

# The Eight Limbs of Yoga can be Maintained in a Veteran Friendly Yoga Program

## Abstract

**Background:** Posttraumatic stress disorder (PTSD) may occur after a traumatic event and has deleterious effects on individuals, including decreased quality of life and function. Yoga is an intervention that may help with the management of PTSD symptoms, however yoga interventions in research studies frequently only include postures and breathwork, not all eight limbs of yoga. **Aims and Objectives:** The aims of this qualitative study was to examine whether participants with PTSD in a group yoga program discussed the benefits of yoga in a way that represented the eight limbs of yoga, when answering questions about their experience of the yoga program. **Methods:** Qualitative data were collected after participants completed a 16-week yoga intervention. Qualitative data were collected via survey, reviewed, coded, and categorized into themes representing each of the eight limbs of yoga. **Results:** Overall, 108 people were randomized to the yoga intervention and 67 individuals completed the intervention and follow up questions used in these analyses. The mean age of the 67 participants in this study was 52.4 years ( $\pm 12.0$ ), the majority were male (70.2%), and most had combat-related trauma (62.7%). All eight limbs of yoga were represented in the data, including each of the five yamas and niyamas, even though the yoga intervention did not explicitly include Sanskrit terms, definitions, or education about yoga philosophy or the eight limbs of yoga. **Conclusion:** Results may indicate that yoga, even when only including postures, breathwork, intentions, and relaxation/meditation, may still address all of the yamas, niyamas, and the other eight limbs of yoga.

**Keywords:** Eight limbs, post-traumatic stress disorder, qualitative research, Yoga

## Introduction

Posttraumatic stress disorder (PTSD) occurs after exposure to a traumatic event and results in psychological symptoms, including, but not limited to nightmares, flashbacks, avoidance, change of mood, and hypervigilance.<sup>[1]</sup> Veterans are at risk for the development of PTSD due to trauma witnessed or experienced during times of conflict. The symptoms of PTSD negatively impact the quality of life, function, and return to normal day-to-day life.<sup>[1]</sup> Due to the significant impact of PTSD on everyday life, it is essential that interventions be developed to address PTSD. Yoga is an intervention that is gaining both popularity and evidence for use with PTSD.<sup>[2,3]</sup> However, there may be concern that when yoga is delivered in a group intervention in a manner that is intentionally secular and military-friendly, important elements of yoga, such as the eight limbs, may be lost.

Described in *The yoga sutras of Patanjali*, the eight limbs of yoga are meant to offer a pathway for a meaningful and purposeful life and are described in Table 1.<sup>[4]</sup> Researchers found that only 37% of yoga intervention publications include the detailed components of yoga interventions and that often postures, breathwork, and meditation were the only limbs included in the description of the yoga intervention.<sup>[5]</sup> The purpose of this qualitative study was to examine whether participants in a study of a group yoga program discussed the benefits of yoga in a way that represented any of the eight limbs of yoga when responding to open-ended questions about their experience of the yoga program.

## Methods

### Design

This is a secondary analysis of qualitative data collected as part of a larger randomized controlled study of a yoga intervention

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**Table 1: The eight limbs of yoga and a brief description of each**

The 8 limbs	Brief description
Yama	Ethical standards and sense of integrity, a pathway to contentment and happiness, providing guidance through our daily lives. Five Yams include: ahimsa, satya, asteya, brahmacharya, aparigraha.
Niyama	Self-discipline and spiritual observances, a pathway to contentment and happiness, providing guidance through our daily lives. Five Niyamas include: saucha, santosha, tapas, svadhyaya, ishvara pranidhana
Asana	Physical practice, movements, poses, postures. Combined with breath (specific movement on the inhale and the exhale).
Pranayama	Breathwork, used to connect the mind and body, moving the 'life force' or prana through the body
Pratyahara	Brining intentions or attention inward. The practice of restoring calmness in life through withdrawing the senses or bringing intentions inward.
Dharana	Meditation, enhancing concentration
Dhyana	Meditation, uninterrupted state of focus to the point of union with the divine
Samadhi	Meditation, focused on connection to the divine, experience of bliss or joy

for individuals with PTSD.<sup>[6]</sup> These data were collected after the completion of the yoga intervention through an online survey that contained open-ended questions. The idea to examine the data in relation to the eight limbs of yoga emerged when data analysis revealed that participants organically discussed the eight limbs, in spite of there being no explicit research questions or yoga teachings about the limbs.

### Participants

Participants were veterans or civilians diagnosed with PTSD who consented to complete a PTSD intervention. To be included in the study, all participants had to be 18 or older and have a current PTSD diagnosis confirmed with the Clinician-Administered PTSD Scale 5.<sup>[7]</sup> Individuals were excluded if they had a severe medical, cognitive, or mental health condition where yoga was contraindicated or was using yoga, meditation, relaxation, and mind-body reduction strategies more than one hour a week. Of the 212 individuals who consented to participate in the study, 108 individuals were randomized to the control group and were not included in these qualitative analyses; 108 individuals were randomized to the yoga intervention. Sixty-seven individuals completed yoga and the survey after the intervention. Demographic data, such as age, gender, veteran status, and trauma were collected at baseline assessments, before the intervention. The study was approved by the local Veterans' Administration office of research and the university Institutional Review Board.

### Intervention

The yoga intervention included a one-on-one introductory session with the yoga teacher to orient participants to the yoga practice and discuss individual concerns. After orientation, the study participant completed one 90-min group yoga session weekly for 15 weeks. The yoga intervention was developed by a yoga therapist and delivered in a group format by trained yoga teachers. The intervention was created to address the symptoms of PTSD. Each class included: a welcome; a centering practice to orient to space and body; setting an intention; pranayama; seated, standing, kneeling, prone, and supine postures; relaxation; returning from relaxation; restatement of the intention; and a closing acknowledging the benefits of practicing yoga with others, including "Namaste." The design of the yoga intervention included practices that addressed four of the eight limbs of yoga, including Asana and Pranayama, Pratyahara, and relaxation (considered as meditation addressing Dharana, Dhyana, and Samadhi). We used body-based practices for relaxation, for example, the participants were asked to "feel their body weight let go to gravity," going through 31 points of the body to reunite the mind and body. However, Sanskrit terms were never used for the limbs, and there was never explicit discussion of the eight limbs of yoga or yogic philosophies.

### Qualitative data collection

Qualitative data were collected after the yoga program through written responses to an online survey with open-ended questions. This method of collection and use of elicited data is advantageous as study participants may be more likely to honestly disclose their feelings and opinions about the intervention than in a one-to-one interview.<sup>[8-10]</sup> Online questions included: "what did you like most about the classes and why?" "what did you like least about the classes and why?" "name one change in attitude or beliefs that have occurred since beginning the program;" "name a change in a behavior that occurred since beginning the program;" "which new skills did you learn that will likely be used after the end of the program;" and "share any suggestions for future programming."

### Qualitative data analyses

These data analyses were an extension of the main analyses, which were completed to examine the benefits of the yoga intervention. Qualitative data were coded in multiple stages.<sup>[9,11]</sup> First, four researchers (AS, ES, AD, and LD) read all qualitative data and came together to agree on terminology and definitions to develop the original coding manual. Data were read again, line by line, and coded using the coding manual; new codes were developed for concepts that emerged from the data. During analyses, it became evident that, in addition to discussing benefits associated with yoga, participants also addressed benefits associated with the eight limbs

of yoga, as described in *The yoga sutras of Patanjali*.<sup>[4]</sup> Thus, new codes emerged to capture language regarding the eight limbs to complete these analyses. Patterns in the coding were reviewed to establish preliminary and secondary themes. Coded data were categorized into themes [Table 2]. After themes were developed and refined, two team members (ES and AD) completed the bulk of the analyses. AD first reread and coded all of the qualitative data. ES then coded the same text, and when coding differed, the two team members met to discuss the quotes and codes, thus ultimately coming to agreement for all coded and analyzed text.

## Results

### Demographic Data

Ultimately, 67 individuals completed the intervention and questions included in these qualitative analyses. Demographic data for the 67 individuals can be found in Table 3.

### Qualitative data

These qualitative data analyses were focused on participant answers related to the eight limbs of yoga. The three limbs associated with meditation were combined into one theme, as they may not be obtainable in a 16-week intervention that did not include explicit teaching of meditation practices: Dharana, Dhyana, and Samadhi. Data were categorized into themes and sub-themes [Table 2] and each is represented with salient quotes.

### Yamas and niyamas

In general, the five Yamas address ethical standards involving interactions with other people and the five Niyamas speak to self-discipline or personal practices. Each Yama and Niyama are described in Table 2 and we include representative quotes demonstrating how individual participants perceived that they benefited from the yoga intervention in relation to these two limbs of yoga.

#### Yamas

*Ahimsa (no harm or nonviolence)*. PTSD often includes negative thoughts and aggressive expression of anger (verbally and/or physically) and may include memories of violence to others or self. Quotes that represented ahimsa include:

*"I feel empowered and have the courage now to remove myself from an abusive relationship and know that I am worth something."*

*"...be kinder to myself."*

*Satya or truthfulness*. Related to PTSD, Satya may include being honest about experience and recovery, including when one is in the recovery process. Representative quotes include:

*"I can control my PTSD to an extent, I do not have to let it control me."*

*"I take time to check in with myself. I know how to calm myself down without a panic."*

*Asteya or nonstealing*. In PTSD recovery, Asteya may be committing to yoga, otherwise one might be stealing from own recovery. If one is focused on the past or the

**Table 2. Themes and sub-themes related to the 8 limbs of yoga**

Theme	Sub-theme	Definition used for coding
Yama	Ahimsa	Ahimsa is related to physical violence, but also violent words or thoughts to others or self. Ahimsa may be interpreted as having compassion for one's self.
	Satya	Satya includes being honest and truthful; truth is influenced by our own experiences or beliefs.
	Asteya	Asteya involves not taking things from others, this includes physical things but also time or happiness. If one is focused on the past or the future, the individual is potentially stealing from their time in the present.
	Brahmacharya	Brahmacharya translates to 'celibacy' but is also about managing or regulating energy or managing excessive energy or feelings.
	Aparigraha	Aparigraha may be about greed and not being attached to items. May be about being happy with the current state.
Niyama	Saucha	Saucha includes keeping our mind, body, and surrounding environment clean and uncluttered.
	Santosha	Santosha is the practice of being content and happy, accepting life as it currently is.
	Tapas	Tapas means being willing to do the work and to learn.
	Svadhya	Self-study is to find the happiness that is in each of us.
Asana	Ishvara pranidhana	Ishvara pranidhana is obtaining the highest happiness and ultimate goal of yoga.
Pranayama		Asana is the physical practice of yoga, the movement through postures or poses.
		Pranayama is the breathwork associated with yoga; breath may be paired with movement (asana) or be its own practice.
Pratyahara		Pratyahara is the practice of bringing intentions inward, moving toward calmness.
	Dharana, Dhyana, samadhi (combined)	Dharana is about concentration.
		Dhyana is the focus of the yoga practice into the body.
		Samadhi is connecting to the divine, experienced as bliss or joy.

**Table 3: Demographics of individuals who completed the study and data collection and included in these analyses**

Characteristics	Total (N=67)
Age, year (M and SD)	52.4 (12.0)
Gender	
Female	20 (29.9%)
Male	47 (70.2%)
Race	
White (Caucasian)	42 (62.7%)
Black/African American	20 (29.9%)
Other	5 (7.5%)
Marital status (partnered, yes)	42 (62.7%)
Education	
HS degree/GED or less	8 (11.9%)
Some college/completed trade school/associate's (2 year college) degree	32 (47.8%)
4-year college degree	14 (20.9%)
Some graduate/graduate degree	13 (19.4%)
Employed (yes)	31 (46.3%)
Veteran or currently serving in military/non-veteran (yes)	62 (92.5%)
Type of trauma	
Combat-related	42 (62.7%)
Childhood trauma/childhood sexual	11 (16.4%)
Military/adult sexual	8 (11.9%)
Other adult	6 (9.0%)
Years since the trauma (M and SD)	27.0 (16.9)
History of PTSD treatment (yes)	55 (82.1%)
Current psychiatric medications (yes)	52 (77.6%)
History of Yoga instruction (yes)	15 (22.4%)
History of meditation instruction (yes)	9 (13.4%)

future, the individual is potentially stealing from their time in the present. Quotes related to Asteya include:

*"[Yoga] keeps me in the moment, my moment, not the past where I do not belong and not to dabble in the future long periods. Less worry, anxiety and anger become focal points."*

*"Not stealing from own health."*

*Brahmacharya nonexcess or energy regulation.* PTSD may be linked to explosive anger or hypervigilance, both of which may be lessened through yoga and energy regulation. Quotes supporting enhanced control over energy or excessive feelings included:

*"I take time to relax much more than I used to."*

*"Breathing practice helps when I get a little out of control."*

*Aparigraha or nonattachment, nonpossessiveness, nongreed.* Aparigraha may translate to being happy with the current state, and not being attached to an idea, attitude, a fear, or a time before the PTSD triggering event or related physical injuries. When asked about a change in behaviors or attitudes, the following quote may represent less attachment to a prior fear:

*"The fear of all men."*

### Niyamas

*Saucha or cleanliness, purity.* PTSD includes negative and distracting thoughts (clutter) that may impact recovery. Quotes that represent Saucha include:

*"I can think clearly, better and control my breathing better."*

*"I can truly 'escape' my tormented thoughts by clearing my mind and focusing on my body, breathing, etc..."*

*Santosha or contentment.* In PTSD, Santosha may be represented by being content with the current pathway of recovery, but still striving to improve. Quotes representing Santosha include:

*"I now know that I can find a moment of contentment."*

*"[I am a] happy person now."*

*Tapas or self-discipline, training your senses, effort.* In a PTSD yoga study, tapas might be committing to the yoga practice and a healthy lifestyle. Many individuals talked about using breathwork outside of the practice and beginning a home practice, indications of being committed to their yoga practice. Quotes that represent tapas include:

*"I'm going to keep doing yoga every day. I am going to work at breathing better so I can make it subconscious."*

*"I will continue to practice yoga and utilizing the resources provided to continue on my own."*

*"I will likely continue with a structured yoga class at least once per week and will use relaxation techniques during flashbacks and other panic-inducing moments."*

*Svadyaya or self-study, an inner exploration of person, mind, body, and spirit.* Svadyaya may help explore complex life experiences and increase self-compassion. There are quotes representing Svadyaya or self-study:

*"I have begun to pay more attention to my overall physical health and wellness."*

*"I am moving through problems in a more measured, precise manner."*

*Ishvara pranidhana or dedicate or surrender.* In PTSD, yoga may help shift focus from "this thing happened" to "I am alive" or "I am recovering after this thing." In a 16-week intervention, Ishvara Pranidhana may simply be associated with an enhanced feeling of well-being; quotes include:

*"More of a sense of 'well-being' that was not there previously."*

*"I am a survivor, not a victim."*

### Asana

Poses may change the physical body in relation to strength, balance, and flexibility, and each movement was connected to breathwork (pranayama). Many individuals talked about how the physical practice impacted their physical body.

*“My lower extremities can gain flexibility and become pain free. I can keep my balance better. My brain is working better because I made a big breakthrough in moving one specific faulty belief from emotion to logic where I could deal with it. This is the hemispheres talking to each other.”*

*“I will most likely continue the breathing techniques and all body postures to increase proper blood circulation and muscle stretch and tone.”*

### Pranayama

Almost all participants spoke about the benefits they perceived related to breathwork, including the use of breathwork outside the yoga practice and in the real world. Some of the most salient quotes include:

*“The breathing was the most helpful.”*

*“When I am upset, I start doing the breathing techniques to try to calm down before I speak.”*

*“Learning the breathing to help relax so I don’t try to beat the xxx out of people.”*

*“That [I] can help myself to control my emotions with my breathing.”*

### Pratyahara

During the intervention, participants set an intention for their practice. Setting an intention may help in bringing the intention inward to improve focus and calmness. Participants talked about changing their mindset through the practice:

*“Positive reinforcement (was a benefit)”*

*“I am calmer and less stressed”*

*“To reinforce the ‘I matter’ mind set. To realize, I must take a moment to put myself in check when circumstances elevate my PTSD...”*

*“The thought of ‘I can survive’.it is not all that bad and you can do it.”*

### Dharana, Dhyana, and Samadhi

Dharana (concentration), Dhyana (state of focus to the point of uniting with the divine), and Samadhi (merge into one with the divine, experience of bliss) are each associated with meditation and take many years of practice to cultivate, thus are combined in these analyses. In the yoga intervention, these three limbs were addressed through a centering practice to help orient individuals to space and their own body and relaxation practices. Quotes that collectively represent these three limbs of yoga include:

*“[I have] more of a sense of ‘well-being’ that was not there previously.”*

*“Mindfulness breathing is a tool I can rely on to bring focus and concentration. Less mind wandering”*

*“As much as I can at least ten minutes minimum a day, helps me to relax more and concentrate on my breathing especially when I’m hyper alert.”*

## Discussion

It appears this is the first study to examine the benefits of a yoga intervention related to the eight limbs of yoga. It seems that while there is extensive research regarding the benefits of yoga, most research is associated with a change in outcome measures, showing improvements in cognitive, emotional, and physical measures. The results of this study suggest that the study participants in this intervention described outcomes related to all eight limbs of yoga, even though the intervention only explicitly included Asana, Pranayama, Intentions, and relaxation/meditation.

Elwy *et al.* completed a scoping review of the components of yoga.<sup>[5]</sup> The authors noted that only 37% of yoga research detail the components of yoga, and often only Asana, breathwork, and meditation were included in the description of the interventions. Breathing was the most common yoga component included in the review and is in 42% of interventions, meditation is in 23% of studies, and relaxation is included in 15% of studies. In our current study, we included postures, breathwork, intentions, and relaxation, but did not explicitly address or define all eight limbs during classes. Our qualitative results indicate that while the intervention did not teach practices or philosophy pertaining to all eight limbs, participants identified benefits associated with each limb. It is possible that many yoga research trials would be linked to similar results, with improvements noted across the eight limbs.

Potentially, we heard about changes related to each of the limbs due to the way the questions were asked. In our prior yoga studies, we simply asked about benefits or improvements after the intervention, thus we often heard about improved balance, pain, or depression.<sup>[12-15]</sup> In the current study we asked about changes in attitudes, beliefs, and behaviors, possibly allowing participants to talk or think about benefits in a different way, providing an opportunity for information about the eight limbs to surface organically. The questions about attitudes, beliefs and behaviors likely led to the emergence of quotes associated with the Yamas and Niyamas, which are traditionally more about personal integrity, self-discipline, and self-study. For example, quotes about being content or less fearful may not come up without a question about change in attitude, beliefs, and behaviors. It is also possible that had we asked more specific questions about the limbs, we may have received even more feedback about each limb.

Of note, this current yoga study included 16 weeks of yoga, double the number of weeks in most of our yoga studies. Dose of yoga varies greatly among studies<sup>[16]</sup> but may certainly impact outcomes, including outcomes related to the limbs of yoga. For example, a longer study, or lifelong practice, is likely needed to cultivate benefits related to Dharana, Dhyana, and Samadhi. It is however interesting, and encouraging, that these three limbs came up with only a 16-week practice. It is also believed that asana paired with

pranayama improves concentration, potentially allowing participant to discuss enhanced concentration (Dharana). Perhaps, our results also point to the idea that yoga is holistic, treating the whole body, and cannot be broken apart.<sup>[17]</sup> In the future, researchers may consider explicitly defining and integrating the limbs of yoga into the intervention. Further explanation of yoga may allow for a better understanding of yoga and the possible benefits.

### Limitations

Data were collected online, allowing for confidential and protected data collection, but limited our ability to rephrase interview questions or provide prompts or information participants. In addition, all data were collected in the American Midwest; data cannot be generalized to individuals outside the area. Of note is the lack of negative quotes regarding the eight limbs of yoga, as would be common in a qualitative study. This is likely due to our data collection pathway, where data were collected and analyzed to examine the benefits of the yoga intervention, but then further refined to address the eight limbs of yoga. Notably, traditional meditation was not included in the study. This was purposefully chosen as to not confound the results, as it is known that meditation improves PTSD.<sup>[18,19]</sup> Participants were instead guided through relaxation.

### Conclusion

Research suggests that people with PTSD benefit from interventions that help them change or confront their attitude, beliefs, and behaviors, such as cognitive behavior therapy.<sup>[20]</sup> It appears yoga is another promising pathway to changes in thinking and behaving that are of benefit to those who have PTSD, including PTSD and Veterans and civilians.

### Ethical clearance

This study was approved by the institutional review board and all participants provided consent.

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### Conflicts of interest

There are no conflicts of interest.

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