

### **3.0 REVIEW OF MODERN LITERATURE ON PTSD DISORDER**

PTSD, classified as an anxiety disorder in the DSM-III in 1980, has sparked significant debate regarding its nature and origins. The earliest Western literature describing PTSD-like symptoms appears in Homer's Iliad. In "Achilles in Vietnam," Shay presents the Iliad as a depiction of Achilles' tragedy and a portrayal of men at war. In the first five chapters, Shay examines Achilles' trials, including betrayal by his commander Agamemnon, which is described as shattering Achilles' social and moral framework. Consequently, Achilles is depicted as consumed by rage and concerned only with a small group of seasoned comrades. The narrative progresses with the death of his foster brother and close friend, Patroklos, in battle, leading Achilles to grief and suicidal thoughts. Achilles is shown to suffer from survivor's guilt, feeling lifeless and despairing. Ultimately, he becomes committing atrocities against both the living and the dead (Shay, 1994). Shay argues that this mirrors the experiences of many Vietnam combat veterans. The Iliad is estimated to have been created around 720 BC, but some researchers believe PTSD has always existed, albeit unrecognized by contemporaries (Gersons & Carlier, 1992). Symptoms of PTSD were also observed in a family trapped in the Bergemolletto avalanche in the mid-18th century (Parry-Jones & Parry-Jones, 1994). Historically, PTSD may have been present but was described with more emphasis on physical symptoms rather than psychological ones like flashbacks. Flashbacks are involuntary, dissociative images occurring during waking states (Frankel, 1994). In recent history, PTSD was first described as 'Irritable Heart' by Jacob D'Costa in 1871. It was known as 'Shell Shock' during World War I and 'Combat Neurosis' in World War II. However, the psychiatric issues faced by Vietnam War veterans led to the formal recognition of PTSD as we understand it today.

### **3.1 EFFECTIVE SERVICE DELIVERY OF PTSD TREATMENTS: IN-PERSON VERSUS ONLINE**

Given the pervasive issues surrounding limited access to mental health services, some scholars have developed and advocated for online psychotherapies for PTSD. Two systematic reviews on internet-based cognitive behavioral therapy (i-CBT) for PTSD and one systematic review of virtual reality exposure therapy provide insights into these approaches. Sijbrandij et al. (2016) reviewed twelve RCTs on i-CBT, comparing it to inactive controls (e.g., waitlist, treatment-as-usual) and active controls (e.g., i-CBT without exposure, internet-based supportive counseling,

psychoeducation) (Sijbrandij et al., 2016). They found that i-CBT was superior to inactive controls, with the strongest effects observed when i-CBT was therapist-assisted and longer than eight sessions. Compared to active controls, i-CBT was somewhat more effective, though the small number of studies and small effect sizes made these findings inconclusive. Lewis et al. (2019) conducted a systematic review of ten RCTs to assess the effects of trauma-focused i-CBT among adults, primarily compared to inactive controls (Lewis et al., 2019). They found very low-quality evidence for i-CBT effectiveness in reducing PTSD symptoms compared to a waitlist. Symptom reduction for PTSD, depression, and anxiety was noted at post-treatment, with anxiety reduction persisting at follow-up. However, there was no significant difference between i-CBT and online supportive counseling in terms of symptom reduction, PTSD diagnosis, or attrition rates after treatment, with low-quality evidence of differences at follow-up (6–12 months).

### **3.2 RESEARCH EVIDENCE: YOGA AND PTSD**

A recent systematic review and meta-analysis of seven RCTs on the role of yoga and PTSD concluded that a weak recommendation for yoga as an adjunctive intervention can be made (Cramer et al., 2018) and all yoga studies have low-quality of clinical evidence. Another systematic review of five RCTs also observed that there was significant heterogeneity in the yoga intervention and frequency of practices or total durations of practices used in these studies (Niles et al., 2018). Yoga interventions used in different RCTs were *sudharsana yoga* (Carter & Robert, 2016), *kripalu yoga* (Mitchell et al., 2014), *kundalini yoga* (Jindani, Turner, & Khalsa, 2015), *haṭha Yōga* (Van Der Kolk et al., 2014). These yoga interventions are widely known for their inherent differences in their approach as yoga therapy. It further highlights the weak evidence and warrants the need for a standardized yoga protocol for PTSD, which caters to the specific needs of the target population.

In another pilot RCT comparing eight sessions of *kundalini yoga* intervention with waitlist control, those who received yoga had a significant reduction in the symptoms, but the effect size was from small to moderate and 30% dropped out from the yoga group (Jindani, Turner, & Khalsa, 2015). The RCT studies on women with chronic, treatment-resistant PTSD were assigned into a ten-week trauma-informed yoga group (*Haṭha Yōga*) and a supportive women's health education group. Both the groups exhibited a significant decrease in PTSD symptoms during the first half of the

treatment (week 5), but these improvements were maintained in the yoga group, while the control group relapsed after its initial improvement (Van Der Kolk et al., 2014).

Another RCT study on breath-based meditation (*sudharsana yoga*) significantly reduced PTSD symptoms, hyper-arousal, re-experiencing symptoms, anxiety, and respiration rate in United States military combat veterans (Carter & Robert, 2016). This suggests that rhythmic breathing has the potential to restore cognitive functional reserve mechanisms.

### **3.3 RESEARCH EVIDENCE: TELE-HEALTH FOR PTSD**

Tele-health can differ in its format in terms of what interventions are provided and how video teleconferencing technology is used to deliver online ‘in-person’ therapy where the therapist and client can see and hear each other, without being in the same room. Tele-health is a relatively recent field, with early findings suggesting it being as effective as traditional in-person interventions (Bolton & Dorstyn, 2015). A systematic review of 41 studies on tele-therapy for veterans with PTSD was conducted. According to the researcher, tele-therapy is shown to be as effective as in-person therapy in minimising PTSD symptoms in the majority of cases, as well as providing high levels of acceptability and satisfaction. It is important to note that in-person counselling has a high dropout rate. (Schulz-Heik et al., 2017; Turgoose, Ashwick, & Murphy, 2018). A recent study that tested the acceptability and initial efficacy of a smartphone application mindfulness intervention for college student veterans (n=23) with PTSD (Reyes, Bhatta, Muthukumar, & Gangozo, 2020) found significant changes in resilience, mindfulness, PTSD, experiential avoidance, and rumination.

### **3.4 TELE YOGA**

Tele yoga (TY), as a modern approach to traditional yoga practices, has shown promising results in improving physical and psychological well-being in different patient populations.

Studies on ankylosing spondylitis patients demonstrated significant enhancements in physical function, disease activity, flexibility, balance, and quality of life with tele-yoga interventions (Acar et al., 2023). Additionally, research on hypothyroidism patients highlighted the effectiveness of a scientific yoga module delivered through telehealth in improving quality of life and managing symptoms (Nilkantham et al., 2023). Furthermore, investigations on COVID-19 patients revealed

that tele-yoga interventions led to improvements in clinical outcomes, inflammatory markers, and stress levels, suggesting its potential as a complementary treatment in hospital settings (Ruchi et al., 2023).

Another pilot study on 26 breast cancer female patients had the participants undergo online via Facebook group. The practice consisted of 4 weeks of TY consisting of 12 yogic *Suksma Vyāyama* lasting 12 minutes per session 4 times a week. The author concluded that teaching yoga via social media will provide better access to the therapeutic modality to patients at all points in the cancer care continuum globally (Leibel, Metri, Prasad, & Mears, 2019).

A small study (n=15) investigated the feasibility of TY for treating cardiac and respiratory issues associated with heart failure and chronic obstructive pulmonary disease (Selman, McDermott, Donesky, Citron, & Howie-Esquivel, 2015). TY involved home-based *Iyengar yoga* for 1-hour twice weekly for 8 weeks. The qualitative data from the pilot study revealed that the TY intervention was acceptable and appropriate, with participants experiencing physical and psychological benefits, including increased motivation and skills to effectively deal with shortness of breath and anxiety.

Another study examined the feasibility, acceptability and usefulness of TY in stress management instead of inperson yoga classes. The fifty of fifty-four participants reported it to be safe and feasible and its very usefulness in reducing stress and enhancing wellbeing, mental relaxation and calmness (Jasti, Bhargav, George, Varambally, & Gangadhar, 2020). Overall, TY has been deemed feasible, safe, and beneficial in enhancing both physiological and psychological parameters, emphasizing its role as a valuable adjunct to conventional care in various health conditions. See the summary of scientific research PTSD and Yoga in table 7.

**3.5 TABLE 6: SUMMARY OF SCIENTIFIC RESEARCH PTSD AND YOGA**

<b>S. No</b>	<b>Author</b>	<b>Type of Traumatic population PTSD</b>	<b>Style of yoga</b>	<b>Yoga components</b>	<b>Dose and frequency</b>	<b>Effect of outcome variables</b>
1	(Carter et al., 2013)	Male Vietnam veterans (n=31)	Sudarshan kriya yoga (SKY)	Modified SKY program with joint mobility exercises, focus on warrior values, religious content removed	22 hrs over 5 days + 92 hrs follow-up	Significant reduction in PTSD symptoms
2	(Mitchell et al., 2014)	Female(n=38)	Kripalu yoga	Progressive yoga postures with increasing difficulty	12 sessions 1*75 min/week or 2*75 min/week	Reduction in PTSD symptoms, especially in re-experiencing and hyperarousal symptoms
3	(Jindani, Turner, & Khalsa, 2015)	Mixed gender PTSD community participants(n=80)	Kundalini Yoga	Warm-ups, asanas, breathing, meditation, philosophy discussion; support video provided	90-min group session for 8 weeks + 15-min daily home practice a 20-minute	Improved PTSD symptoms, sleep, affect, stress, anxiety, and resilience
4	(Seppala et al., 2014)	Recently return Veterans- /male(n=21)	SKY	Three-stage victory breath, bellow breath, SKY breath, meditation, group discussion on resilience and reintegration	3 hrs group session daily for 7 days	Reduction in PTSD symptoms, especially hyperarousal and re-experiencing
5	(Van der Kolk et al., 2014)	Women with chronic PTSD (n=64), treatment-resistant	Trauma-informed yoga	Not reported	1 hr/week for 10 weeks	Reduction in PTSD symptoms
6	(Neukrich et al., 2019)	Civilian participants (n=3)	Trauma Sensitive yoga	Not reported	1 hr/week for 8 weeks	Improved interoceptive awareness
7	(Staples et al., 2013)	Veterans with military-related PTSD(n=12)	Therapeutic yoga	Self-awareness, postures with breath awareness, relaxation, visualizations, various yoga postures and breathing techniques	1 hr, twice/week for 6 weeks	Reduction in hyperarousal symptoms, improved sleep quality
8	(Descilo et al., 2010)	Tsunami survivors (n=183)	SKY	Four breathing techniques including ujjayi, bhastrika, Om chanting, SKY; discussion on trauma and life meaning	8 hrs total over 4 days (2 hrs/day)	Reduction in PTSD and depression

S. No	Author	Type of Traumatic population PTSD	Style of yoga	Yoga components	Dose and frequency	Effect of outcome variables
9	(Reinhardt et al.,2018)	Military veterans (n=51)	Kripalu yoga	Warm-ups, physical poses, breath work, moving meditation, final relaxation	90-min group sessions, twice/week for 10 weeks	Reduction in PTSD symptoms
10	(Reddy et al.,2014)	Veteran and civilian women with PTSD (n=38), at risk of substance abuse	Kripalu Yoga	Not reported	75-min sessions, total 12 sessions	Reduction in PTSD and substance abuse risk
11	(Mathersul et al., 2018)]	Veterans (n=85)	SKY	Three-stage victory breath, bellow breath, SKY breath, meditation, group discussion on resilience and empowerment	5-day intensive (3 hrs/day) + ten 60-min sessions (2x/week for 5 weeks)	It protocols study and in future study outcomes may findings.
12	(Telles et al., 2010)	Bihar flood survivors (n=22)	Integrated Yoga	Loosening (10 min), postures (20 min), breathing (25 min), guided relaxation (5 min)	1 hr daily for 1 week	Reduction in fear, anxiety, sadness, and disturbed sleep
13	(Telles, Naveen & Dash, 2007)	Tsunami survivors (n=47)	Vivekananda yoga program	Loosening (10 min), postures (20 min), breathing (15 min), guided relaxation	8 days, 60 min/day	Reduction in distress: fear, anxiety, sadness, and disturbed sleep
14	(Johnston et al., 2015)	Military personnel (n=12)	Kripalu Yoga	Warm-up (10–15 min), poses (50–55 min), deep relaxation (5–10 min); home practice encouraged	90-min classes, twice/week for 10 weeks + 15 min daily home practice	Reduction in PTSD, improved resilience
15.	(Zaccaria et al., 2020)	Veterans (n=27)	Trauma Sensitive Yoga (TSY)	Not reported	10 weeks, 60 min/session	Improved PTSD, depression, sleep, QoL; reduced cortisol and neurocognitive complaints
16.	(Chopin et al., 2020)	Veterans (n=49)	<i>Haṭha Yōga</i>	Alignment-focused poses, breath-movement link, motivational quotes, relaxation, pose modifications encouraged	8–12 weekly sessions, 60–90 min each	Reduction in PTSD, negative mood, arousal; improved social participation
17.	(Martin et al., 2015)	Women (n=32)	Kripalu yoga	Not fully detailed	75 min weekly for 12 weeks or	Growth modeling showed no change in activity or self-efficacy,

<b>S. No</b>	<b>Author</b>	<b>Type of Traumatic population PTSD</b>	<b>Style of yoga</b>	<b>Yoga components</b>	<b>Dose and frequency</b>	<b>Effect of outcome variables</b>
					twice/week for 6 weeks	but external motivation declined only in the yoga group.
18	(Cushing et al., 2018)	Military (n=23)	Vinyasa + Trauma-Sensitive Yoga	Breath work, physical postures, meditation; progressive and restorative sequences, body scan	60-min weekly sessions for 6 weeks	Improved PTSD symptoms, mindfulness; reduced insomnia, depression, and anxiety