

# Systematic Reviews of Complementary and Alternative Therapies for Psychological and Behavioral Health Disorders

Over the past two decades, the U.S. Department of Defense has made significant investments in developing effective treatments for military-related psychological health conditions. A survey of the military health system has shown that military personnel frequently seek complementary and alternative medicine (CAM) therapies. Researchers found that, in 2014, approximately 1.12 million visits per year were for CAM services, and 83 percent of military treatment facilities offered some form of CAM.<sup>1</sup> The effectiveness of CAM for psychological and behavioral health conditions is largely unknown. Given the stigma associated with seeking traditional mental health care,<sup>2</sup> these CAM approaches may be more appealing to service members than medications and talk therapy are. To explore available options for treatment, the Defense Health Agency's Psychological Health Center of Excellence (PHCoE) commissioned the RAND Corporation to conduct a series of systematic reviews evaluating the evidence for the effectiveness and safety of selected and integrative medicine treatments for managing major depressive disorder, substance use disorders, tobacco use disorder, posttraumatic stress disorder (PTSD), and chronic pain.<sup>3</sup> The treatments include meditation, acupuncture, herbs (specifically, St. John's wort), and supplements (specifically, omega-3 fatty acids). By

identifying promising intervention strategies for the treatment of psychological conditions, this research might help expand treatment options for service members. Systematic reviews summarize a body of scientific research, often to inform clinical practice guidelines, which prescribe evidence-based treatment strategies for health providers to follow. The results of systematic reviews can also identify gaps in the evidence and indicate the kinds of additional research needed.

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U.S. service members with psychological and behavioral health conditions may benefit from expanding treatment options and approaches.

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## What the Researchers Did

Systematic reviews rely on exhaustive searches of the literature using predefined inclusion criteria, a comprehensive literature review, dual data abstraction, critical appraisal using internationally recognized criteria, standardized reporting criteria that include a flow diagram and evidence table, and a narrative summary or meta-analysis of the study findings. The RAND researchers used this rigorous, transparent methodology to summarize studies through meta-analysis to evaluate the evidence on the use of CAM approaches. They conducted ten studies, grouped here by type of CAM.

Systematic reviews allowed the researchers to summarize treatment effectiveness research for different CAM modalities.

## What the Researchers Found



**Meditation:** A practice in which individuals use any of a variety of techniques to train awareness and attention, usually to attain mental clarity and an emotionally calm state.

- Chronic pain (28 studies): Meditation showed some benefit for managing pain, depression, and quality of life.
- Major depressive disorder (17 studies): When combined with antidepressants, mindfulness-based cognitive therapy, which combines cognitive therapy with mindfulness meditation, was more effective at reducing depression symptoms than were antidepressants alone.
- PTSD (10 studies): Meditation showed modest evidence of augmenting other treatments for PTSD and reducing symptoms of PTSD and depression.
- Substance use disorders (6 studies): Mindfulness-based relapse prevention, a treatment that combines mindfulness meditation with cognitive-behavioral relapse prevention therapy, showed promise for improving well-being but not substance use disorder symptoms (such as craving).
- Tobacco use (9 studies): Meditation showed no apparent benefit on smoking cessation.



**Acupuncture:** A component of traditional Chinese medicine that uses thin needles inserted into the skin at select locations throughout the body to treat a variety of conditions believed to be caused by an imbalance or blockage of energy flow.

- Major depressive disorder (18 studies): Acupuncture did not show conclusive evidence for improving symptoms.
- PTSD (7 studies): Acupuncture showed promise for treating PTSD.
- Substance use disorder (41 studies): Acupuncture showed benefits for reducing cravings and anxiety but not other symptoms.



**St. John's wort:** An herb that has been used for centuries by some cultures to treat depression.

- Major depressive disorder (35 studies): St. John's wort showed promise for treating mild-to-moderate depression and had fewer side effects than antidepressants did.



**Omega-3 fatty acids:** A fatty acid found in dark-skinned fish, nuts, flax seed, and dark leafy greens that is an essential dietary component for cell and tissue growth, especially for nervous system development.

- Major depressive disorder (24 studies): One type of omega-3 fatty acid—eicosapentaenoic acid—showed promising effects for treating symptoms of depression.

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## What Else Did the Researchers Learn?

This portfolio of systematic reviews surveyed prominent complementary and alternative therapies for common psychological and behavioral health disorders.



**Safety.** One of the appeals of CAM interventions is their perceived safety. In addition to examining the effectiveness of these CAM interventions, the researchers assessed their safety and found that adverse events stemming from these interventions were rare but often are not reported.



**Confidence.** Generally, the quality of individual studies was low to modest, which resulted in low confidence ratings of the effectiveness of each treatment.



**Future research.** This portfolio of systematic reviews also pinpointed the need for future well-designed studies to gather conclusive evidence of effectiveness. For instance, mindfulness meditation trials for tobacco cessation did not report whether participants used other nicotine products, and studies had short follow-up periods. And omega-3 fatty acid trials for major depressive disorder did not determine whether omega-3 fatty acids are effective as a stand-alone treatment or are more effective when used with antidepressants. These findings underscore the need for additional studies to address these research gaps.

This portfolio of systematic review research revealed promising interventions to address a variety of conditions prevalent in the U.S. military.

## Systematic Reviews in the Portfolio

The research reports and journal publications resulting from this research can be found on the PHCoE website (see [health.mil](http://health.mil)) and at [www.rand.org](http://www.rand.org). Details are provided in the following list:

1. Grant, Sean, Benjamin Colaiaco, Aneesa Motala, Roberta M. Shanman, Melony E. Sorbero, and Susanne Hempel, *Needle Acupuncture for Posttraumatic Stress Disorder (PTSD): A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1433-OSD, 2017. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1433.html](https://www.rand.org/pubs/research_reports/RR1433.html)  
Grant, Sean, Benjamin Colaiaco, Aneesa Motala, Roberta Shanman, Melony Sorbero, and Susanne Hempel, “Acupuncture for the Treatment of Adults with Posttraumatic Stress Disorder: A Systematic Review and Meta-Analysis,” *Journal of Trauma and Dissociation*, Vol. 19, No. 1, January–February 2018, pp. 39–58. As of September 1, 2021: <https://www.ncbi.nlm.nih.gov/pubmed/28151093>
2. Grant, Sean, Susanne Hempel, Benjamin Colaiaco, Aneesa Motala, Roberta M. Shanman, Marika Booth, Whitney Dudley, and Melony E. Sorbero, *Mindfulness-Based Relapse Prevention for Substance Use Disorders: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1031-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1031.html](https://www.rand.org/pubs/research_reports/RR1031.html)  
Grant, Sean, Benjamin Colaiaco, Aneesa Motala, Roberta Shanman, Marika Booth, Melony Sorbero, and Susanne Hempel, “Mindfulness-Based Relapse Prevention for Substance Use Disorders: A Systematic Review and Meta-Analysis,” *Journal of Addiction Medicine*, Vol. 11, No. 5, September/October 2017, pp. 386–396. As of September 1, 2021: <https://www.ncbi.nlm.nih.gov/pubmed/28727663>
3. Grant, Sean, Susanne Hempel, Ryan Kandrack, Aneesa Motala, Roberta M. Shanman, Marika Booth, Jeremy N. V. Miles, Whitney Dudley, and Melony E. Sorbero, *Needle Acupuncture for Substance Use Disorders: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1030-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1030.html](https://www.rand.org/pubs/research_reports/RR1030.html)  
Grant, Sean, Ryan Kandrack, Aneesa Motala, Roberta Shanman, Marika Booth, Jeremy Miles, Melony Sorbero, and Susanne Hempel, “Acupuncture for Substance Use Disorders: A Systematic Review and Meta-Analysis,” *Drug and Alcohol Dependence*, Vol. 163, June 2016, pp. 1–15.
4. Hilton, Lara, Alicia Ruelaz Maher, Benjamin Colaiaco, Eric Apaydin, Melony E. Sorbero, Marika Booth, Roberta M. Shanman, and Susanne Hempel, *Meditation for Posttraumatic Stress Disorder: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1356-OSD, 2017. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1356.html](https://www.rand.org/pubs/research_reports/RR1356.html)  
Hilton, Lara, Alicia Ruelaz Maher, Benjamin Colaiaco, Eric Apaydin, Melony E. Sorbero, Marika Booth, Roberta M. Shanman, and Susanne Hempel, “Meditation for Posttraumatic Stress: Systematic Review and Meta-Analysis,” *Psychological Trauma: Theory, Research, Practice, and Policy*, Vol. 9, No. 4, July 2017, pp. 453–460.

5. Maglione, Margaret A., Susanne Hempel, Alicia Ruelaz Maher, Eric Apaydin, Brett Ewing, Lara Hilton, Lea Xenakis, Roberta M. Shanman, Sydne Newberry, Benjamin Colaiaco, and Melony E. Sorbero, *Mindfulness Meditation for Chronic Pain: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1317-OSD, 2016. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1317.html](https://www.rand.org/pubs/research_reports/RR1317.html)  
Hilton, Lara, Susanne Hempel, Brett A. Ewing, Eric Apaydin, Lea Xenakis, Sydne Newberry, Ben Colaiaco, Alicia Ruelaz Maher, Roberta M. Shanman, Melony E. Sorbero, and Margaret A. Maglione, "Mindfulness Meditation for Chronic Pain: Systematic Review and Meta-Analysis," *Annals of Behavioral Medicine*, Vol. 51, No. 2, 2017, pp. 199–213.
6. Maglione, Margaret A., Susanne Hempel, Alicia Ruelaz Maher, Brett Ewing, Benjamin Colaiaco, Sydne Newberry, Ryan Kandrack, Roberta M. Shanman, and Melony E. Sorbero, *Mindfulness Meditation for the Treatment of Tobacco Use: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1343-OSD, 2017. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1343.html](https://www.rand.org/pubs/research_reports/RR1343.html)  
Maglione, Margaret A., Alicia Ruelaz Maher, Brett Ewing, Benjamin Colaiaco, Sydne Newberry, Ryan Kandrack, Roberta M. Shanman, Melony E. Sorbero, and Susanne Hempel, "Efficacy of Mindfulness Meditation for Smoking Cessation: A Systematic Review and Meta-Analysis," *Addictive Behaviors*, Vol. 69, June 2017, pp. 27–34. As of September 1, 2021: <https://www.ncbi.nlm.nih.gov/pubmed/28126511>
7. Maher, Alicia Ruelaz, Susanne Hempel, Eric Apaydin, Roberta M. Shanman, Marika Booth, Jeremy N. V. Miles, and Melony E. Sorbero, *St. John's Wort for Major Depressive Disorder: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1048-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1048.html](https://www.rand.org/pubs/research_reports/RR1048.html)  
Apaydin, Eric A., Alicia R. Maher, Roberta Shanman, Marika S. Booth, Jeremy N. V. Miles, Melony E. Sorbero, and Susanne Hempel, "A Systematic Review of St. John's Wort for Major Depressive Disorder," *Systematic Reviews*, Vol. 5, No. 1, 2016, article 148.
8. Newberry, Sydne, Susanne Hempel, Marika Booth, Brett Ewing, Alicia Ruelaz Maher, Claire E. O'Hanlon, Jennifer Sloan, Christine Anne Vaughan, Whitney Dudley, Roberta M. Shanman, and Melony E. Sorbero, *Omega-3 Fatty Acids for Major Depressive Disorder: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1079-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1079.html](https://www.rand.org/pubs/research_reports/RR1079.html)
9. Sorbero, Melony E., Sangeeta Ahluwalia, Kerry A. Reynolds, Susan L. Lovejoy, Coreen Farris, Jennifer Sloan, Jeremy N. V. Miles, Christine Anne Vaughan, Ryan Kandrack, Eric Apaydin, Benjamin Colaiaco, and Patricia M. Herman, *Meditation for Depression: A Systematic Review of Mindfulness-Based Cognitive Therapy for Major Depressive Disorder*, Santa Monica, Calif.: RAND Corporation, RR-1138-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1138.html](https://www.rand.org/pubs/research_reports/RR1138.html)
10. Sorbero, Melony E., Kerry A. Reynolds, Benjamin Colaiaco, Susan L. Lovejoy, Coreen Farris, Christine Anne Vaughan, Jennifer Sloan, Ryan Kandrack, Eric Apaydin, and Patricia M. Herman, *Acupuncture for Major Depressive Disorder: A Systematic Review*, Santa Monica, Calif.: RAND Corporation, RR-1135-OSD, 2015. As of September 1, 2021: [https://www.rand.org/pubs/research\\_reports/RR1135.html](https://www.rand.org/pubs/research_reports/RR1135.html)

For additional information about RAND's Southern California Evidence-based Practice Center, see [www.rand.org/health-care/centers/epc](http://www.rand.org/health-care/centers/epc). For additional information about the evidence synthesis conducted by PHCoE, see <https://health.mil/Military-Health-Topics/Centers-of-Excellence/Psychological-Health-Center-of-Excellence>.

## Notes

- <sup>1</sup> Patricia M. Herman, Melony E. Sorbero, and Ann C. Sims-Columbia, "Complementary and Alternative Medicine Services in the Military Health System," *Journal of Alternative and Complementary Medicine*, Vol. 23, No. 11, November 2017, pp. 837–843.
- <sup>2</sup> Marie-Louise Sharp, Nicola T. Fear, Roberto J. Rona, Simon Wessely, Neil Greenberg, Norman Jones, and Laura Goodwin, "Stigma as a Barrier to Seeking Health Care Among Military Personnel with Mental Health Problems," *Epidemiologic Reviews*, Vol. 37, No. 1, 2015, pp. 144–162.
- <sup>3</sup> Although a few government agencies, including the Department of Veterans Affairs and the Agency for Healthcare Research and Quality, have established evidence synthesis centers, there is no similar center within the Department of Defense that focuses exclusively on psychological health issues.

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This brief describes work done in the RAND National Security Research Division and documented in the reports listed in this brief. To view this brief online, visit [www.rand.org/t/RBA428-1](http://www.rand.org/t/RBA428-1). The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.

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