

# Healing Yoga for Cancer: Results from a Pilot Study

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## **Abstract**

*There were more than 1.5 million new cases of cancer diagnosed in the United States in 2013. Allopathic treatments such as surgery, radiation and chemotherapy, can cause a multitude of side-effects that can last for years after treatment has ended and it is crucial that an effective palliative intervention be developed to reduce side effects in cancer survivors. This pilot/feasibility study examined a yoga-based intervention protocol, the Healing Yoga for Cancer program, in a sample of women and men with various types of cancer. The eight week protocol included centering techniques, breathing exercises, hand gestures, gentle yoga movements, restorative yoga, yoga nidra and relaxation. Outcome was based on weekly measures of pain, lymphedema, neuropathy, anxiety, fatigue, cognitive function, digestive function and sleep hygiene during the week prior to the study and for eight weeks during the study. Six women and four men completed the study (mean age=55, mean time since diagnosis=23 months; one woman with stage IIIc ovarian cancer, one woman with stage I breast cancer, one woman with stage II breast cancer, one woman with stage III breast cancer, one woman with triple-negative stage IV breast cancer, one woman with multiple myeloma in remission, one woman with advanced multiple myeloma, one man with stage IV marginal zone non-Hodgkin's Lymphoma, one man with a refractory recurrence of stage II Hodgkin's Lymphoma, one man with stage II prostate cancer in remission, one man with stage IV pancreatic cancer; one Hispanic, one Asian/Indian; two Asian/Pacific Islanders, and six non-Hispanic whites). During the study two participants were hospitalized. Despite low statistical power, pre-to-post analyses showed significant decreases in some side effects. There was a 24% decrease in fatigue, a 20% decrease in pain, a 14% decrease in cognitive dysfunction, an 8% decrease in anxiety and an 8% decrease in insomnia (see figures 7-11). Analyses of frequency of home yoga practice showed that the weeks during which participants practiced more; they experienced correspondingly lower levels of pain, fatigue, cognitive dysfunction, anxiety and insomnia. These findings support the need for further investigation of the effects of the Healing Yoga for Cancer program in cancer survivors.*

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## **Introduction**

Practicing weekly yoga will potentially benefit participants through a reduction in common side effects of cancer treatment including pain, lymphedema, neuropathy, anxiety, fatigue, decreased cognitive function, digestive disturbance and sleep disturbance over the course of the eight week study.

The Healing Yoga for Cancer Research study investigated the potential for yoga practices to reduce the side effects of cancer treatment. The yoga practices to be used included asana (postures), pranayama (breathing), mudra (hand gestures), mantra (chanting), relaxation, yoga nidra and meditation taught in eight weekly 90 minute sessions. The purpose of this study is to provide participants with simple yogic practices that they can do at home

to help mitigate cancer treatment side effects. The purpose of the research is to expand knowledge of the effectiveness of therapeutic yoga in conjunction with medical cancer treatment in improving patients' quality of life.

## **Methods**

Participants were asked to report on levels of pain, lymphedema, neuropathy, anxiety, fatigue, cognitive function, digestive function and sleep quality each week. The sessions were taught by a certified Professional Yoga Therapist with video and audio recorded for online viewing which allowed participants who missed a session to watch or listen from home and complete the required weekly assessments online.

## **Participants**

Volunteers for this study included thirteen adults who

self-referred from the Cancer Support Community of the East Bay. Before start of the study, potential participants were assessed via phone interviews to evaluate their appropriateness for the study. Patients were excluded if they were not experiencing any of the side effects to be measured. Of those who volunteered for the study, two withdrew before the first session because they were unable to attend enough classes in person and one withdrew after week two citing health deterioration. Attrition subsequent to the beginning of the intervention was thus 23%. Of the ten remaining participants one woman chose to participate virtually by watching videos of the class at home and reporting her measures online and nine participated in person at the Cancer Support Community of the East Bay in Walnut Creek, California, USA. The mean age of the sample was 55 years (range 32-66). One participant was Asian/Indian, one was Hispanic, two were Asian/Pacific Islander, and six were non-Hispanic white. The average time since diagnosis was 23 months (range 1-67). Five were concurrently receiving chemotherapy treatments, five were concurrently receiving maintenance drugs, one was concurrently receiving radiation treatments and one was in remission. Two participants were hospitalized during the study and did not finish the final assessments. Attendance varied throughout the study, 100% attended week 1 with 100% reporting, 89% attended week 2 with 100% reporting, 67% attended week 3 with 100% reporting, 100% attended week 4 with 100% reporting, 89% attended week 5 with 100% reporting, 78% attended week 6 with 78% reporting, 89% attended week 7 with 89% reporting, 78% attended week 8 with 78% reporting.

### **Methods**

The protocol for this study did not receive approval from an Institutional Review Board. Prior to the study, informed consent was obtained from all participants. They were asked to provide basic demographic information and information relevant to their cancer diagnosis and treatment history, experience with yoga and other complementary and alternative therapies and their health history. Participants continued to receive the standard care provided by their health care providers

### **Data Collection**

The assessment questions were compiled from FACTIT Measurement System owned and copyrighted by David Cella, Ph.D. The Assessment Center Instrument Library which includes

instruments from PROMIS, Neuro-QOL, and the NIH Toolbox. PLoS Medicine from Joachim Scholz and colleagues present a pain assessment tool called StEP (Standardized Evaluation of Pain) in PLoS Medicine. The Rome Foundation which presents tools to assess more functional gastrointestinal disorders (FGIDs).

*Long Assessment* was completed immediately before the yoga session during week 1 and week 8. The Long Assessment included six pain questions, eight lymphedema questions, thirteen neuropathy questions, nine anxiety questions, ten fatigue questions, nine cognitive function questions, fifteen digestive function questions, and nine sleep quality questions.

*Short Assessment* was completed immediately before the yoga session during weeks 2, 3, 4, 5, 6, and 7. The Short Assessment included a subset of three of the Long Assessment questions per side effect measured.

*Post Session Assessment* was completed immediately before and after the yoga session during weeks 2, 4 and 6. The Post Session Assessment measured pain and fatigue and used the same three questions from the Short Assessment both before and after class.

### **Protocol**

The intervention protocol consisted of eight weekly 90 minute sessions conducted at the Cancer Support Community of the East Bay. The sessions were taught by a Certified Yoga Teacher and Professional Yoga Therapist (registered with the national Yoga Alliance) who holds a bachelor's degree in philosophy (UMW). The teacher has extensive experience teaching yoga and meditation techniques to cancer patients and the general public in private and group settings. On average participants attended seven of the eight sessions (range, five to eight). All sessions were videotaped and audio recorded and to ensure consistency of reporting throughout the study, participants were given the option to watch or listen to instruction at home and complete assessments online. Each week a different topic was covered and the topics that were covered were Week 1 Yoga for Healing, Week 2 Yoga for Fatigue, Week 3 Yoga for Pain, Week 4 Yoga for Anxiety, Week 5 Yoga for Digestion, Week 6 Yoga for Insomnia, Week 7 Yoga Mental Clarity, and Week 8 Building a Home Practice. Different centering practices, breathing exercises, hand gestures, yoga postures, restorative poses and relaxation techniques were used during each weekly session. A goal of this pilot program was to determine what yoga practices were the most effective in reducing participant's side effects. It was noted that the measurements taken during the week after some topics were taught, side effects dropped

more significantly than in other weeks. For example, After Week 3 Yoga for Pain, and Week 6 Yoga for Insomnia, all measures dropped significantly (see Figures 7-11). The yoga practices used during these two weeks will form the basis of further research.

The Healing Yoga for Cancer protocols included a wide variety of traditional yogic practices including centering (e.g., setting an intention for practice, chanting), conscious breathing exercises (pranayama e.g., breathing into the lower abdomen, exhalation retention, alternate nostril breathing), hand gestures that evoke an energetic or emotional response (mudras e.g., Adhi mudra, Vajrapradama mudra, Anjali mudra), yogic postures and movements (asana e.g., cat/cow, Childs pose, z-pose series), long held supine postures supported by props (restorative yoga e.g., supported heart opener, legs on a chair), and relaxation techniques (meditation e.g., yoga nidra, guided imagery). Participants were reminded to only do what felt comfortable for their bodies at any given moment and alternate postures and techniques were always given when necessary. Discussion of how and why yoga helps the body, mind, emotions and spirit were interwoven into each class.

### **Results**

Analyses of outcome measures were compiled from both the in person and virtual participants. In most cases if a student missed a class, they were able to participate virtually and complete their assessments online. It was shown that participants practiced the six categories of yogic methods more often throughout the study.

The weekly surveys showed the following trends over the eight week period. Participants were asked how many times in the previous seven days did they practice each form of yoga. 65% of participants were already practicing some form of yoga in the week prior to the study and the average number of days participants practiced are shown. Frequency of centering went from 1.7 to 3.6 times per week, a 38% increase (see Figure 1). Frequency of pranayama increased from 1.8-4.3 times per week, a 50% increase (see Figure 2). Frequency of mudras increased from 0.5 to 3.0 times per week, a 50% increase (see Figure 3). Frequency of asana increased from 1.3 to 2.4 times per week, a 22% increase (see Figure 4). Frequency of restorative yoga increased from 0.7 to 2.6 times per week, a 22% increase (see Figure 5). Frequency of relaxation increased from 1.5 to 3.6 times per week, a 42% increase (see Figure 6). These results show that participants felt that they received value in practicing the yoga protocol at

home between sessions.

The assessment measures used the following rating system for side effect severity (0=not at all, 1=a little bit, 2=somewhat, 3=quite a bit, and 4=very much).

One question from the Long Assessment was selected for the average figures below, the questions selected can be seen in Figures 7-11. It was shown that participants had a reduction in the severity of measured side effects the longer they participated in the study. Severity of fatigue reduced from 2.7 to 1.5, a 24% decrease (see Figure 7). Severity of pain reduced from 2.4 to 1.4, a 20% decrease (see Figure 8). Severity of cognitive dysfunction decreased from 1.5 to 0.8, a 14% decrease (see Figure 9). Severity of anxiety decreased from 1.2 to 0.8, an 8% decrease (see Figure 10). Severity of insomnia decreased from 1.2 to 0.8, an 8% decrease (see Figure 11). There were not enough members of the group who reported having lymphedema or neuropathy so the results for these two side effects were not significant. The participants had a combination of constipation, diarrhea and nausea and results were not significant for digestive disturbance.

After the study a voluntary survey was distributed online and 5 of the 10 participants returned the survey. Of the responses received 100% would participate in the study again at the Cancer Support Community; 80% cited the compassionate, skilled teacher and team of assistants being what they enjoyed most about the experience; 60% specifically mentioned that mudras were very helpful for the management of side effects. 40% suggested more specificity and/or more frequent assessment tools.

### **Conclusion**

Based on the population that participated in the study, future studies would be directed at an audience of cancer survivors who are in the maintenance phase of treatment. It was concluded that patients in an active phase of radiation and/or chemotherapy tended to drop out of the course due to health deterioration. It is the opinion of the instructor that patients in maintenance phase would be better able to participate in the study and in the assessments.

Based on the data collected and the experience teaching the classes, the instructor concluded that a single sequence would need to be developed that would be repeated for each class. This would give the students many weeks to learn the yoga techniques and would likely increase home practice frequency

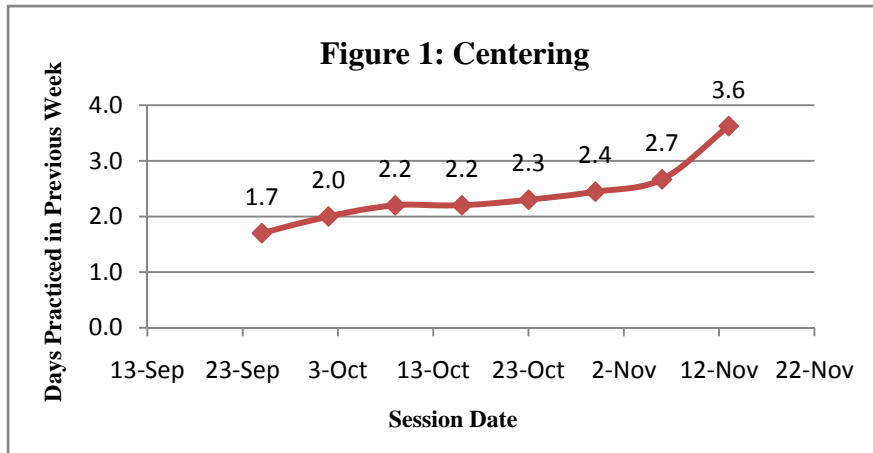
Based on survey responses, more specific and more frequent assessment tools would be used in future studies.

Based on the data collected, future studies would focus on therapeutic yoga that would address fatigue and pain specifically. In the case of lymphedema, since the study was not specific to breast cancer patients, there were not enough participants with lymphedema for the results to be meaningful. In the case of neuropathy, there were too few participants with neuropathy for the results to be meaningful. In the case of digestive disturbance, there were participants with nausea, diarrhea and constipation and different yoga practices are necessary to address these three issues. In the case of cognitive function, the levels of cognitive difficulty were fairly low in the group of participants for the results to be

meaningful. In the case of anxiety, the levels of anxiety were too low in most of the participants for the results to be meaningful; also several of the participants were taking medication for anxiety. In the case of insomnia, too many of the participants were taking medication for insomnia for the results to be meaningful. These findings support the need for further investigation of the effects of the Healing Yoga for Cancer program in cancer survivors.

***Notes***

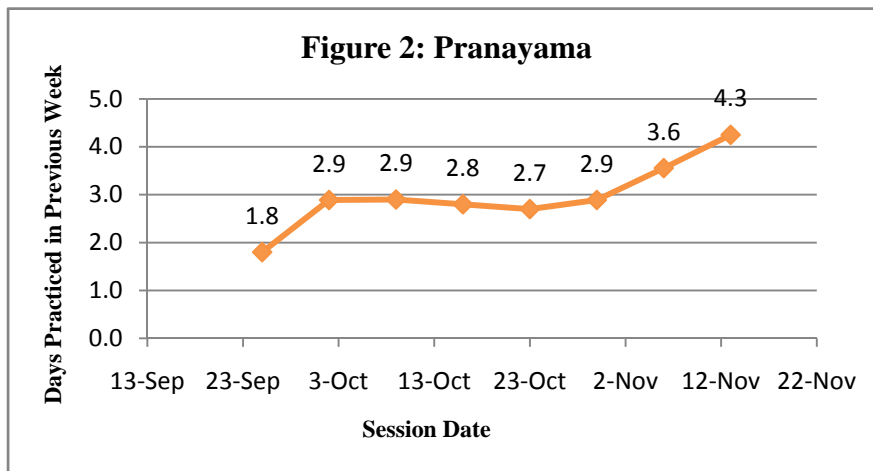
The study protocol is available for use by other yoga therapists. Please visit [www.yogacheryl.com](http://www.yogacheryl.com) or contact Cheryl Fenner Brown at [cherylbrown yoga@gmail.com](mailto:cherylbrown yoga@gmail.com).



**Figure 1:** Centering includes setting an intention and chanting.

Centering was the second most often practiced yoga prior to the study. During the study, frequency increased by 38%

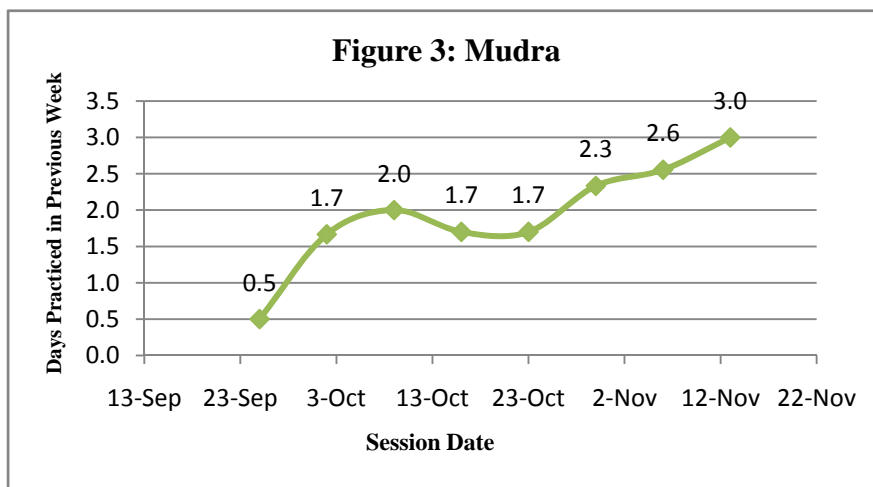
This trend shows reduced symptoms with more frequent centering practice.



**Figure 2:** Pranayama includes conscious breathing exercises.

Pranayama was the most frequently practiced yoga prior to the study. During the study, frequency increased by 50%

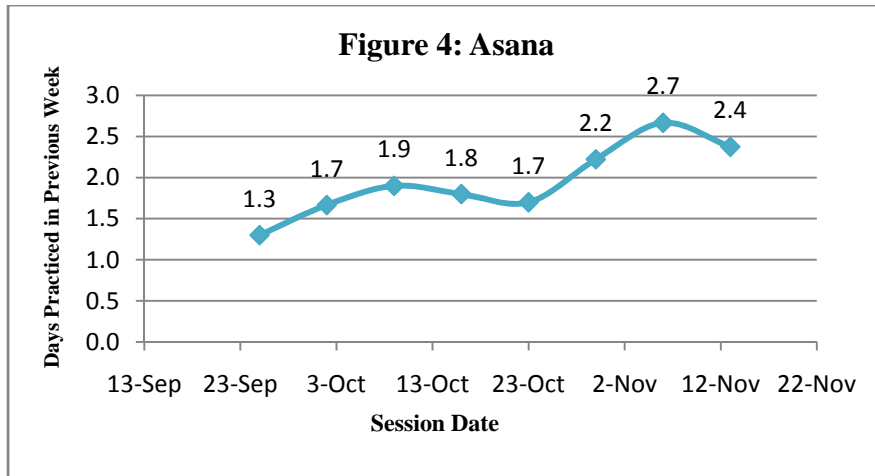
This trend shows reduced symptoms with more frequent pranayama practice.



**Figure 3:** Mudras include hand gestures.

Mudras were practiced least frequently before the study. During the study frequency increased by 50%

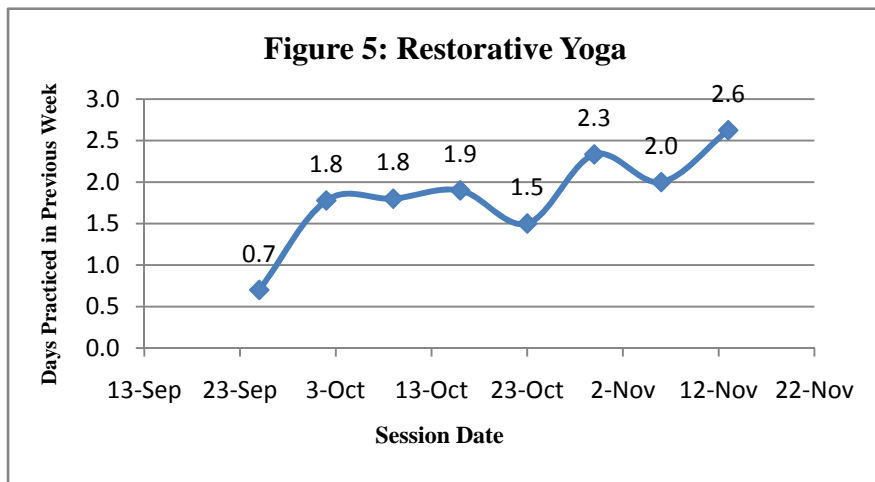
This trend shows that mudras were practiced least frequently before the study and symptoms reduce with more frequent practice.



**Figure 4:** Asana includes yoga movements and postures.

Asana was the second most frequently practiced yoga prior to the study. During the study, frequency increased by 22%

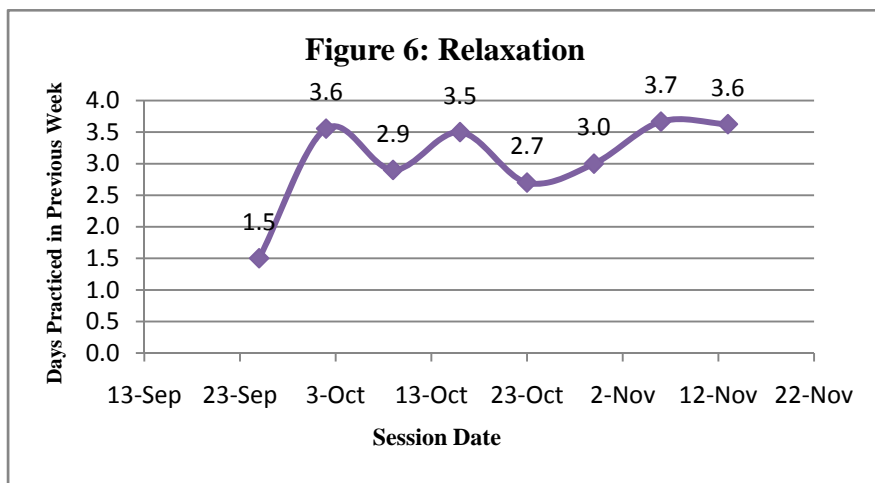
This trend shows reduced symptoms with more frequent asana practice.



**Figure 5:** Restorative yoga includes longer-held supine postures with the support of props.

Restorative yoga was the third most frequently practiced prior to the study. During the study, frequency increased by 38%

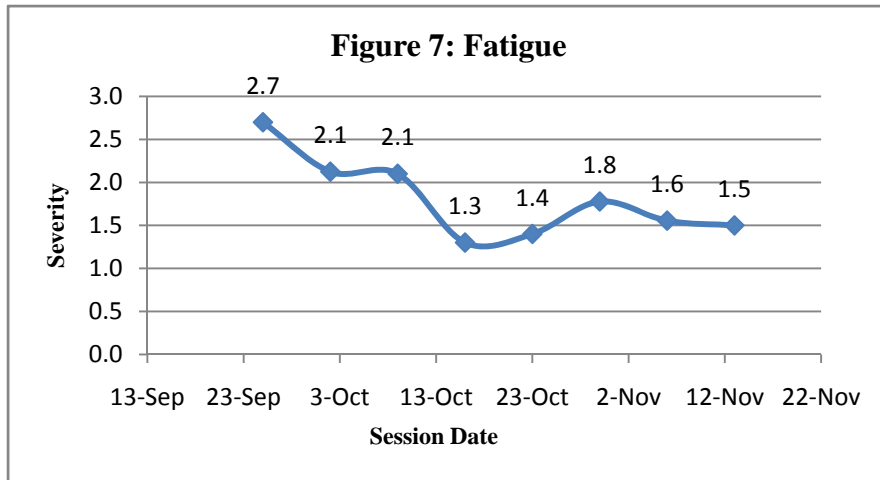
This trend shows reduced symptoms with more frequent restorative practice.



**Figure 6:** Relaxation includes yoga nidra and meditation techniques, often coupled with a reclining propped position.

Relaxation was the third least frequently practiced yoga prior to the study. During the study, frequency increased by 42%

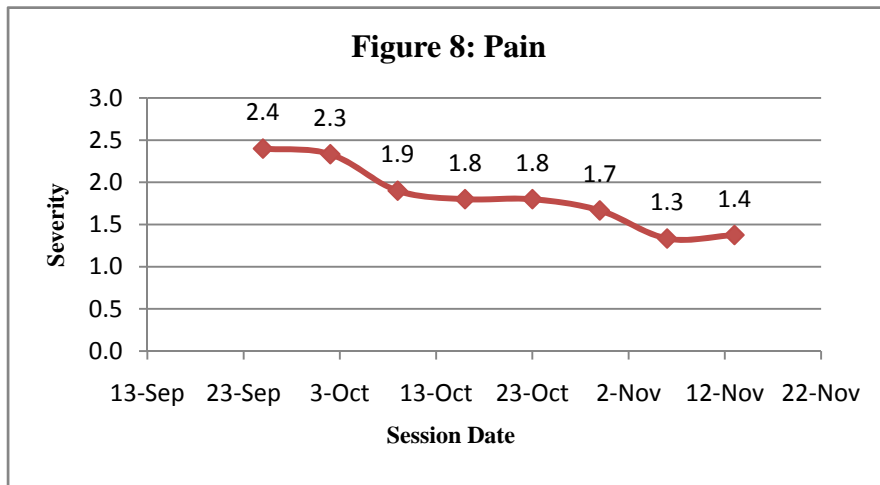
This trend shows reduced symptoms with more frequent relaxation practice.



**Figure 7:** Participants were asked how many times in the previous seven days “I feel fatigued”.

Fatigue was reduced by 24%

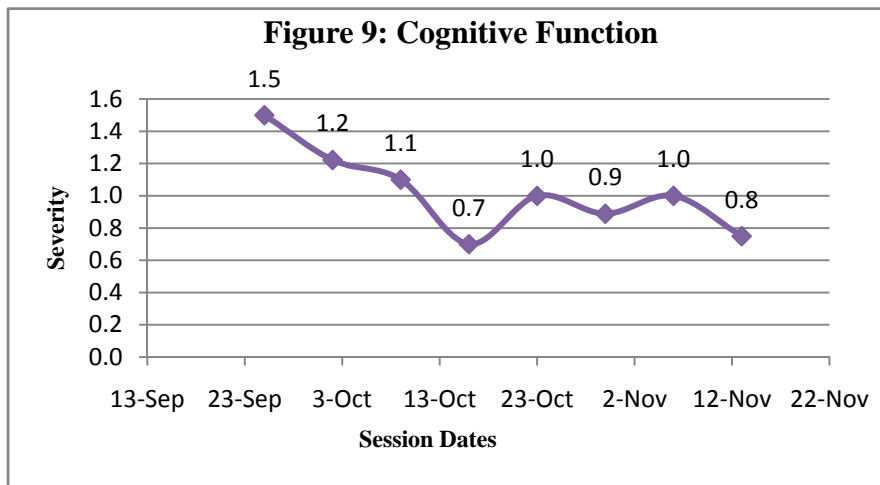
This trend shows a reduction in fatigue by that by alleviating stress, balancing body and mind, yoga can help to bring up stamina.



**Figure 8:** Participants were asked how many times in the previous seven days “I have certain parts of my body where I experience pain”.

Pain was reduced by 20%

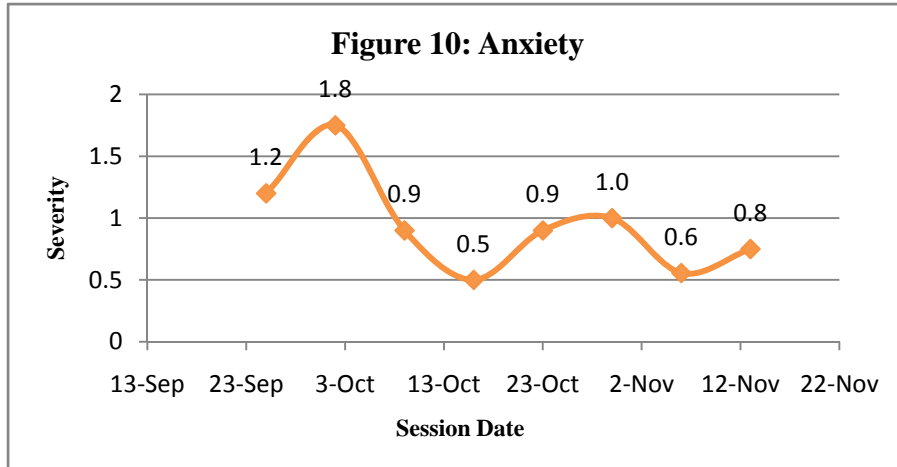
This trend shows that consistent yoga practice brings awareness to the body and can help to alleviate pain



**Figure 9:** Participants were asked how many times in the previous seven days “My thinking has been slow”.

Cognitive dysfunction was reduced by 14%

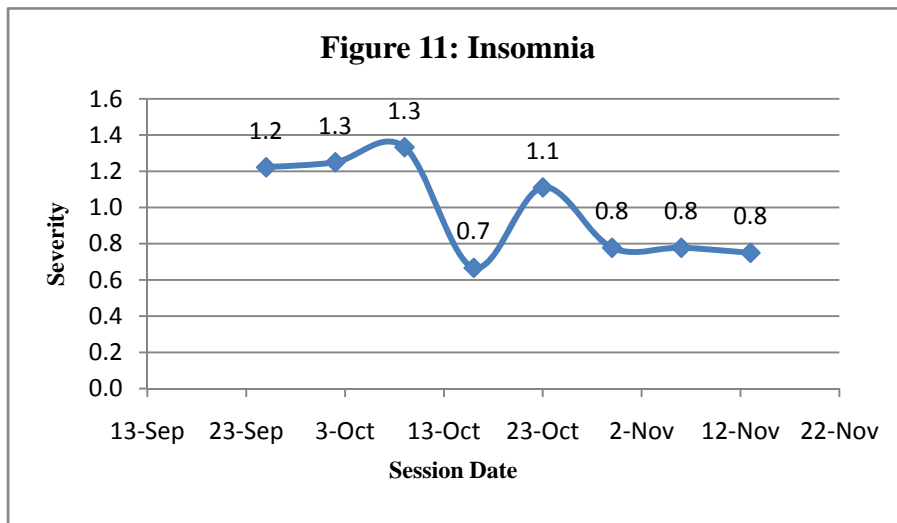
This trend shows that yoga can foster mental acuity and clarity.



**Figure 10:** Participants were asked how many times in the previous seven days “I feel sad”.

Anxiety was reduced by 8%

This trend shows that yoga can help people to lighten the emotional load of their condition and foster well-being.



**Figure 11:** Participants were asked how many times in the previous seven days “I had difficulty falling asleep”.

Insomnia was reduced by 8%

This trend shows that yoga gave participants tools in order to combat insomnia.