how they produced their results. Therefore, use of a search engine cannot be documented like the database search can be (Toronto & Remington, 2020).

Section Three: Managing the Collected Data

The assembled data were sorted using Toronto and Remington's (2020) guidelines. The researcher concentrated on assessing relevance through parallel eligibility criteria, selecting articles for review by full text, and then organizing the articles by types of study conducted. The Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) flowchart used in this review (Appendix C) depicts the procedure through which articles were evaluated and ultimately selected for inclusion in this review. The inclusion and exclusion criteria are found in

Table 1. Articles included in this review were published English language within the past 5 years, full text, and peer reviewed. The selected articles were arranged in the literature matrix and assessed by the title, purpose, sample, methods, results, level of evidence, limitations, and rationale for selection. All article citations are accessible in the references portion of the review.

The evaluating process included a review of the titles of 3,462 articles for relevance to the topic of interest, therapies for veterans with PTSD, with a focus on integrative and complementary therapies. Throughout this process, titles were identified by patient population and for type of study conducted. After a thorough title screening process, 62 articles were left for further review. According to Toronto and Remington (2020), articles are filtered by title, duplicates are discarded, and unrelated articles are rejected. Hence, of the 62 relevant articles, 47 met the inclusion criteria for full-text screening. Eight of those did not have strong enough evidence, four contained duplicate evidence of previous articles, and five did not focus on integrative or complementary therapies. At this point, the database search process was completed, as duplicate articles were being produced and different search keywords were being used but not generating any new results (Toronto & Remington, 2020).

After removal of the duplicates, a comprehensive full-text examination of the remaining articles was performed. The researcher read 30 articles to confirm all inclusion criteria were met while assessing for bias, internal validity, appraisal, analysis, and synthesis, which will be further discussed in the subsequent two sections.

Section Four: Quality Appraisal

As a component of the assessment method, Melnyk's Levels of Evidence (Appendix A) was utilized to evaluate every article to establish the level of evidence while concurrently decreasing bias incidence (Toronto & Remington, 2020). This evaluation and rating structure

applies a numerical value from 1-7, with 1 representing the highest level of evidence (a systematic review or meta-analysis of randomized controlled trials or clinical guidelines based on systematic reviews or meta-analyses) and 7 representing the lowest level of evidence (an expert opinion; Melnyk & Fineout-Overholt, 2019). This assessment was conducted as part of the construction of the literature review matrix (Appendix B), which was used to evaluate the 30 remaining articles for the final integrative review.

In addition to the inclusion criteria, the initial review question aided in keeping the analysis and appraisal accurate: For veterans with PTSD, what complementary and integrative therapies are available? Each article was evaluated according to three components, which determined if the article would be included in the integrative review: inclusion criteria, level of evidence, and relevance to the initial review question.

Sources of Bias

All research is subject to bias, be it attrition, selection, measurement, or performance bias. Bias can appear at any phase during a project. The structure for bias evaluation must be reproducible, and the outcomes must be described clearly. In quantitative research, bias can influence the validity and reliability of outcomes, represented by the notion of rigor identified as trustworthiness. Trustworthiness is composed of four concepts: credibility, dependability, transferability, and confirmability. Additionally, publication bias takes place when publication is linked with the significance of the results (Toronto & Remington, 2020). This review is not contingent on evidence collected from immediate contact with human subjects. Therefore, bias will be minimized in selection, measurement, attrition, and performance. Nevertheless, bias is a matter for this review when contemplating the chosen literature by the researcher and can involve elements of the sources of bias reviewed beforehand.

Internal Validity

The term *validity* denotes how strongly the research outcome represents the truth. Validity is achieved when outcomes of the research are acquired employing appropriate scientific methods. Bias can impair the validity of specific study outcomes and lead to a biased integrative review, possibly causing over- or underestimation of the results. Appraisal of the literature should be conducted with a focus on the studies' internal validity, as the pertinence of the results may be contingent on how the findings may be applied. The findings cannot be trustworthy if substantial bias exists (Toronto & Remington, 2020).

Appraisal Tools

There is no gold standard procedure for the appraisal of study quality at this time, but it is agreed that any article included in a review should be critically appraised. Different appraisal tools, including rapid critical appraisal checklists, the Critical Appraisal Skills Program, the John Hopkins Research evidence appraisal tool, and Joanna Briggs Institute critical appraisal tools, are available (Toronto & Remington, 2020). This review used Melnyk's Levels of Evidence Pyramid (Appendix A) as it is a rapid system of literature appraisal. This quality appraisal instrument was applied along with the literature matrix (Appendix B) to sort and appraise the 30 articles selected for this review. All articles were meticulously assessed based on a degree of evidence, rigor, and data relevance.

Reporting Guidelines

This review used the PRISMA guidelines for the selection of the final articles to be included and Melnyk's Levels of Evidence for assessment of the articles for evidence. The literature review matrix (Appendix B) comprises only the articles utilized in this integrative review; it does not include complementary material that did not meet the inclusion criteria.

There are 30 articles included in this review. The articles utilized in this review include two systematic reviews (Level I), 10 randomized controlled study articles (Level II), four Level III articles (three control studies and one quasi-experimental study), and seven Level IV articles (two cohort studies and one each of pilot study, parallel-group trial, open trial, scoping review, and empirical review). Also included are five Level V articles (three systematic reviews, one retrospective study and one review study) and two qualitative reviews (Level VI).

Section Five: Data Analysis and Synthesis

This integrative review's primary goal is to determine what complementary and integrative therapies are available for veterans with PTSD. Throughout, the review delivers the outcomes of the reviewed articles and produces an integrative data synthesis showing the current state of the science. For an integrative to be considered well done, it must have the same rigor, clarity, and replication standards as a primary research paper, which requires the researcher to code, order, and categorize data from all sources with varied methodologies (Toronto & Remington, 2020). This integrative review used a literature matrix with evidence leveling (Appendix B) using Melnyk's Levels of Evidence in place of coding. While forming this table, the researcher obtained data that related to this integrative review's goal and clinical question. The following themes came to light during this data review: yoga, acupuncture, AATs, and other therapies.

Thematic Analysis

All of the descriptive results from the articles reviewed for this integrative review are displayed in the literature matrix in Appendix B. The following themes emerged and will be discussed in more detail: yoga, acupuncture, AAT, and other therapies. All the articles chosen for review specifically pertained to PTSD treatment, but not all pertained specifically to veterans.

Yoga

Yoga has existed for several hundred years but is not being used as a form of first-line treatment in the East. Yoga has many different categories, such as trauma-sensitive, seated, or gentle, and hatha-based, each using breathwork and meditation.

In 2020, a quasi-experimental pilot study using a 10-week yoga program was published that showed statistically significant improvements postintervention in sleep habits, PTSD, quality of life, depression, measures of response inhibition, and subjective neurocognitive complaints (Zaccari et al., 2020). Scores from patient completed questionnaires obtained 2 weeks prior to implementation were compared to scores after completion of a 10-week yoga protocol. Positive changes were also discovered between baseline and postintervention in depression and sleep, as well as in cortisol output and a measure of life satisfaction.

A temporary evaluation of data gathered from an ongoing multisite randomized clinical trial was published in 2021 (Kelly et al., 2021). This trial is ongoing and assesses the efficacy of trauma-sensitive yoga for PTSD in female veterans with MST PTSD. This study has established that trauma-sensitive yoga is associated with a higher retention rate and quicker symptom improvement than CPT.

Other articles reviewed found that veterans are increasingly using yoga, as more studies are being conducted on the effect of yoga on the seriousness of PTSD symptoms (Lang et al., 2021). Gentle yoga includes meditation, breath work, or breathing exercises. Studies have confirmed that these types of yoga are associated with a retention rate of 70% and considerable improvements in PTSD symptoms (Cushing & Braun, 2018). Yoga practice allows participants to develop more efficient coping mechanisms (English et al., 2022). After using yoga for six

weeks, participants found improved stillness, body awareness, and social connection, all of which helped with PTSD symptoms (Cushing et al., 2018).

Acupuncture

Acupuncture is a complementary and integrative medicine procedure that includes subcutaneous needles being introduced and manipulated for an allotted time in selected points. According to customary Chinese medicine, energy is forced throughout the body during this procedure and harmony is then reestablished among the internal organs systems (Grant et al., 2018). This theme was found in three out of the 30 articles reviewed for this integrative review.

The literature supports the use of acupuncture in PTSD treatment, as it has been found to produce an increase in the functional status of the participant immediately after the treatment and a decrease in PTSD and depression symptoms in the months afterward (Grant et al., 2018). A study published in 2021 demonstrated that acupuncture improved sleep disturbances, especially in veterans with traumatic brain injury (Hollifield et al., 2021).

One study found that electroacupuncture had better results and fewer systemic issues than treatment with paroxetine and suggested electroacupuncture could be a public health tool used in disaster-stricken areas to quicken mental recovery. This study went on to discuss that acupuncture acts on the limbic brain structures, providing relief from symptoms of PTSD (Ding et al., 2020).

Animal-Assisted Therapies (AATs)

AATs were divided into two categories, equine-assisted and canine-assisted. AATs were the theme of seven out of 30 articles, with four articles discussing EATs and three covering canine-assisted therapies.

Canine-assisted therapies are used now for a multitude of disorders, with PTSD service canines currently being part of 19% of assistance dog relationships worldwide. This is defined in the United States as dogs exclusively educated to perform tasks or do work for anyone with a disability (Leighton et al., 2022). A 2022 study reported better quality of life and positive mental health outcomes associated with canine-assisted therapies (Leighton et al., 2022). Whitworth et al. (2019) reported that veterans with service dogs for PTSD had improved social and relational functions and decreased PTSD symptoms. In another study, lower depression severity and improved attentional and emotional regulation were found to be the result of canine-assisted therapy (Maoz et al., 2021).

Equine-assisted therapy studies revealed that horses positively influence attachment patterns. Based on these studies, horses can emphasize a sense of control, foster the development of a patient's awareness of behavior patterns, establish openings for experiences, and grant immediate and nonjudgmental feedback (Rosing et al., 2022). A 2020 study showed decreased depression and PTSD with an eight-session EAT therapy (Arnon et al., 2020). An additional study from 2021 exhibited the same results of decreased symptoms even 3 months after the therapy ended (Fisher et al., 2021). EAT participants also reported a decrease in PTSD symptoms and stated they felt as though EAT was enabling bonding and self-regulation and nurturing hope for change. Also reported was the feeling that EAT bridged the social, emotional, and spiritual dimensions (Rosing et al., 2022). Finally, a study published in 2018 resulted in potentially positive adjustments in salivary cortisol scores on the PTSD Check List-Military Version and supports further study (Burton et al., 2018).

Other Therapies

Other therapies were the focus of 13 out of the 30 chosen articles. An assortment of therapies were identified in this category, including wellness groups, computer-based and computer-guided therapies, art, music, and couples therapy for the veteran and their spouse.

The VA expanded its provision of CIH approaches to meet the patient demand for nonpharmacological health management options. These include acupuncture, chiropractic care, clinical hypnosis, guided imagery, massage therapy, yoga, and tai chi. The use of these options rose by 70% within 3 years, and by 2019, 5.7% of all veterans were using some form of CIH, with 10.6% of these being veterans with PTSD (Taylor et al., 2022).

Dropout rates are a barrier to traditional treatment and triggered the robust discussion of CIH therapies. An average dropout rate of 38.5% is seen among veterans in CPT or prolonged therapy alone. Edwards-Stewart et al. (2021) found that patient-centered therapy had a lower incidence of dropout and a higher efficacy rate in regard to PTSD symptoms compared to prolonged therapy or CPT.

Family, wellness, and couples-based therapies are all found in the literature, confirming the veterans are not alone in their battle with PTSD. Kugler et al. (2019) published a study that revealed a reduction in self- and clinician-rated PTSD symptoms with improved relationship outcomes perceived by both the veteran and their significant other after couples-based therapy. A 12-week wellness group therapy study was completed without any dropouts during the therapy. That study showed high treatment satisfaction and improvements in at least three of the wellness domains: food and drink, sleep, exercise, spirituality, surroundings, personal development, relationships, and power of the mind (Mori et al., 2019). A study in family therapy intervention identified a decrease in dropout rates and increased retention and homework completion for CPT.

This two-session protocol focuses on skill-building and psychoeducation for family members of veterans diagnosed with PTSD and initiating a course of CPT (Thompson-Hollands et al., 2021).

Additional therapies found in research include transcendental meditation, music therapy, and bright light therapy. A 2022 transcendental meditation study found a decrease in self-reported PTSD symptoms, anxiety, depression symptoms, and sleep difficulties, as well as an increase in the quality of life (Bellehsen et al., 2022). Youngstedt et al. (2022) conducted a study on bright light therapy, which resulted in improvement in the Clinician Assessed PTSD Scale and the Clinical Global Impressions Scale. Music therapy was studied in 2019 and was shown to positively affect veterans' PTSD and depression symptoms (Gooding & Langston, 2019).

Other treatments found in the literature were hyperbaric oxygen therapy and exercise. Biggs et al.'s (2021) study showed mixed results overall with hyperbaric oxygen therapy but did not demonstrate decreased PTSD symptoms. The first of two studies related to exercise looked at older veterans with PTSD. The study showed a decrease in depression and PTSD symptoms with improvements in the quality of life and sleeping habits after a 12-week course of exercise (Hall et al., 2020). Bettmann et al. (2021) studied outdoor exercise, which resulted in a reduction in PTSD symptoms.

Another therapy discovered in the literature was written exposure therapy. The study of this therapy illustrated a 47.2% positive change in PTSD symptoms among the participants at the 30-week mark of the study (Sloan et al., 2022). Art therapy is an additional treatment found in the research. In a 2019 study by Decker et al., art therapy was used as an adjunct therapy and resulted in decrease scores of avoidance (from 9.1 to 6.4), reexperiencing (from 21.4 to 14), and anxious arousal (from 9.2 to 6.5). Finally, a 2018 trial for computer-guided problem-solving therapy discovered that after therapy, there was a decrease in Posttraumatic Stress Disorder

Checklist-5 (from 12 at baseline to 4 after therapy) scores as well as Insomnia Severity Index scores (from 35 baseline to 15 posttreatments; Bedford et al., 2018).

Synthesis

A thematic synthesis aligns with the purpose of a review and adheres to a data analysis method in order to uphold a systematic approach. The choice to deliver a synthesis of the acknowledged themes developed from the analysis and critique of the data is one of the most popular methods of presenting results (Toronto & Remington, 2020). As part of this integrative review, modern literature was reviewed, critiqued, and synthesized in order to establish science's disposition to complementary and integrative therapies for veterans with PTSD.

The evidence revealed the usefulness of complementary and integrative therapies of all sorts. These therapies are preferred since there are very few if any adverse effects or systemic issues. Complementary and integrative therapies provide more encouraging results than the preferred therapy uue to the fact that they can be supplied outside of conventional mental health clinics, do not have the dangers and side effects of pharmaceutical interventions, and require less conversation than psychotherapy (Grant et al., 2018). Yoga has been shown to result in not only mental but physical improvements after sessions. Acupuncture is a newer integrative and is still being evaluated, but studies show it is beneficial in several different health areas. AATs can include any animal, but equine and canine are the most popular and most studied. Each has benefits for physical and mental health alike.

Other therapies included art and music therapy, couples counseling, and bright light therapy. Bright light therapy is favored as a therapeutic approach because it is facilitated by serotonergic mechanisms, that corresponds with selective serotonin reuptake inhibitor treatment

for PTSD. Youngstedt et al. (2022) stated that some evidence indicates that PTSD is related to circadian abnormalities, and bright light could be advantageous.

Ethical Considerations

An application was submitted to Liberty University Institutional Review Board (IRB), and the study was approved as nonhuman subject research as defined by the Food and Drug Administration regulations and Office for Human Research Protections (see Appendix F). The primary investigator and project chair completed Collaborative Institutional Initiative (CITI) training. The training certificate can be found in Appendix E.

Timeline

In January of 2023, the integrative review process started with Dr. Vickie Moore being assigned as chair. Also, this month, the topic was proposed, and the final topic was submitted and approved. In February, the primary investigator submitted the first and second revision of sections One through Five submitted, conducted a meeting with the LU librarian, and completed CITI training. In March 2023, the primary investigator completed the database searches of CINAHL, PubMed Central, Medline Ultimate, and Psychology and Behavioral Sciences. The IRB application was submitted and approved. In April, the literature review matrix was updated and finalized, Melnyk's Levels of Evidence was added to the appendix, the Doctor of Nursing Practice (DNP) Essentials were added and described, and Sections Five and Six were started. The final draft was sent for revision by the chair and then sent to the editor in June. A more detailed breakdown of the timeline can be found in Table 2.

Section Six: Discussion

Integrative reviews aim to analyze the evidence in existing research on a topic (Toronto & Remington, 2020). To uncover the disposition of the science related to complementary and

integrative therapies for veterans with PTSD, this integrative review will review, critique, and synthesize the modern literature. Throughout the research, specific themes of yoga, acupuncture, AATs, and other therapies emerged and were further investigated.

DNP Essentials

In January 2005, a task force was created by the American Association of Colleges of Nursing board of directors and was assigned the task of creating the curricular expectancies that would drive and structure DNP education. The Task Force on the Essentials of Nursing Education for the DNP created the DNP Essentials (Appendix D). These essentials are the foundational competencies of advanced nursing. Any DNP program must use these essentials as the cornerstone of its curriculum (American Association of Colleges of Nursing, 2006).

This integrative review addressed DNP Essential I by profoundly looking into matters that will impact practice standards by critiquing, reviewing, and synthesizing the existing literature to evaluate the state of the science. Essential III is addressed by allowing for the integration and application of knowledge on current treatments for PTSD. It will allow future research to discover more complementary and integrative therapies. Essential III is also supported by proper dissemination of the review, using Melnyk's Levels of Evidence to help the researcher synthesize the literature with evaluation and critique. In addition, the researcher will confront any gaps in the current state of science. This integrative review provides a picture of the current state of science for veterans with PTSD and can guide future research and health care policy transformation, which supports Essential V. Finally, this integrative review addresses Essential VII by focusing on integrative and complementary therapy for PTSD in veterans' groups in need of nursing advocacy for clinical prevention and health of the population. This

researcher purposefully searched for proven complementary and integrative therapies currently used to treat PTSD.

Interpretation of Findings

In regard to the future of therapies for PTSD in veterans, research shows that there is a plethora of integrative and complementary therapies, and the need for these therapies is critical, as current therapy has a high dropout rate (Whitworth et al., 2019). The impacts of integrative treatments on PTSD lack substantial research. While there are practices in place, such as the VA's implementation of the Whole Health System, it is not yet mainstream to implement these other therapies from the start of PTSD treatment (Strauss et al., 2018).

The four identified themes demonstrated that integrative therapies have proven beneficial in lessening and treating PTSD symptoms. Yoga provided both mental and physical improvements after sessions. Acupuncture is proving beneficial in several different health areas, and AATs have benefits to physical and mental health alike.

Implications for Practice/Future Work

It is necessary to conduct further research in order to identify the success of each complementary and integrative therapy specifically for the treatment of PTSD in veterans. The VA's implementation of the Whole Health Systems will hopefully lead to more awareness of the need for more research on these therapies. For example, canine therapy has been shown to expand physical activity and reduce social seclusion (Maoz et al., 2021), and equine therapy produces honest animal biofeedback, but both are lacking in abundant empirical evidence (Burton et al., 2018).

Limitations

A multitude of reasons exist why the current science on CIH is significantly limited. The main issue is simply a lack of research or evidence. People who have experienced trauma, and then develop PTSD, often do not pursue assistance, or obtain sufficient empirically based therapy (Grant et al., 2018). For instance, the existing medical evidence for hyperbaric oxygen therapy is not supportive of many integrative uses (Biggs et al., 2021). In addition, yoga is not being compared specifically to other treatments of PTSD, so the current data are rather nonspecific (Lang et al., 2021). One of the barriers to utilizing yoga for PTSD treatment is the perception that yoga is not widely accepted and physically effortless (Cushing & Braun, 2018). Lastly, the use of music therapy with military personnel is still rising (Gooding & Langston, 2019).

AAT also lacks substantial evidence for both equine and canine assistance. Service dog therapy still needs more empirical evidence for evaluation (Leighton et al., 2022). Even though research on equine therapy is growing, medical providers are yet to engage in use of key factors such as the phenomenological perspective of patients (Rosing et al., 2022). However, equine-assisted treatment for PTSD has drawn significant attention even though there is a deficit of empirical backing (Arnon et al., 2020).

Dissemination

This integrative review will be disseminated via journal publications to encourage both provider and patient awareness. This manuscript will also be submitted to Scholars Crossing, Liberty University's institutional repository for scholarly writing. As medicine and nursing move toward a holistic approach, integrative therapies must be discussed and examined as a routine course of treatment.

Conclusion

The diagnosis of PTSD is prevalent among U.S. military veterans. Current treatments for PTSD include CPT, extended exposure therapy, selective serotonin reuptake inhibitors, and other pharmacotherapies. Multiple barriers exist to the completion of treatment with these therapies. Over the past decade, complementary and integrative therapies have emerged and are gaining favor for treating PTSD. The most popular of these therapies are yoga, acupuncture, and AATs. The purpose of this integrative review was to examine the current literature on complementary and integrative therapies for PTSD and to obtain information on these therapies as they relate to veterans. The research literature shows a significant improvement in PTSD with many of these therapies. Future use of these therapies shows great promise.

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Tables

Table 1

IR Abstract Criteria

Inclusion Criteria	Exclusion Criteria
Published within the last five years	Older than five years
English language	Non-English language
Peer reviewed	Editorials or commentaries
Full text	Abstract only
Patients with PTSD	Not identified with PTSD

Table 2

IR Timeline

Date	Description
January 16, 2023	Integrative review process initiated with consent granted by this author's chair, Dr. Vickie Moore.
January 23, 2023	The initial subject matter for proposal presented after discussion with Dr. Moore.
February 09, 2023	First revision presented
February 16, 2023	Second revision presented.
February 22, 2023	Video teleconference with LU librarian through Microsoft Teams.
February 25, 2023	CITI Training complete
March 07, 2023	Finalized CINAHL database search.
March 07, 2023	Finalized PubMed Central database search.
March 23, 2023	First defense presentation with Dr. Moore.
March 23, 2023	IRB submission: Research Ethics Office viewed the integrative review to not be classified as human subjects research.
March 29, 2023	Finalized Psychology and Behavioral Sciences and MEDLINE Ultimate database search.
April 19, 2023	Literature review matrix and Melnyk LOE table updated.
April 21, 2023	DNP Essentials added to IR narrative.
April 22, 2023	Sections Five and Six of IR initiated and ongoing development.
May 08, 2023	The paper was sent for review with completed Section Five
May 19, 2023	The paper was sent for review of revisions.
May 26, 2023	Final draft sent for review.

Note. IR = integrative review.

Appendix A: Melnyk Levels of Evidence

Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses

Level 2 - One or more randomized controlled trials

Level 3 - Controlled trial (no randomization)

Level 4 - Case-control or cohort study

Level 5 - Systematic review of descriptive & qualitative studies

Level 6 - Single descriptive or qualitative study

Level 7 - Expert opinion

(Melnyk & Fineout-Overholt, 2019)

Appendix B: Literature Review Matrix

Name: Kelly Greene

Clinical Question: what complementary and integrative therapies are available for treatment of veterans with PTSD?

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Arnon, S., Fisher, P. W., Pickover, A., Lowell, A., Turner, J. B., Hilburn, A., Jacob-McVey, J., Malajian, B. E., Farber, D. G., Hamilton, J. F., Hamilton, A., Markowitz, J. C., & Neria, Y. (2020). Equine-assisted therapy for veterans with PTSD: Manual development and preliminary findings. *Military Medicine*, *185*(5), e557–e564. https://doi.org/10.1093/milmed/usz444	EAT and posttraumatic stress disorder (PTSD) were evaluated with the help of a treatment manual.	Eight subjects aged 18-65 with PTSD diagnosis. Six men and two women with a mean age of 45.	In addition to pretreatment, midpoint, and posttreatment assessments, quality of life, PTSD, anxiety, and depression symptoms were assessed during a 3-month follow-up period.	From pre-treatment to post-treatment and follow-up, depression and PTSD symptoms decreased. Self-reports showed similar trends.	Level III: Control study.	Small sample size, receiving concurrent treatment.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Bedford, L. A., Dietch, J. R., Taylor, D. J., Boals, A., & Zayfert, C. (2018). Computer-guided problem-solving treatment for depression, PTSD, and insomnia symptoms in student veterans: A pilot randomized controlled trial. *Behavior Therapy*, *49*(5), 756–767. https://doi.org/10.1016/j.beth.2017.11.010	A computer-guided Problem-Solving Treatment (ePST) was tested on student military veterans to see if it reduced symptoms of PTSD, depression, and insomnia.	24 student veterans (Mean age = 32.7) with indications of depression. Groups are indiscriminately assigned either to receive six group meetings a week of ePST or to receive minimal contact.	Randomized Controlled Trial	ePST proved to be a valuable tool in depression.	Level II: Randomized controlled trial	The sample studied may not be focused only on clinically depressed participants. Unlike the minimal contact control group who completed their weekly survey online, the ePST therapy was conducted in a lab.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.
Bellehsen, M., Stoycheva, V., Cohen, B. H., & Nidich, S. (2022). A pilot randomized controlled trial of transcendental meditation as treatment for posttraumatic stress	A study of the effectiveness of Transcendental Meditation (TM) in treating post-traumatic stress disorder	40 U.S. veterans diagnosed with PTSD from the Long Island, NY area	Members in the TM class participated in 16 sessions over 12 weeks.	PTSD symptoms improved.	Level II: Randomized controlled trial (RCT).	Exclusion of participants with comorbidities, no long-term follow-up.	Yes, this shows an integrative therapy has positive effects on PTSD symptoms

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
disorder in veterans. *Journal of Traumatic Stress*, *35,* 22–31. https://doi.org/10.1002/jts.22665			Between September 2015 and January 2017.				
Bettmann, J. E., Prince, K. C., Ganesh, K., Rugo, K. F., Bryan, A. B. O., Bryan, C. J., Rozek, D. C., & Leifker, F. R. (2021). The effect of time outdoors on veterans receiving treatment for PTSD. *Journal of Clinical Psychology*, *77*, 2041–2056. https://doi.org/10.1002/jclp.23139	In order to determine whether spending time outdoors during PTSD treatment affects military veterans' PTSD symptoms.	49 study participants, 37 were male (75.5%), and 12 were female (24.5%).	Recruited online, through flyers, and from community referrals for a two-week treatment program for Veterans / military personnel	There was an association between more time spent outdoors and a decrease in PTSD symptoms among participants.	Level IV: Cohort study.	Small sample size that was not diverse, no further information on differences between military branches and symptoms.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.
Biggs, A. T., Littlejohn, L. F., & Dainer, H. M. (2021). Integrative uses of hyperbaric oxygen therapy in military medicine: Current positions and future directions. *Military Medicine*, *187*(1-2),	PTSD, mild traumatic brain injury, and traumatic brain injury as integratives to hyperbaric oxygen therapy are discussed.	Published reviews of hyperbaric oxygen therapy literature focused on three integrative	Review of study evidence, observational data, quasi-experimental design, or RCT.	An atmosphere of healing is fostered, but it is not specific to PTSD, mild traumatic brain injury,	Level V: Review	Broad review.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
e40–e46. https://doi.org/10.1093/milmed/usab022		uses: mild traumatic brain injury, traumatic brain injury, and post-traumatic stress disorder. PubMed and Google Scholar were used as well as other databases.	Active duty, veteran, or civilian population.	or traumatic brain injury.			
Burton, L. E., Qeadan, F., & Burge, M. R. (2018). Efficacy of equine-assisted psychotherapy in veterans with posttraumatic stress disorder. *Journal of Integrative Medicine*, *17*, 14–19. https://doi.org/10.1016/j.joim.2018.11.001	An investigation of the effects of equine-assisted psychotherapy on PTSD symptoms is being conducted.	21 volunteer veterans, 18 years old or older, with a score of at least 29 on the PTSD Checklist-Military version.	Sequentially assigned, two-arm parallel-group trial. One hour session per week of EAP for 6 weeks.	A potential improvement in the PTSD Checklist-Military score.	Level IV: Sequentially assigned, two-arm parallel-group trial	Small sample size and not randomized.	Yes, this shows this complementary therapy has potential positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Cushing, R. E., & Braun, K. L. (2018). Mind–body therapy for military veterans with post-traumatic stress disorder: A systematic review. *The Journal of Integrative and Complementary Medicine*, *24*(2), 106–114. https://doi.org/10.1089/acm.2017.0176	Review mind-body therapies for PTSD with veterans of post-9/11 operations to fill the gap.	Of 175 records identified, 15 met inclusion criteria.	Systemic literature review. PubMed MeSH terms used to portray articles describing military populations with PTSD acquiring a portable mind–body intervention. PubMed/MEDLINE/PsycINFO was searched.	Indications of meaningful improvement in PTSD symptoms.	Level V: Systematic Review.	Small sample size, lack of control in the studies reviewed.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.
Cushing, R. E., Braun, K. L., & Alden, S. (2018). A qualitative study exploring yoga in veterans with PTSD symptoms. *International Journal of Yoga*	A military-tailored, trauma-sensitive yoga intervention will be examined to	9 Veterans between the ages of 22-52, of which 5 completed a 6-week	Open-ended questionnaire for completion	Perceived improved mental well-being and social support. The social	Level VI: Qualitative study.	Small sample size	Yes, this shows this integrative therapy has positive effects on

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Therapy, *28*, 63–70. https://doi.org/10.17761/2018-00020	determine its potential benefits and obstructions.	trauma yoga intervention.		stigma of yoga among veterans and the lack of physical strength are barriers.			PTSD symptoms.
Decker, K. P., Deaver, S. P., Abbey, V., Campbell, M., & Turpin, C. (2019). Quantitatively improved treatment outcomes for combat-associated PTSD with adjunctive art therapy: Randomized controlled trial. *Art Therapy*, *35*(4), 184–194. https://doi.org/10.1080/07421656.2018.1540822	Research into the efficacy of art therapy in treating veterans with PTSD	38 veterans diagnosed with PTSD that is already admitted to a residential program; 31 completed the study, with 17 White and 14 African American	19 participants assigned to art and CPT, while 19 were just assigned to CPT.	Treatment was more significant for art therapy as compared to CPT.	Level II: Randomized Clinical Trial.	Not a blind study	Yes, this shows a complementary therapy has positive effects on PTSD symptoms
Ding, N., Li, L., Song, K., Huang, A., & Zhang, H. (2020). Efficacy and safety of acupuncture in treating post-traumatic stress disorder. *Medicine*, *99*(26), Article 20700.	PTSD patients were treated with acupuncture to assess treatment efficacy and safety.	Inclusion criteria: All RCTs using acupuncture as PTSD treatment. Exclusion criteria: non-	Systemic review. Searches of eight English electronic databases and five	The autonomic nervous system and prefrontal and limbic brain structures	Level V: Systematic review.	During searching, some articles may have been missed.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
https://doi.org/10.1097/md.0000000000020700		RCTs, animal studies, case series, quasi-RCTs, and reviews.	Chinese databases	are both impacted by acupuncture, which reduces symptoms of PTSD.			
Edwards-Stewart, A., Smolenski, D. J., Bush, N. E., Cyr, B. A., Beech, E. H., Skopp, N. A., & Belsher, B. E. (2021). Posttraumatic stress disorder treatment dropout among military and veteran populations: A systematic review and meta-analysis. *Journal of Traumatic Stress*, *34*, 808–818. https://doi.org/10.1002/jts.22653	Identify the factors that affect military personnel's treatment dropout rates for PTSD.	26 studies were included, with a total of 2,984 participants.	Inclusion criteria: Studies had to be RCTs that analyzed PTSD as the primary diagnosis and included a treatment term that was given a "strong for" suggestion in the Veterans Affairs (VA)/Department of	The dropout rate might be determined by the type of treatment, not by the population	Level I: Systematic review with meta-analysis	Research is needed on more disorders, treatment types, comorbid conditions, and treatment dropouts for PTSD.	Yes, this evaluates reasons for dropout rates of PTSD treatments.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
			Defense clinical practice guideline				
English, A., McKibben, E., Sivaramakrishnan, D., Hart, N., Richards, J., & Kelly, P. (2022). A rapid review exploring the role of yoga in healing psychological trauma. *International Journal of Environmental Research and Public Health*, *19*(23), Article 16180. https://doi.org/10.3390/ijerph192316180	Understanding yoga's effect on traumatized individuals. As well as exposing obstacles to yoga adoption.	148 records, and 11 peer-reviewed articles	Review of current literature	In terms of trauma recovery, yoga presents excellent potential	Level IV: Cohort/Rapid Review	Number of studies analyzed, not gender specific, and unknown what other treatments the participants were on.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.
Fisher, P. W., Lazarov, A., Lowell, A., Arnon, S., Turner, J. B., Bergman, M., Ryba, M., Such, S., Marohasy, C., Zhu, X., Suarez-Jimenez, B., Markowitz, J. C., & Neria, Y. (2021). Equine-assisted therapy for posttraumatic stress	An 8-session group EAT for veterans with PTSD was examined for results, practicality, and acceptability.	63 Veterans with PTSD. 23 were women, mean age of all was 50 years.	July 2016-July 2019. Pre-, mid, and post-treatment assessments and 3-month post-treatment follow-up.	There was no doubt that EAT for PTSD was reasonable, safe, and clinically viable. Low dropout rates.	Level IV: Open trial.	The results could not carry over to all animals, no control against sample group, could not control additional	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
disorder among military veterans. *The Journal of Clinical Psychiatry*, *82*(5). https://doi.org/10.4088/jcp.21m14005						treatments being had by veterans, independent evaluators were not blinded.	
Gooding, L. F., & Langston, D. G. (2019). Music therapy with military populations: A scoping review. *Journal of Music Therapy*, *56*(4), 315–347. https://doi.org/10.1093/jmt/thz010	In order to identify the types of information available, key characteristics, and gaps in the literature regarding music therapy treatment for military personnel, we must integrate the available literature.	27 publications met the criteria for review.	Review of 27 articles for needed information to prove clinical question.	A positive effect was observed with music therapy; it was well received by people with PTSD.	Level IV: A scoping review.	For targeted symptoms, more research is needed; most vets are men, more research is needed for females.	Yes, this shows an integrative therapy has positive effects on PTSD symptoms
Grant, S., Colaiaco, B., Motala, A., Shanman, R., Sorbero, M., & Hempel, S. (2018). Acupuncture for the treatment of adults with	Assessing the effects of acupuncture on PTSD, depressive symptoms, and	Seven qualified studies that overall randomized	716 titles examined; of 119 potentially eligible full texts	Positive effect on PTSD symptoms short-term	Level I: Systematic review with meta-analysis	Missing data in some studies, some potential bias,	Yes, this shows an integrative therapy has positive effects on

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
posttraumatic stress disorder: A systematic review and meta-analysis. *Journal of Trauma & Dissociation*, *19*(1), 39–58. https://doi.org/10.1080/15299732.2017.1289493	sleep quality among adults with PTSD.	709 participants	identified, 106 articles were excluded			unknown long-term effects	PTSD symptoms
Hall, K. S., Morey, M. C., Bosworth, H. B., Beckham, J. C., Pebole, M. M., Sloane, R., & Pieper, C. F. (2020). Pilot randomized controlled trial of exercise training for older veterans with PTSD. *Journal of Behavioral Medicine*, *43*, 648–659. https://doi.org/10.1007/s10865-019-00073-w	Exercise training for older veterans with PTSD: feasibility and acceptability	54 veterans, 60 years or older, with a *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.) diagnosis of PTSD	randomized to supervised exercise (*n* = 36) or wait list (*n* = 18).	PTSD and linked conditions enhanced clinically significantly after the trial.	Level II: RCT	short exercise intervention, no long-term follow-up	Yes, this shows an integrative therapy has positive effects on PTSD symptoms
Hollifield, M., Hsiao, A.-F., Carrick, K., Gory Munoz, A., Calloway, T., Cocozza, K., Smith, B., Smith, T., Jovanovic, T., Norrholm, S., Sokhadze,	Verum acupuncture's clinical and biological effects on combat-related PTSD in US	90 treatment-seeking veterans with chronic combat PTSD aged 18-55 in the	Two-arm, parallel-group, prospective randomized placebo-controlled	Study ongoing.	Level II: RCT	Unable to use double-blind study; trial is ongoing.	Yes, this shows this complementary therapy has positive effects on

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
E., & Reist, C. (2021). Acupuncture for combat post-traumatic stress disorder: Trial development and methodological approach for a randomized controlled clinical trial. *Trials, 22,* Article 594. https://doi.org/10.1186/s13063-021-05394-3	veterans will be investigated.	Long Beach, VA.	clinical trial. 1-hour session twice a week for 12 weeks, Either verum or sham acupuncture				PTSD symptoms.
Kelly, U., Haywood, T., Segell, E., & Higgins, M. (2021). Trauma-sensitive yoga for post-traumatic stress disorder in women veterans who experienced military sexual trauma: Interim results from a randomized controlled trial. *The Journal of Integrative and Complementary Medicine*, *27*, s45–s59. https://doi.org/10.1089/acm.2020.0417	Performing an interim analysis of data accumulated from a multisite RCT assessing the efficacy of trauma-sensitive yoga for PTSD among women veterans who have experienced military sexual trauma.	152 women, with 92% African American	RCT with 3-month postintervention. 10-weekly sessions	Symptoms decreased significantly so far, but the study is still ongoing	Level II: RCT	Ongoing study that has not yet been completed; some participants were engaged in yoga outside the VA.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
Kugler, J., Andresen, F. J., Bean, R. C., & Blais, R. K. (2019). Couple-based interventions for PTSD among military veterans: An empirical review. *Journal of Clinical Psychology*, *75*, 1737–1755. https://doi.org/10.1002/jclp.22822	A study of couple-based therapies for PTSD among military service members and veterans and their romantic partners is being conducted.	16 studies that looked at 7 interventions	In July 2018, 167 studies were found in a database search, 16 (10%) of which met inclusion criteria.	Reduced self- and clinician-rated symptoms of PTSD, improved relationship outcomes	Level IV: Empirical review.	Small sample size, primarily male veterans and female partners.	Yes, this shows a complementary therapy has positive effects on PTSD symptoms.
Lang, A. J., Malaktaris, A., Maluf, K. S., Kangas, J., Sindel, S., Herbert, M., Bomyea, J., Simmons, A. N., Weaver, J., Velez, D., & Liu, L. (2021). A randomized controlled trial of yoga vs nonaerobic exercise for veterans with PTSD: Understanding efficacy, mechanisms of change, and mode of delivery. *Contemporary Clinical Trials Communications*, *21,* Article 100719.	The aim is to determine whether manualized yoga courses decrease PTSD severity in veterans more effectively than nonaerobic exercise.	192 veterans with PTSD aged 18 or older.	The sample was randomized with either the yoga or nonaerobic exercise programs for 12-weekly sessions—outcomes measured at baseline, mid-way, and after completing	Veterans who practiced yoga reported fewer symptoms.	Level II: RCT	More information is needed on the overall benefits of yoga itself.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
https://doi.org/10.1016/j.conctc.2021.100719			the 12 weeks.				
Leighton, S. C., Nieforth, L. O., & O'Haire, M. E. (2022). Assistance dogs for military veterans with PTSD: A systematic review, meta-analysis, and meta-synthesis. *PLoS ONE*, *17*(9), Article e0274960. https://doi.org/10.1371/journal.pone.0274960	A systematic review of literature is conducted to capture their characteristics, assess evidence quality, and review outcomes.	432 records were independently screened; 41 articles (29 peer-reviewed publications and 12 unpublished dissertations) met inclusion criteria	The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines; 11 databases searched	Strong human-animal bond; PTSD symptom improvements.	Level V: Systematic review.	Only English language searched, search base could have missed some articles.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.
Maoz, I., Zubedat, S., Dolev, T., Aga-Mizrachi, S., Bloch, B., Michaeli, Y., Eshed, Y., Grinstein, D., & Avital, A. (2021). Dog training alleviates PTSD symptomatology by emotional and attentional regulation. *European Journal of Psychotraumatology*, *12*(1), Article 1995264.	Studying the effects of a one-year dog training program on dogs' behavior and PTSD symptomatology in patients with PTSD.	53 adolescents clinically diagnosed with PTSD. Half were assigned to dogs, half to a control group without dogs. Recruited from the Manof youth	Evaluations at baseline, then 12 months completion of training	Compared with the control group, the dog-training group underwent substantial relief of PTSD symptoms and declined depression severity.	Level III: Controlled trial	Dog handler training, human-dog interaction/relationship.	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
https://doi.org/10.1080/20008198.2021.1995264		village in Acre, Israel.					
Mori, D. A. L., Smidt, K., Brown, L., Pless Kaiser, A., Weinstein, E. S., & Niles, B. L. (2019). Acceptability of a wellness group program for veterans with symptoms of posttraumatic stress disorder. *Global Advances in Health and Medicine*, *8*, 1–5. https://doi.org/10.1177/2164956119867048	A wellness group intended to support adaptive coping and healthy behaviors for veterans suffering from post-traumatic stress disorder should be explored	Nine veterans in a PTSD outpatient clinic	12-week, 24-session Wellness Group. Interviews, attendance data, and questionnaires were used to assess the appropriateness of the intervention	Class rates were high; no members stopped treatment. Fulfillment was high; all veterans described increases in at least 3/8 of Wellness domains covered.	Level III: Controlled Trial	Small sample size, intervention was not focused solely on PTSD	Yes, this shows this complementary therapy has positive effects on PTSD symptoms.
Rosing, T., Malka, M., Brafman, D., & Fisher, P. W. (2022). A qualitative study of equine-assisted therapy for Israeli military and police veterans with PTSD—Impact on self-regulation, bonding and hope. *Health & Social Care in the Community*, *30*, e5074–e5082.	Add to the existing body of knowledge regarding EAT as a treatment approach for Israeli veterans coping with PTSD by asking: "What are the meanings given	13 PTSD patients who completed the initial EAT intervention	A qualitative study; investigated the incidents of the Israeli army and police veterans coping with PTSD	EAT was a positive addition to the treatment of PTSD.	Level VI: Qualitative study	Trauma causes varied among the sample; no specific cause of PTSD was studied.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
https://doi.org/10.1111/hsc.13922	by those suffering from PTSD to the experience of participating in an intervention program based on EAT? What aspects of dealing with PTSD are reflected in the experience of the program participants? What is the EAT's contribution to dealing with PTSD?" (Rosing et al., 2022, p. e5075)		who participated in an EAT program between 2015 and 2016				
Sloan, D. M., Marx, B. P., Resick, P. A., Young-McCaughan, S., Dondanville, K. A., Straud, C. L., Mintz, J., Litz, B. T., & Peterson, A. L. (2022). Effect of	An examination of the effectiveness of written exposure therapy versus cognitive	169 participants; predominantly male (136 80.5%]), serving in the Army (167	Randomized noninferiority design with a 1:1 randomization	Dropout rates of exposure therapy are lower than those of CPT.	Level II: RCT	Participant dropouts, lack of long-term follow-up	Yes, this shows this complementary therapy has positive effects on

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
written exposure therapy vs cognitive processing therapy on increasing treatment efficiency among military service members with posttraumatic stress disorder. *JAMA Network Open*, *5*(1), Article e2140911. https://doi.org/10.1001/jamanetworkopen.2021.40911	processing therapy in treating PTSD.	[98.8%]), mean age of 34 years. 85 participants indiscriminately assigned to written exposure therapy, with 65 (76.5%) fulfilling all treatment sessions and 84 to cognitive processing therapy, with 47 (54.8%) completing all sessions.	allocation. Written exposure was 5-weekly sessions, CPT was 12 twice-weekly sessions. Members were measured at baseline, 10, 20, and 30 weeks after first session.				PTSD symptoms.
Taylor, S. L., Gelman, H. M., DeFaccio, R., Douglas, J., Hawrilenko, M. J., McGinty, N. K., Resnick, A., Tomlanovich, N. C., Toyama, J., Whitehead, A. M., Kligler, B., & Zeliadt, S. B. (2022).	An evaluation of 11 VA-covered therapies over a three-year period: chiropractic care, acupuncture,	Veterans using VA health care from October 2016–September 2019	For each fiscal year between 2016 and 2019, veterans visited a VA primary	In three years, these therapies have increased by 70%. The use rate among VA patients was	Level V: Retrospective review.	Only a review of medical records,	Yes, this shows complementary therapy has positive effects on PTSD symptoms.

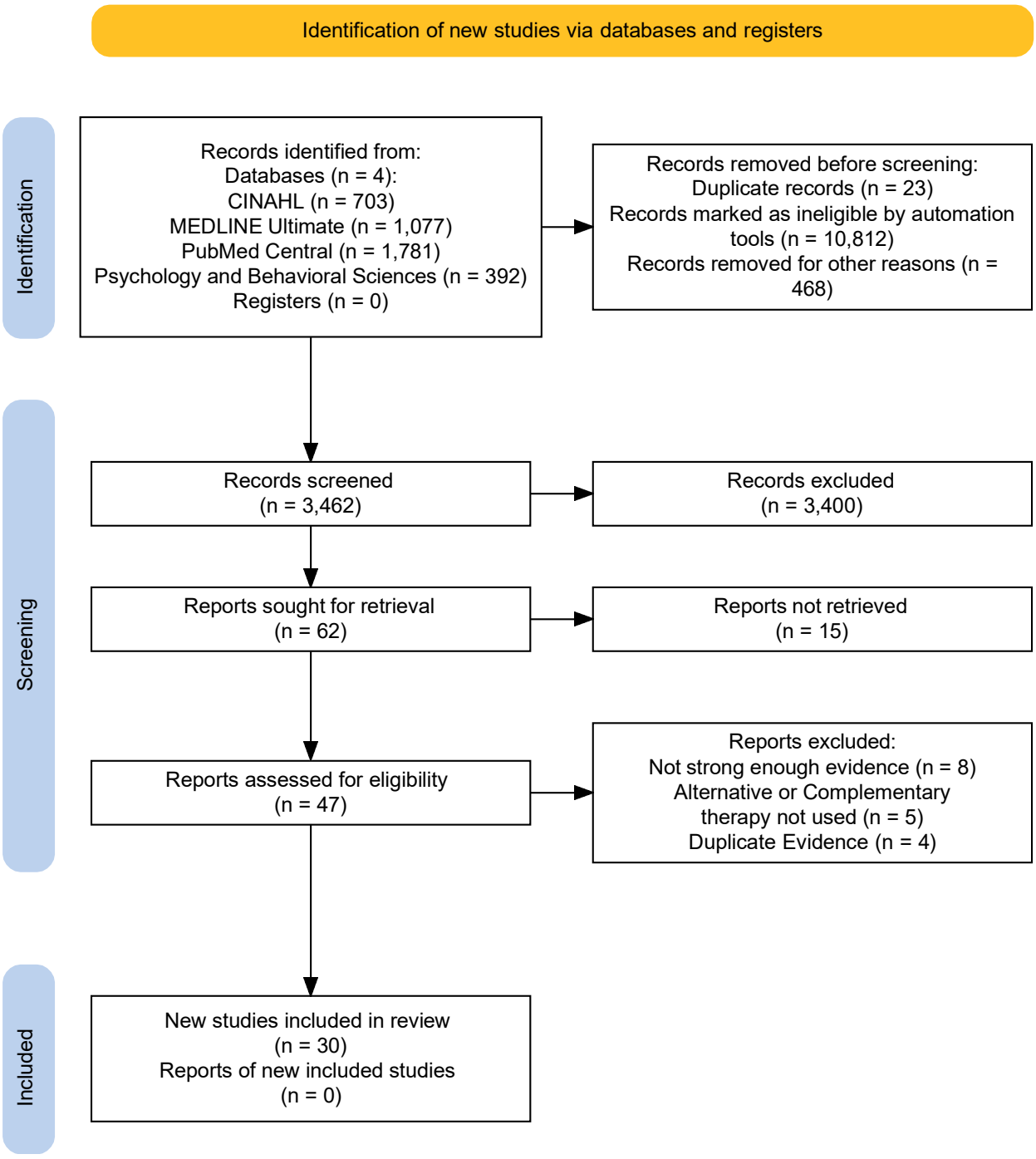
Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
We built it, but did they come: Veterans' use of VA healthcare system-provided complementary and integrative health approaches. *Journal of General Internal Medicine, 38,* 905–912. https://doi.org/10.1007/s11606-022-07889-4	Battlefield Acupuncture, biofeedback, clinical hypnosis, guided imagery, massage therapy, meditation, Tai Chi/Qigong, and yoga.		care center, mental health clinic, or pain clinic at least once.	5.7% by 2019, with PTSD accounting for 10.6%.			
Thompson-Hollands, J., Lee, D. J., & Sloan, D. M. (2021). The use of a brief family intervention to reduce dropout among veterans in individual trauma-focused treatment: A randomized controlled trial. *Journal of Traumatic Stress*, *34*, 829–839. https://doi.org/10.1002/jts.22680	An adjunct to trauma-focused individual treatment, a two-session brief family intervention protocol was tested	20 dyads consisting of one veteran (with diagnosis of PTSD) and one adult family member	Randomized to receive the brief family intervention or not receive the brief family intervention, with a 1:1 allocation.	The approach was found to be valuable. Positive effects towards dropout rates.	Level II: RCT	Small sample size, short follow-up time.	Yes, this shows an integrative therapy positively affects treatment dropout rates.
Whitworth, J. D., Scotland-Coogan, D., & Wharton, T. (2019). Service dog training	Investigate the feasibility of conducting a controlled trial	32 veterans diagnosed with PTSD who applied	9-month study period. Pre- and post-	30 participants completed the study.	Level IV: Pilot Study	Participants were not randomly assigned, no	Yes, this shows this complementary therapy

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
programs for veterans with PTSD: Results of a pilot controlled study. *Social Work in Health Care*, *58*(4), 412–430. https://doi.org/10.1080/00981389.2019.1580238	comparing veterans with PTSD who train/have a service dog to veterans without a service dog.	to one of the two service dog agency programs participating. Combat veterans 18 years or older with an honorable discharge.	tests administered to participants	Social and relational functioning improved, reduction in PTSD symptoms		follow-up outreaches after completing the course.	has positive effects on PTSD symptoms.
Youngstedt, S. D., Kline, C. E., Reynolds, A. M., Crowley, S. K., Burch, J. B., Khan, N., & Han, S. Y. (2022). Bright light treatment of combat-related PTSD: A randomized controlled trial. *Military Medicine*, *187*(3-4), e435–e444. https://doi.org/10.1093/milmed/usab014	In order to determine whether bright light reduces the severity of PTSD among combat veterans. PTSD progress was examined in relation to shifts in actigraphic wrist movement circadian rhythms.	69 veterans with PTSD from combat in Afghanistan and/or Iraq.	Randomized to 4 weeks of daily morning bright light treatment (10,000 lux for 30 min/day) or a control treatment. Self-reported scales at baseline and at the end of each	Bright light participants showed advancement in Clinician Assessed PTSD Scale, the Clinical Global Impressions Scale, the Hamilton Depression Scale and the PTSD	Level II: RCT	Treatment adherence was based on daily log sign-ins and loss of some actigraphic data.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
			weekly treatment, then final.	Checklist-Military.			
Zaccari, B., Callahan, M. L., Storzbach, D., McFarlane, N., Hudson, R., & Loftis, J. M. (2020). Yoga for veterans with PTSD: Cognitive functioning, mental health, and salivary cortisol. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(8), 913–917. https://doi.org/10.1037/tra0000909	Veterans with PTSD were assessed for the effects of a yoga intervention on PTSD symptoms, cognitive functioning, and biological stress reactions.	27 were signed up, and 17 completed the course.	Self-report measures of mental health symptoms, cognitive functioning, and salivary cortisol were assessed within two weeks prior to beginning and following completion of a 10-week yoga course. Paired *t* tests and correlational analyses	Improvements in PTSD, sleep, response inhibition, quality of life, depression, and subjective neurocognitive complaints.	Level III: Quasi-Experimental	Small sample size, self-reporting, potential lack of compliance.	Yes, this shows this integrative therapy has positive effects on PTSD symptoms.

Article	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change?
			were used to evaluate quantitative data.				

Appendix C: PRISMA Flowchart



(Haddaway et al., 2022)

Appendix D: The Essentials of Doctoral Education for Advance Nursing Practice

Essential	Foundational Competency
Essential I: Scientific Underpinnings for Practice	The scientific underpinnings of this education exhibit the complexity of practice at the doctoral level and the rich heritage that is the conceptual footing of nursing.
Essential II: Organizational and Systems Leadership for Quality	This is critical for the DNP student to improve patient outcomes. The graduate will develop care delivery approaches, advance communication skills, and excel is other organizational tasks and cultures.
Essential III: Clinical Scholarship & Analytical Methods for EBP	This is the hallmark of doctoral education. The graduate will be able to implement EBP and analyze data. They are also able to disseminate findings and examine trends.
Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	DNP graduates are recognized by their abilities to apply information systems/technology to support and enhance patient care and healthcare systems and offer leadership within healthcare systems and/or academic venues.
Essential V: Health Care Policy for Advocacy in Health Care	Commitment to the process of healthcare policy development is vital for establishing a health care system that meets the needs of its patients.
Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes	As a member of these collaborations, the DNP graduates have enhanced training in the interprofessional dimension of health care that assist them to assist collaborative team functioning.
Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health	The application of clinical prevention and population health behaviors is central to succeeding the national goal of improving the health status of the population of the United States.
Essential VII: Advanced Nursing Practice	DNP graduates display refined assessment skills and base practice on the application of biophysical, psychosocial, behavioral, sociopolitical, cultural, economic, and nursing science as suitable in their area of specialization.

(American Association of Colleges of Nursing, 2006)

Appendix E: Collaborative Institutional Training Initiative Certificate

CITI PROGRAM

Completion Date 25-Feb-2023
Expiration Date 25-Feb-2026
Record ID 54629159

This is to certify that:

Kelly Greene

Not valid for renewal of certification through CME.

Has completed the following CITI Program course:

Biomedical Research - Basic/Refresher
(Curriculum Group)
Biomedical & Health Science Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w19e2839d-c9ce-4877-9e0a-861c5c087227-54629159

Appendix F: Liberty IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

March 23, 2023

Kelly Greene
Vickie Moore

Re: IRB Application - IRB-FY22-23-1278 Complementary and Alternative Therapies Available for Treating Veterans with PTSD: An Integrated Review

Dear Kelly Greene and Vickie Moore,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds that your study does not meet the definition of human subjects research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research because it will not involve the collection of identifiable, private information from or about living individuals (45 CFR 46.102).

Please note that this decision only applies to your current application. Any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office