

## MBI for Adult Survivors of Sexual Assault

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## **Mindfulness-Based Interventions for Adult Survivors of Sexual Assault: A Scoping Review**

A scoping review of literature was conducted to identify and map the breadth of evidence on mindfulness-based interventions (MBI) as a supportive intervention for adult survivors of sexual assault. Out of an initial 37 articles retrieved, five met criteria for review. Three studies used descriptive pre-post design and two used experimental design. Four studies utilized integrated MBI (combined with yoga, art, or aerobic activity). All five reported positive outcomes to varying degrees. The findings of this scoping review suggest that MBIs are a promising intervention for adult survivors of sexual assault, however, more rigorous trials are needed to further enhance the currently limited evidence in this area.

**Keywords:** sexual assault, rape, mindfulness-based interventions, scoping review

## **Clinical Impact Statement**

The findings of this scoping review indicate that MBIs are a potentially promising intervention to improve mental health outcomes for adult survivors of sexual assault and the need for rigorous trials to substantially increase effective treatment for victims of sexual assault.

## **Introduction**

Sexual assault is a serious public health problem with devastating effects, both long- and short-term in nature, through deleterious mental and medical health comorbidities, all-cause mortality, and costs exceeding \$3.1 trillion per year in the United States (Peterson et al., 2017; Twamley et al., 2009). Sexual assault is a common form of trauma, with as many as one in three women and one in four men experiencing attempted or completed rape in their lifetime (Smith et

al., 2018). Female college students (age 18–24 years) are three times more likely than women in general to experience sexual violence (Cantor et al., 2020).

Sexual assault appears to have a more substantial impact on mental health than other forms of trauma (Dworkin et al., 2017; Kelley & Garland, 2016). Mental health consequences of sexual assault are similar for male and female victims (Brown et al., 2019). Long-term consequences are often related to mental health and can include post-traumatic stress disorder (PTSD), substance misuse, eating disorders, anxiety, depression, self-harm, and suicidality (Brown et al., 2019). Survivors of sexual assault often experience self-blame and a diminished sense of self-worth (Sigurvinsdottir & Ullman, 2015). Self-blame is often accompanied by rumination, or repeatedly mentally replaying the assault. Worry and rumination have been shown to contribute to the development and maintenance of anxiety and depressive symptoms (McLaughlin et al., 2007; Young & Dietrich, 2015). Providing accessible, evidence-based interventions for survivors of sexual assault is essential to limit the consequences of the traumatic event (Brown et al., 2019).

A burgeoning area of research has supported the effectiveness of mindfulness-based interventions (MBIs) with a variety of physical and mental health concerns. Mindfulness is defined as awareness and non-judgmental acceptance of one's present moment experience (Bishop et al., 2004; Kabat-Zinn, 1994). Or, put more simply, mindfulness is “paying attention here and now, with kindness and curiosity, and then choosing your behavior” (Saltzman, 2014, p. 9). While it may, at first glance, appear paradoxical that paying more attention to the experience of a distressing symptom (e.g., chronic pain) would ultimately relieve suffering associated with that symptom, systematic reviews and meta-analytic findings have supported the effectiveness of MBIs with physical health conditions (Hilton et al., 2017; Howarth et al., 2019) and mental

health conditions (Chi et al., 2018; Goldberg et al., 2018). Additionally, a recent systematic review and meta-analysis examined the effectiveness of MBIs among non-clinical samples and identified reductions in symptoms of rumination/worry, stress/psychological distress, depression, and anxiety (Querstret et al., 2020). This analysis also found a statistically significant improvement in quality of life and well-being. Taken together, these findings suggest that MBIs may have utility in supporting health and well-being among survivors of sexual assault.

While there is emerging evidence of the preliminary effectiveness of MBIs among individuals that have experienced trauma (Taylor, McLean, Kerner, Stratton, & Glozier, 2020), the unique vulnerabilities/needs of survivors of sexual assault have not received as much attention. Taylor et al.'s (2020) systematic review (N=66) and meta-analysis (N=24) investigating the impact of mindfulness and yoga among adults with psychological trauma (e.g., "violence," "abuse," "neglect") found moderate effects (mindfulness:  $g=0.45$ ,  $p < .0001$ ; yoga:  $g = 0.46$ ,  $p < .001$ ), and two studies of 'integrative exercise' with large effects ( $g = 0.94$ ,  $p < .001$ ) on trauma related symptoms. Interestingly, it was noted that trauma type did not influence the interventions' effectiveness, however, many studies report diagnosis (e.g., PTSD) rather than trauma type. The authors recommend more rigorous reporting of trauma exposure to enhance future research.

Theoretically, MBIs are informed by a confluence of contemplative traditions, science, and the major disciplines of psychology, medicine, and education (Crane et al., 2017). Through these lenses, MBIs guide participants, through experiential mindfulness training, to identify pathways to decrease distress through enhanced attentional, emotional, and behavioral self-regulation and the cultivation of positive qualities of compassion, wisdom, and equanimity (Crane et al., 2017). In this way, it may be that MBIs are particularly suited for survivors of

sexual assault within which high levels of shame, guilt, and anxiety associated with the traumatic assault are often found.

The current state of the literature regarding implementation of MBIs with survivors of sexual assault is unknown, therefore, a review was undertaken to answer the following questions:

- (1) What types of mindfulness-based interventions have been tested with adult survivors of sexual assault?
- (2) What were the outcomes of mindfulness-based interventions reported for adult survivors of sexual assault?

### **Methodology**

Figure 1 illustrates the screening process. Given the broad goal of locating all available literature on our topic, to identify all existing ideas and themes, and to detect knowledge gaps that merit further investigation, a decision was made to conduct a scoping review. For the purposes of this study, we used the JBI definition of a scoping review: a type of evidence synthesis that aims to systematically identify and map the breadth of evidence available on a topic, often irrespective of source, within or across particular contexts (Munn et al., 2022).

To promote rigor, the research team coordinated with a health science librarian specializing in systematic reviews and adhered to scoping review guidelines outlined in Arksey and O'Malley's (2005) original methodological framework for scoping studies coupled with the PRISMA-extension for scoping reviews (Tricco et al., 2018). Because the majority of research on mindfulness-based interventions has occurred in the past decade (Hoffman & Gomez, 2017) we limited the search to studies conducted in the past ten years.

Potential search terms and subsequent synonyms were identified and agreed upon as a team. Once a finalized search string was decided upon, a repository search was conducted to

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check for any existing reviews on the topic. No such pre-existing reviews were located. The final keyword search terms were:

“sexual assault” OR rape OR “sexual violence” OR “sexual abuse” OR  
“sexual harassment” OR “sexual trauma” OR “sexual coercion” OR  
“dating violence” OR “spouse abuse” OR “rape trauma syndrome” OR  
“Intimate Partner Violence” AND “Mindfulness” OR “mindful” OR  
“mindfulness based stress reduction” OR “mindfulness-based  
interventions” OR “MBSR” OR “mindfulness intervention” OR  
“mindfulness program” OR “mindfulness therapy” OR “mindfulness  
treatment” OR “meditation” OR “mindful meditation” OR “mindfulness  
meditation”

Modified search strings were utilized on various databases to incorporate additional controlled vocabulary phrases when and where possible. Per PRISMA protocols on scoping reviews which require a full search strategy for at least one database, our search strategy for PubMed can be found here: <https://hdl.handle.net/11274/13627>.

The following inclusion/exclusion criteria was agreed upon:

Inclusion = (1) population includes adult victims of sexual violence, (2) report outcomes of an intervention that includes mindfulness component, (3) English language, (4) less than 10 years old

Exclusion = (1) intervention includes stress without explicit mention of mindfulness (e.g., relaxation, stress reduction, coping), (2) primary mechanism of therapeutic intervention is not mindfulness, (3) discusses offenders not the victims, (4) not in English, and (5) not a primary study

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Our database and repository selection included: PubMed, CINAHL, Nursing and Allied Health, PsycINFO, Emcare, Scopus, Web of Science. Where the database allowed, limiters included: English language only, scholarly/academic journals only, and a 10-year date range. As a scoping review, the search criteria remained broad and no limitations/exclusions were placed on study design. In collaboration with our research librarian we determined a date range of 10 years for two reasons. First, the 10-year date range is fairly standard in papers that do not have a historical perspective as it provides the most recent and up to date research. Second, although mindfulness began emerging in western medicine and popular culture in the 1980s and 1990s, the term “mindfulness” was not coined as a MeSH term until 2014. We believe that searching three years prior to this was sufficient to ensure a thorough review of the literature.

Articles returned were uploaded to the systematic review tool, Rayyan. Rayyan’s duplicate detection tool was used to identify possible duplicates; these were then manually inspected and removed where appropriate.

Per PRISMA, articles underwent three rounds of consideration and elimination: (1) removal of duplicates, (2) screening record by title and abstract, and (3) full report assessed for eligibility corresponding to the inclusion/exclusion criteria. Voting for the articles was blinded via Rayyan so reviewers could not be influenced by each other’s voting preference. Any disputes in choice between the main two reviewers was resolved via a third objective reviewer casting a deciding vote. Two of the three reviewers with expertise with the theoretical underpinnings of mindfulness practice and interventions evaluated the intervention content closely and agreed with inclusion of all final articles.

A separate gray literature search was conducted. As it was not possible to upload these results to Rayyan, voting was blinded via article lists being sent out separately to the two

reviewers. Disputes in choice between the main two reviewers was again resolved via a third objective reviewer casting a deciding vote.

A search of available electronic journals produced no new results. A hand search of physical materials was vetoed due to safety concerns regarding COVID-19. A follow up search of the literature, to pull up any new articles that may have been published since the date of the initial search, was not deemed necessary.

The review team examined the citation pages from the selected articles and utilized Google Scholar's 'cited by' tool to search for additional pertinent articles. No new pertinent literature was found.

## **Findings**

### **Study Characteristics**

#### ***Study Designs***

Five articles met the search criteria and were approved for inclusion by the team. See Table 1 for a summary of study characteristics. Included studies consisted of four primary reports published in peer-reviewed journals (Goodarzi et al., 2020; Nicotera & Connolly, 2020; Pence et al., 2014; Shors, Chang, & Millon, 2018) and one dissertation study (Johnson, 2020) with publication dates ranging from 2014 to 2020. Of the included articles, two used a single group, pre-posttest design (Nicotera & Connolly, 2020; Pence et al., 2014); two described an experimental design with random allocation to treatment and control (Goodarzi et al., 2020, Shors et al., 2018) and one used a single group repeated measures design (Johnson, 2020).

#### ***Sample and Setting***

Sample sizes ranged from 10 to 105. All participants in the studies were female; Johnson's (2020) study did not limit their recruitment to women but, ultimately, all participants



in the study were women. Shors et al. (2018) did not limit participation to those who had experienced sexual violence but analyzed data from that group separately. Four of the studies were conducted in the United States and one was conducted in Iran (Goodarzi et al., 2020). Although all studies recruited individuals reporting a history of sexual assault, samples were recruited from a variety of settings including women seeking general medical care (Goodarzi et al., 2020; Pence, et al., 2014), community-based settings (Nicotera & Connolly, 2020; Shors et al., 2018), as well as college students who were not seeking medical care (Johnson, 2020). Data regarding participant ages are further described in Table 1. Some missing data were identified across the studies, yet those reporting age ranges spanned from 18 to 82 years with the mean age from 20 years (Shors et al., 2018) to 56 years (Pence, et al., 2014).

### ***Measurement***

Approaches to measurement in terms of timing varied across the included studies, however similarities in selection of standardized measures were found (see Table 2). Three measures were used in more than one of the five included studies. These were the Five Facet Mindfulness Questionnaire (FFMQ), the Brief Symptom Inventory (BSI-18), and the Post Traumatic Checklist (PCL-5).

A wide range of measures were used in one of the five studies. These include:

- Acceptance and Action Questionnaire II
- Alcohol Use Disorders Identification Test-Consumption
- Autobiographical Memory Questionnaire
- Beck's Depression Inventory 2
- Best Self Scale
- Impact of Event Scale Revised

- Multidimensional Experiential Avoidance Questionnaire - 30
- Personal Feelings Questionnaire 2
- Post-traumatic Cognitions Inventory
- Ruminative Responses Scale
- World Health Organization Quality of Life-BREF

### ***Description of Interventions***

While mindfulness was at the core of each included intervention, four of the five combined mindfulness with an additional component: Aerobic exercise (Shors et al., 2018), yoga (Nicotera & Connolly, 2020; Pence, et al., 2014) or art making (Goodarzi et al., 2020). See Table 3 for details regarding each intervention.

Shors et al. (2018) used the focused-attention (FA) meditation method, which is similar to Zen meditation, followed by 30 minutes of moderate intensity exercise. Two of the interventions used mindfulness-based stress reduction (MBSR) as the core curriculum with modifications through the addition of components of art making (Goodarzi et al., 2020) or of Johnson's (2020) approach of pre-recording content for asynchronous delivery of weeks two to eight of the intervention and shortening weekly guided mindfulness exercises. Both interventions combining yoga and mindfulness practices were established manualized curricula. Indeed, Nicotera and Connolly (2020) used the guiding principles of the Trauma Center Trauma Sensitive Yoga protocol that, as of a 2017 citation, was included in the Substance Abuse and Mental Health Administration National Registry of Evidence-Based Programs and Practices.

The mindfulness didactic and experiential components were described within these written reports, but the yoga components (e.g., asanas) were not. Interventions lasted between six and ten weeks with sessions weekly (Goodarzi et al., 2020; Johnson, 2020; Nicotera & Connolly,

2020) or bi-weekly (Pence et al., 2014; Shors et al., 2018). The only article not to speak to the qualifications/training of the intervention facilitator was Johnson (2020). Pence et al. (2014) and Shors et al. (2018) did not address modifications to tailor the intervention for survivors of sexual trauma. Both provided evidence of effectiveness and appropriateness of the intervention for individuals diagnosed with PTSD, a common condition encountered among sexual trauma survivors.

Attrition was a problem reported for three of the studies. Nicotera and Connolly (2020) lost 26 participants to incomplete data. Pence et al. (2014) lost five participants (33% drop out rate) due to inability to complete the study. Johnson (2020) reported a 44% drop out rate. Shors et al. (2018) did not discuss attrition. Goodarzi et al. (2020) reported no attrition, but noted that recruitment was very difficult and time-consuming given the stigma of sexual assault in Iran, the country where the research was conducted. Both Johnson (2020) and Shors et al., (2018) offered a participant incentive.

### ***Study Outcomes***

All five of the studies reported statistically significant improvements in some or all the outcomes measured. Shors et al. (2018) reported significant decreases in trauma-related cognitions after both FA meditation and exercise and FA meditation only but not with exercise only. On the analysis of only participants with a history of sexual assault, Shors et al. (2018) reported that both FA meditation and exercise significantly reduced trauma-related cognitions but FA meditation alone and exercise alone did not change trauma-related cognitions. Nicotera and Connolly (2020) reported statistically significant improvements in mindfulness and emotional regulation from pre- to post-intervention. Pence et al. (2014) reported statistically significant improvement in measures of post-traumatic stress, post-traumatic cognitions, and

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depressive symptoms. Goodarzi et al. (2020) found a statistically significant difference between experimental and control groups at both 'post-test' and 'follow-up' for depression, anxiety, and shame.

Nicotera and Connolly, Pence et al., and Goodarzi et al. did not specify the timing of 'post-test' and 'follow up'. Shors et al. (2018) indicated that post-test was completed at least six weeks after the initial session. Johnson (2020) collected outcome data at baseline, during the intervention, at intervention completion, and 1-month post-intervention for participants who completed at least five of the eight mindfulness modules. Significant missingness was reported as a limitation. Despite this, statistically significant linear decreases in PTSD symptoms and improvements in mindfulness were identified from baseline to post-intervention. Additionally, 70% of participants reported a clinically relevant improvement in symptoms of PTSD immediately post-intervention. Thus, it is unknown if improvements past the one month follow up by Johnson occurred. No adverse events were reported for any of the four studies.

### **Discussion**

The findings of this scoping review suggest that, although the number of studies was small, MBIs may be effective to help adult survivors of sexual assault avoid long-term mental health consequences, namely symptoms of depression, anxiety, and PTSD. Despite noted limitations in sample sizes, significant attrition, and the majority lacking control conditions, the statistically significant improvements in several measures of mental health as well as mindfulness are encouraging.

Four of the studies reviewed used an integrated intervention; mindfulness interventions integrated with exercise, yoga, or art making. This makes it difficult to know whether improvement was achieved due to the mindfulness intervention, the yoga movements, art

activities, or the combination of the components. The exception to this is the Shors et al. (2018) study, which indicated that, for victims of sexual assault, the combination of FA meditation and exercise together were associated with improvement in symptoms where the individual components were not associated with improvement in symptoms. The length of the intervention period varied from six to ten weeks and the ratio of the dose of mindfulness and yoga or art was not clear in any of the studies except the Shors et al. (2018) study. Thus, it remains somewhat unclear what dose might lead to improvements. Johnson's (2020) study used a mindfulness only intervention with truncated weekly sessions as well as guided mindfulness exercises. Although statistically significant findings were identified, the sample included for analysis at 1-month post-intervention only included  $N = 6$  ( $N = 10$  original sample size).

All intervention delivery was group-based and in-person except for Johnson (2020). The online, truncated modifications were suggested as a means to improve engagement with intervention components and nine of the original 10 participants (90%) completed the post-intervention assessment. Nicotera and Connolly (2020) reported that 37 participants (58.7%) completed pre- and post-intervention data collection. What is not represented within these statistics is the number of participants completing the intervention as compared with completing assessments. Future work in this area would greatly benefit from tracking engagement with the intervention components overall as well as with the weekly activities. Several additional suggestions for advancing the science in the area of MBI to support survivors of sexual assault, based on the findings of this scoping review, are provided below.

First, operationalizing a consistent set of outcome measures moving forward would allow researchers to pool effect sizes in future meta-analyses. As shown in Table 2, three measures were the most commonly used: (1) the Five Facet Mindfulness Questionnaire, (2) Brief

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Symptom Inventory, and (3) Post Traumatic Checklist. A strong recommendation as to what psychological or symptom outcome measures should be included is not possible based on the findings of this review. We would suggest that since MBIs are a positive psychology intervention, it may be wise to consider constructs associated with psychological well-being (e.g., resilience, self-efficacy, emotion regulation) as opposed to focusing solely on decreasing levels of distress. It is also important to note that three of the five included studies (Goodarzi et al., 2020, Pence et al., 2014; Shors et al., 2018) did not include a measure of mindfulness. This is a limitation to an emerging area of science that is working to establish the efficacy and effectiveness of MBIs through the mechanism of mindfulness. All mindfulness intervention research moving forward should include a formal assessment of mindfulness in order to formally investigate its role in intervention outcomes.

Attrition was a problem for three of the studies reviewed. Lack of appropriate participant incentives may have contributed. Three of the studies offered no participant incentive and one offered a maximum \$25 incentive. The Johnson (2020) study included a participant incentive and required participants to complete a large number of instruments four times throughout the study, which likely contributed to attrition. Authors cited various reasons for attrition including difficulty arranging transportation to sessions, the length of the drive required to attend sessions, deliberately limiting communication with participants, and failure to track participant progress. The study with the highest attrition rate reported that participants did not offer reasons for leaving the study.

Brueton et al. (2011) recommended strategies to reduce attrition in clinical trials. These include: a) varying forms of communication such as email and letters with variation in delivery method; b) shorter questionnaire length; c) incentives such as cash, gift cards, vouchers, or gifts;

d) case management for participant follow-up; and e) behavioral strategies such as workshops giving participants information about goal setting. Given the difficulty with recruiting and attrition with this population, future research in this area should include several strategies to retain participants. To reduce participant burden and prevent survey fatigue, measurement length and timings should be carefully considered.

### **Limitations**

Although effort was taken to ensure a rigorous scoping review methodology, several limitations should be addressed. Every attempt was made to include all articles on the topic, yet it is possible that search terms were inadvertently missed. Though the review included a study conducted in Iran, the search was limited to English only, possibly limiting the number of articles included. This review was undertaken with a specific topic in mind — the effectiveness of MBIs for adult survivors of sexual assault. The vast majority of the literature combines populations (e.g., women, military members, etc.) or combines sources of trauma (e.g., childhood sexual abuse, intimate partner violence, sexual violence, etc.). The focused approach of this search led to a small number of articles (four), although as the purpose of this review was to investigate MBI with the specialized population/needs of survivors of sexual assault, the need for the limitations inherent with a narrower search necessarily limited the study.

### **Future Directions and Implications**

The findings of this scoping review suggest that MBIs are a promising intervention for adult survivors of sexual assault. Given the wide variety of methodologies, interventions, and measurements used in the studies described here, a clear direction in terms of ‘best-practices’ is not fully established. To create a strong evidence base regarding effectiveness of MBI in improving psychological well-being among survivors of sexual assault, the literature would

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benefit from a systematic and/or scoping review of the broader literature of MBIs with populations of survivors of multiple forms of trauma, such as interpersonal violence and childhood maltreatment. Moreover, a recognition that MBIs may not be without harm, particularly for individuals with trauma histories, should be acknowledged and investigated as well.

Three of the five studies reviewed here were descriptive pre-post intervention studies. Studies with an active control group such as Shors et al. (2018) would add to the rigor of the body of science in this area. Similarly, four studies reviewed used integrated interventions, making it difficult to draw conclusions about the effectiveness of MBI only interventions following sexual assault.

Using consistent measures in studies related to outcomes of MBIs in adult survivors of sexual assault would facilitate studies that allow for pooled effect sizes. The Five Facet Mindfulness Questionnaire (FFMQ), the Brief Symptom Inventory (BSI-18) and the Post Traumatic Checklist (PCL -5) were used in the studies described here to measure mindfulness, somatization, depression, anxiety, and emotion regulation; all outcomes relevant to the ongoing care of adult survivors of sexual assault.

Both integrated yoga interventions (iRest® & TCTSY) are manualized interventions that are supported through a series of preliminary studies. Further large-scale trials with randomization and an active control would build the science in the area. For example, the iRest® program is an evidence-based ten step meditation protocol that can be practiced anywhere (iRest, n.d.). The interventions used by Shors et al. (2018) were described in detail sufficient to be practiced in a facility with a suitable exercise area (e.g. treadmills or elliptical machines). An experimental study comparing the effectiveness of a face-to-face iRest® program or FA



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meditation with an online MBI may be an important next step in learning how to most effectively help adult survivors recover from sexual assault.

### **Conclusions**

The findings of this scoping review indicate that MBIs are a potentially promising intervention to improve mental health outcomes for adult survivors of sexual assault. This review also points to the needs for innovative approaches to engaging and retaining the vulnerable population in MBI. Future rigorous trials in this area have potential to substantially increase the available treatment resources for a traditionally difficult to reach vulnerable population.

### **Declaration of Interest**

The authors report there are not competing interests to declare.

### **Institutional Review Board**

This scoping review did not utilize human participants, thus no review by an IRB was required.

### **References**

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework.

*International Journal of Social Research Methodology*, 8(1), 19–32.

<https://doi.org/10.1080/1364557032000119616>

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills. *Assessment*, 11, 191–206.

<https://doi.org/10.1177/1073191104268029>

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230–241.

<https://doi.org/10.1093/clipsy.bph077>

Bovin, M. J., Marx, B. P., Weathers, F. W., Gallagher, M. W., Rodriguez, P., Schnurr, P. P., & Keane, T. M. (2016). Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders-fifth edition (PCL-5) in veterans. *Psychological Assessment*, 28(11), 1379–1391. <https://doi.org/10.1037/pas0000254>

Brown, S. J., Khasteganan, N., Brown, K., Hegarty, K., Carter, G. J., Tarzia, L., Feder, G., & O'Doherty, L. (2019). Psychosocial interventions for survivors of rape and sexual assault experienced during adulthood. *The Cochrane Database of Systematic Reviews*, 11, CD013456. <https://doi.org/10.1002/14651858.CD013456>

- Boettcher, J., Åström, V., Pålsson, D., Schenström, O., Andersson, G., & Carlbring, P. (2014). Internet-based mindfulness treatment for anxiety disorders: A randomized controlled trial. *Behavior Therapy*, 45(2), 241–253. <https://doi.org/10.1016/j.beth.2013.11.003>
- Boulet, J., & Boss, M. W. (1991). Reliability and validity of the Brief Symptom Inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 3(3), 433. <https://doi.org/10.1037/1040-3590.3.3.433>
- Brueton, V., Tierney, J., Stenning, S., Nazareth, I., Meredith, S., Harding, S., & Rait, G. (2011). Strategies to reduce attrition in randomised trials. *Trials*, 12(Suppl 1), A128. <https://doi.org/10.1186/1745-6215-12-S1-A128>
- Cantor, D., Fisher, B., Chibnall, S., Harps, S., Townsend, R., Thomas, G., Lee, H., Kranz, V., Herbison, R., & Madden, K. (2020). *Report on the AAU campus climate survey on sexual assault and misconduct*. The Association of American Universities. [https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Campus-Safety/Revised%20Aggregate%20report%20%20and%20appendices%201-7\\_\(01-16-2020\\_FINAL\).pdf](https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Campus-Safety/Revised%20Aggregate%20report%20%20and%20appendices%201-7_(01-16-2020_FINAL).pdf)
- Chi, X., Bo, A., Liu, T., Zhang, P., & Chi, I. (2018). Effects of mindfulness-based stress reduction on depression in adolescents and young adults: A systematic review and meta-analysis. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.01034>
- Crane, R., Brewer, J., Feldman, C., Kabat-Zinn, J., Santorelli, S., Williams, J. M. G., & Kuyken, W. (2017). What defines mindfulness-based programs? The warp and the weft. *Psychological Medicine*, 47(6), 990–999. <https://doi.org/10.1017/s0033291716003317>
- deMeneses-Gaya, C. D., Zuardi, A. W., Loureiro, S. R., & Crippa, J. A. S. (2009). Alcohol use disorders identification test (AUDIT): An updated systematic review of psychometric

properties. *Psychology & Neuroscience*, 2(1), 83–97. <https://doi.org/10.1590/s1983-32882009000100012>

Dworkin, E., Menon, S. Bystrynski, J., & Allen, N. (2017). Sexual assault victimization and psychopathology: A review and meta-analysis. *Clinical Psychology Review*, 56, 565–581. <https://doi.org/10.1016/j.cpr.2017.06.002>

Emerson, D. (2015). *Trauma-sensitive yoga in therapy: Bringing the body into treatment*. WW Norton & Company.

Emerson, D., & Hopper, E. (2011). *Overcoming trauma through yoga: Reclaiming your body*. North Atlantic Books.

Fitzgerald, J., & Broadbridge, C. (2012). Latent constructs of the Autobiographical Memory Questionnaire: A recollection – belief model of the autobiographical experience. *Memory* 21(2), 230-248. <https://doi.org/10.1080/09657211.2012.725736>

Fledderus, M., Oude Voshaar, M. A. H., ten Klooster, P. M., & Bohlmeijer, E. T. (2012). Further evaluation of the psychometric properties of the acceptance and action questionnaire–II. *Psychological Assessment*, 24(4), 925–936. <https://doi.org/10.1037/a0028200>

Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The Posttraumatic Cognitions Inventory (PTCI): Development and validation. *Psychological Assessment*, 11(3), 303–314. <https://doi.org/10.1037/1040-3590.11.3.303>

Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review*, 59, 52–60. <https://doi.org/https://doi.org/10.1016/j.cpr.2017.10.011>

- Goodarzi, G., Sadeghi, K., & Foroughi, A. (2020). The effectiveness of combining mindfulness and art-making on depression, anxiety, and shame in sexual assault victims: A pilot study. *The Arts in Psychotherapy, 71*. <https://doi.org/10.1016/j.aip.2020.101705>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology & Behavioral Assessment, 26*(1), 41–54. <https://doi.org/10.1023/b:joba.00000007455.08539.94>
- Gu, J., Strauss, C., Crane, C., Barnhofer, T., Karl, A., Cavanagh, K., & Kuyken, W. (2016). Examining the factor structure of the 39-item and 15-item versions of the five facet mindfulness questionnaire before and after mindfulness-based cognitive therapy for people with recurrent depression. *Psychological Assessment, 28*(7), 791–802. <https://doi.org/10.1037/pas0000263>
- Harder, D. W., Rockart, L., & Cutler, L. (1993). Additional validity evidence for the harder personal feelings questionnaire-2 (PFQ2): A measure of shame and guilt proneness. *Journal of Clinical Psychology, 49*(3), 345–348. [https://doi.org/10.1002/1097-4679\(199305\)49:3<345::aid-jclp2270490307>3.0.co;2-y](https://doi.org/10.1002/1097-4679(199305)49:3<345::aid-jclp2270490307>3.0.co;2-y)
- Hilton, L., Hempel, S., Ewing, B. A., Apaydin, E., Xenakis, L., Newberry, S., Colaiaco, B., Maher, A. R., Shanman, R. M., Sorbero, M. E., & Maglione, M. A. (2017). Mindfulness meditation for chronic pain: systematic review and meta-analysis. *Annals of Behavioral Medicine, 51*(2), 199–213. <https://doi.org/10.1007/s12160-016-9844-2>
- Hofmann, S. G., & Gómez, A. F. (2017). Mindfulness-based interventions for anxiety and depression. *The Psychiatric Clinics of North America, 40*(4), 739–749. <https://doi.org/10.1016/j.psc.2017.08.008>

- Howarth, A., Smith, J. G., Perkins-Porras, L., & Ussher, M. (2019). Effects of brief mindfulness-based interventions on health-related outcomes: A systematic review. *Mindfulness*, 10(10), 1957–1968. <https://doi.org/10.1007/s12671-019-01163-1>
- iRest. (n.d.). *iRest for healthcare workers*. <https://www.irest.org/healthcare-workers>
- Johnson, E. C. (2020). *Mindfulness and technology: Evaluating an online mindfulness intervention for symptoms related to sexual assault* [Unpublished doctoral dissertation]. Western Michigan University. <https://scholarworks.wmich.edu/dissertations/3643>
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion Books.
- Kelley, A., & Garland, E. (2016). Trauma-informed mindfulness-based stress reduction for female survivors of interpersonal violence: Results from a stage I RCT. *Journal of Clinical Psychology*, 72(4), 311–328. <https://doi.org/10.1002/jclp.22273>
- Kruithof, N., Haagsma, J. A., Karabatzakis, M., Cnossen, M. C., de Munter, L., van de Ree, C., de Jongh, M., & Polinder, S. (2018). Validation and reliability of the abbreviated world health organization quality of life instrument (WHOQOL-BREF) in the hospitalized trauma population. *Injury*, 49(10), 1796–1804. <https://doi.org/10.1016/j.injury.2018.08.016>
- Lewis, M., & Naugle, A. (2017). Measuring experiential avoidance: Evidence toward multidimensional predictors of trauma sequelae. *Behavioral Sciences (Basel, Switzerland)*, 7(1), 9. <https://doi.org/10.3390/bs7010009>
- McLaughlin, K., Borkovec, T., & Sibrava, N. (2007). The effects of worry and rumination on affect states and cognitive activity. *Behavior Therapy*, 38(1), 23–38. <https://doi.org/10.1016/j.beth.2006.03.003>

- Miller, R. (2005). *Yoga nidra: The meditative heart of yoga*. Sounds True, Inc.
- Monti, D. A., Kash, K. M., Kunkel, E. J., Brainard, G., Wintering, N., Moss, A. S., Rao, H., Zhu, S., & Newberg, A. B. (2012). Changes in cerebral blood flow and anxiety associated with an 8-week mindfulness programme in women with breast cancer. *Stress and Health, 28*(5), 397–407. <https://doi.org/10.1002/smi.2470>
- Munn, Z., Pollock, D., Khalil, H., Alexander, L., McInerney, P., Godfrey, C., Peters, M., & Tricco, A. (2022). What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBIM Evidence Synthesis, 20*(4), 950–952. <https://doi.org/10.11124/JBIES-21-00483>
- Nicotera, N., & Connolly, M. (2020). The influence of trauma-informed yoga (TIY) on emotion regulation and skilled awareness in sexual assault survivors. *International Journal of Yoga Therapy, 30*. <https://doi.org/10.17761/2020-D-18-00031>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Gianville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. <https://doi.org/10.1136/bmj.n71>
- Pence, P., Katz, L., Huffman, C., & Cojucar, G. (2014). Delivering integrative Restoration-Yoga Nidra Meditation (iRest) to women with sexual trauma at a veteran’s medical center: A pilot study. *International Journal of Yoga Therapy, 24*. <https://doi.org/10.18861/IJYT.24.1.U7747W56066VQ78U>.

Peterson, C., DeGue, S., Florence, C., & Lokey, C. N. (2017). Lifetime economic burden of rape among U.S. adults. *American Journal of Preventive Medicine*, 52, 691–701.

<https://doi.org/10.1016/j.amepre.2016.11.014>

Querstret, D., Morison, L. A., Dickinson, S., Cropley, M., & John, M. E. (2020). Mindfulness-based stress reduction and mindfulness-based cognitive therapy for psychological health and well-being in nonclinical samples: A systematic review and meta-analysis.

*International Journal of Stress Management*, 27, 394–411.

<https://doi.org/10.1037/str0000165>

Robinaugh, D. & McNally, R. (2010). Autobiographical memory for shame or guilt provoking events: Association with psychological symptoms. *Behaviour Research and Therapy*,

48(7). 6464-652. <https://doi.org/10.1016/j.brat.2010.03.017>.

Roelofs, J., Muris, P., Huibers, M., Peeters, F., & Arntz, A. (2006). On the measurement of rumination: A psychometric evaluation of the ruminative response scale and the

rumination on sadness scale in undergraduates. *Journal of Behavior Therapy and*

*Experimental Psychiatry*, 37(4), 299-313. <https://doi.org/10.1016/j.jbtep.2006.03.002>.

Saltzman, A. (2014). *A still quiet place: A mindfulness program for teaching children and adolescents to ease stress and difficult emotions*. New Harbinger Publications, Inc.

Shors, T., Chang, H., & Millon, E. (2018). MAP training my brain: Meditation plus aerobic

exercise lessens trauma of sexual violence more than either activity alone. *Frontiers in*

*Neuroscience*, 12:211. doi: 10.3389/fnins.2018.00211

Sigurvinsdottir, R., & Ullman, S. E. (2015). Social reactions, self-blame and problem drinking in adult sexual assault survivors. *Psychology of Violence*, 5(2), 192–198.

<https://doi.org/10.1037/a0036316>



Smith, S. G., Zhang, X., Basile, K. C., Merrick, M. T., Wang, J., Kresnow, M., & Chen, J. (2018). *The national intimate partner and sexual violence survey: 2015 data brief—updated release*. Centers for Disease Control and Prevention.

Sundin, E. C., & Horowitz, M. J. (2003). Horowitz's impact of event scale evaluation of 20 years of use. *Psychosomatic Medicine*, 65(5), 870–876.  
<https://doi.org/10.1097/01.PSY.0000084835.46074.F0>

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., . . . Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473.  
<https://doi.org/10.7326/M18-0850>

Twamley, E. W., Allard, C. B., Thorp, S. R., Norman, S. B., Cissell S. H., Berardi K. H., Grimes, E. M., & Stein, M. B. (2009). Cognitive impairment and functioning in PTSD related to intimate partner violence. *Journal of the International Neuropsychological Society*, 15, 879–887. <https://doi.org/10.1017/S135561770999049X>

Vahedi S. (2010). World Health Organization quality-of-life scale (WHOQOL-BREF): analyses of their item response theory properties based on the graded responses model. *Iranian Journal of Psychiatry*, 5(4), 140–153.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3395923>

Young, C. C. & Dietrich, M. S. (2015). Stressful life events, worry, and rumination predict depressive and anxiety symptoms in young adolescents. *Journal of Child and Adolescent Psychiatric Nursing*, 28, 35-42.