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Potential long-term effects of a mind-body intervention for women with major depressive disorder: Sustained mental health improvements with a pilot yoga intervention

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Abstract

Despite pharmacologic and psychotherapeutic advances over the past decades, many individuals with major depressive disorder (MDD) experience recurrent depressive episodes and persistent depressive symptoms despite treatment with the usual care. Yoga is a mind-body therapeutic modality which has received attention in both the lay and research literature as a possible adjunctive therapy for depression. Although promising, recent findings about the positive mental health effects of yoga are limited because few studies have used standardized outcome measures and none of them have involved long-term follow-up beyond a few months after the intervention period. The goal of our research study was to evaluate the feasibility, acceptability, and effects of a yoga intervention for women with MDD using standardized outcome measures and a long follow-up period (one year after the intervention). The key finding is that previous yoga practice has long-term positive effects, as revealed in both qualitative reports of participants' experiences and in the quantitative data about depression and rumination scores over time. Although generalizability of the study findings is limited because of a very small sample size at the one-year follow-up assessment, the trends in the data suggest that exposure to yoga may convey a sustained positive effect on depression, ruminations, stress, anxiety, and health-related quality of life. Whether or not an individual continues with yoga practice, simple exposure to a yoga intervention appears to provide sustained benefits to the individual. This is important because it is rare that any intervention, pharmacologic or non-pharmacologic, for depression conveys such sustained effects for individuals with MDD, particularly after the treatment is discontinued.

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Background

Major depressive disorder (MDD) is a common debilitating chronic illness, with a life time prevalence of 16% in the U.S. (Kessler et al., 2003). Despite pharmacologic and psychotherapeutic advances over the past decades, many individuals with MDD do not achieve remission and experience persistent depressive symptoms and recurrent episodes (Zajecka, Kornstein, & Blier, 2013). As such, many patients become dissatisfied with the usual care and seek out adjunctive or complementary therapies, such as yoga. Yoga is a mind-body therapeutic modality which has received attention in both the lay and research literature as a possible adjunctive therapy for depression. Involving a combination of breathing practices, meditative practices, and gentle physical poses, yoga is an attractive therapy because it is relatively easily available in the United States and it can be self-administered in a variety of “doses” (i.e. daily to weekly home practice and/or group classes) (Kinser, Goehler, & Taylor, 2012). Preliminary studies suggest that yoga may be a reasonable and effective adjunctive therapy for individuals with depressive disorders, such as MDD, and findings suggest that various yoga interventions may help with the psychological, physical, or cognitive symptoms of depression, stress, and anxiety (Bussing, Michalsen, Khalsa, Telles, & Sherman, 2012; Cramer, Lauche, Langhorst, & Dobos, 2013). Although promising, the findings are limited because very few studies have used rigorous methodologies with standardized outcomes measures, there is not a standard for reporting yoga interventions, and none of the studies have involved long-term follow-up beyond a few months after the intervention period (Cramer et al., 2013; Sherman, 2012). A recent meta-analysis of studies on yoga for depression reveals that yoga appears to be effective for the short-term remission of depression symptoms, particularly in individuals with elevated levels of depression, yet the majority of studies do not report any long-term effects of yoga practice which limits the usefulness of findings (Cramer et al., 2013). Of great interest to providers and patients alike, the long-term effects of yoga for depressive symptoms is important to evaluate particularly because many individuals with MDD experience recurrent episodes of depression and have high rates of relapse despite treatment with the usual care.

To our knowledge, there are no currently published studies that involve long-term follow-up, beyond a few months, of the feasibility and effects of yoga for depression. As such, the goal of our research study was to evaluate the feasibility, acceptability, and effects of a yoga intervention for women with MDD with a long follow-up period (one year after intervention). Specifically, this study was designed to address the following research questions:

1. what is the feasibility and acceptability of yoga for women with depression and how would participant describe their experiences with yoga or health-education control activities one year after their completion of an 8-week intervention?;
2. are there differences in depression severity, stress, anxiety, rumination, health-related quality of life in women who received a yoga intervention one year ago vs. women who received an attention-control activity one year ago?; and,
3. are there any differences between individuals who continued to practice yoga on their own after the end of the intervention and those who did not?

Methods

The University of Virginia and the Virginia Commonwealth University Institutional Review Boards reviewed and approved the study protocol, recruitment plans, and guidelines for the protection of confidentiality of participants. Written informed consent was obtained from participants prior to their enrollment in the study and verbal consent was obtained prior to audiotaping the participant interviews.

Study Design, Sample, Setting, & Recruitment

Conducted in the community in an urban area on the east coast of the United States, this randomized, clinical trial utilized a mixed-methods approach with an embedded design in order to explore feasibility, acceptability, and effects of yoga for women with depression. Participants continued their “usual care” for depression and their usual daily activities. Participants participated in the initial 8-week study and were offered the opportunity to participate in the long-term follow-up study.

Initial Short-Term Study—Sampling and recruitment techniques are fully reported elsewhere (Kinser, Bourguignon, Taylor, & Steeves, 2013; Kinser, Bourguignon, Whaley, Hauenstein, & Taylor, 2013). Briefly, IRB-approved recruitment materials were displayed in the offices of primary care providers, women’s health providers, and mental health care providers, as well as in public locations. Individuals who contacted the research team participated in a telephone-based eligibility screening and, if eligible, participated in a face-to-face visit for informed consent, in-depth screening, and completion of baseline study measures. Inclusion criteria included: women age 18 and above with a diagnosis of MDD or dysthymia as confirmed by the M.I.N.I. Neuropsychiatric Interview (MINI) 6.0 depression module; moderate to severe depression, defined by a score of 10 or above on the 9-item Patient Health Questionnaire (PHQ-9). Exclusion criteria were: high suicide risk, as defined by a risk score of 17 or greater on the MINI suicidality scale; psychosis or mania (confirmed by the MINI) or clinically significant alcohol abuse (defined by a score ≥ 2 on the CAGE questionnaire); physical conditions making yoga difficult; hospitalization or surgery in the past month; changes in antidepressant medication dosing over the past month or expected changes during the intervention period; regular yoga or meditation practice longer than 1 month within the past 5 years; and non-English speaking. Participants were randomized into one of two groups (yoga intervention group or attention-control group) using random numbers generated by computer. Participants were offered the opportunity to sign an additional consent form to be contacted in the future for long-term follow-up.

Long-Term Follow-Up Study—For long-term follow-up, participants were contacted one year after their completion of the short-term study if they had signed a statement in their informed consent document from the initial study. The only inclusion criteria for this study were that participants were eligible for and were included in the initial study.

Intervention

Participants in both the yoga and the health-education (HE) control group were encouraged to maintain their typical life style activities, continue the use of any regularly prescribed medications, and continue regularly scheduled visits with healthcare providers.

Yoga group—The short-term (8-week) intervention involved weekly group classes and daily home practice. Taught by experienced yoga teachers, the 75-minute group gentle Hatha yoga class was designed to be safe for and accessible to yoga-naïve individuals and involved the components listed in Table 1. To maintain treatment integrity, a manual was developed by the investigator and followed by all teachers; this manual included weekly sequences of gentle yoga movements, breathing practices, and relaxation practices specifically designed for depression (for a full description, please see Kinser et al, 2013b). For home practice, participants could choose to follow a DVD and/or class handouts provided after every class with pictures and descriptions of the yoga poses practiced that week (Weintraub & Duncan, 2007; Kinser et al., 2013b).

Health-education (HE) control group—The short-term (8-week) HE attention-control activity involved a series of health education sessions facilitated by a registered nurse. The 75-minute weekly sessions involved lectures, videos, and discussions, as outlined in Table 1. To enhance treatment integrity, a manual with details about each session was developed by the investigator and followed by each of the registered nurses who led the activities (Kinser et al., 2013b).

Data Collection and Analysis Plan

Our first research aim was to examine the feasibility and acceptability of the yoga intervention for women with depression by evaluating descriptions of participants' experiences with the yoga or control activities one year after completion. To collect data for this aim, private one-on-one semi-structured interviews were conducted in which questions were asked regarding participants' experiences with the intervention (yoga or health education sessions) one year ago, aspects of that intervention that were/were not beneficial, what made participation in the intervention difficult/easy, perceptions of their current mood and their mood over the past year, and perceptions of the use of yoga or information from the health education sessions for their mood.

To evaluate the feasibility and acceptability of yoga over the long-term, the qualitative interview data was analyzed through content analysis based on descriptive qualitative methodology with phenomenological overtones and analysis through a hermeneutic circle (Agar, 1986; M. Cohen, Kahn, & Steeves, 2000; Sandelowski, 2000). Briefly, the iterative process of analysis included: reading all transcripts from interviews to get an overall view of the data, identifying quotes that seemed to be important with repeating themes across participants, grouping quotes into categories based upon similarities, re-reading all of the data, and, finally, organizing themes for examination and interpretation.

Our second research aim was to examine levels of and changes in depression severity, stress, anxiety, rumination, and health-related quality of life in women who received a yoga

intervention one year ago vs. women who received an attention-control activity one year ago. To collect this data, participants engaged in short face-to-face visits during which they completed questionnaires about their general life style patterns, as well as questionnaires regarding the following: (1) *Depression* severity: evaluated using the Patient Health Questionnaire (PHQ-9), a widely used instrument based on the diagnostic criteria for depressive disorders in the DSM-IV-TR which includes 9 self-report items regarding depressive symptoms over the past 2 weeks on a 4-point Likert scale. Total scores range from 0–27, where 0–4 indicates minimal depression, 5–9 mild depression, 10–14 moderate depression, 15–19 moderately severe depression, 20 severe depression (Kroenke, Spitzer, & Williams, 2001; Löwe, Kroenke, Herzog, & Gräfe, 2004; Spitzer, Kroenke, Williams, and the Patient Health Questionnaire Primary Care Study Group, 1999); (2) *Stress*: evaluated using the Perceived Stress Scale-10 (PSS-10), a widely used psychometrically sound instrument, intended to measure the degree to which an individual perceives stress during the past month (Cohen & Williamson, 1988; Cohen, 1994; Cohen, Tyrrell, & Smith, 1993; Hewitt, Flett, & Mosher, 1992; Logsdon & Hutt, 2006); (3) *Anxiety*: evaluated with the State Trait Anxiety Inventory (STAI); the S-Anxiety portion of the STAI evaluates subjective state anxiety, measuring how an individual feels currently (Spielberger, Gorsuch, & Lushene, 1970; Spielberger, 1983; Tilton, 2008); (4) *Rumination*: evaluated with the Ruminative Responses Scale (RRS) which consists of 10 items addressing various aspects of rumination, or self-judging and negative self-talk (Conway, Csank, Holm, & Blake, 2000; Treynor, Gonzalez, & Nolen-Hoeksema, 2003); (5) *Health-related Quality of Life*: evaluated with the Short Form Health Survey version 2 (SF-12), which allows for a calculation of a mental health component score. Respondents report about some mental and physical health concepts “now” and some “over the past 4 weeks”; the instrument has good psychometric properties tested in numerous study populations (McHorney, Ware, & Raczek, 1993; McHorney, Ware, Lu, & Sherbourne, 1994; McHorney, 2000; Ware, n.d.). A high score indicates a high level of mental health-related quality of life.

For analysis of this second research aim, separate mixed effects linear models were used to compare changes in the means across time between the yoga and attention-control groups for the measures of depression, stress, anxiety, rumination, and health-related quality of life over time. Model parameters included a random effect for participant and fixed effects for group (yoga & attention-control), week (0, 4, 8 & 52 for stress, anxiety, rumination and quality of life, and 0, 2, 4, 6, 8 & 52 for depression) and a group by week interaction. Contrasts were constructed to compare the change from baseline (week 0) to each subsequent week between the 2 groups, with a focus on the contrast comparing the change from baseline to week 52. An $\alpha = 0.05$ was used for all tests.

Results

Recruitment

A CONSORT diagram of participant recruitment, enrollment, and completion of the study is shown in Figure 1. As discussed in-depth elsewhere (Kinser et al., 2013b), 48 women initially expressed interest in the study and, ultimately, 27 women consented to participate in the study and they were allocated to the yoga group or the attention-control group. Nine

individuals dropped out very early in the study, all within the first two weeks of the intervention period (n=3 from yoga group; n=6 from HE control group). Two women agreed to be interviewed and cited scheduling difficulties as their reasons for dropping-out; the others were unavailable for follow-up. Eighteen participants completed the 8-week intervention activities and were included in initial analysis of findings. One year (52 weeks) later, all participants were contacted to participate in a follow-up study and 9 participants consented to participate (n=7 from yoga group; n=2 from HE control group).

Sample

Twenty-seven women participated in the intervention study and nine of these participants participated in the one-year (52 weeks) follow-up study. See Table 2 for demographic characteristics of all the initial participants (n=27) and the participants of the one-year follow-up study (n=9). Briefly, the mean age of participants at one-year follow-up was 38.9 (12.6) and the majority of the women were non-white, had at least a college degree, and were single/divorced. Baseline group differences on key study variables (depression, anxiety, perceived stress, ruminations, and the mental component of health-related quality of life) are included in Table 3, and are separated by all initial study participants and the one-year follow-up participants.

Findings

Qualitative Data/Interviews—Data from the semi-structured interviews with study participants one year after their completion of the 8-week intervention revealed common themes regarding long-term feasibility and acceptability of yoga for stress and depression. The first theme that arose among participants is that there were long-term benefits from having the experience of participating in yoga, even without current or sustained practice. The second theme is that participants identified a few simple methods which could be utilized to sustain future yoga practice. Quotes from participants are presented to support and illustrate these themes.

Theme #1- Long-term benefits of yoga: All of the women stated that they continued to feel multiple benefits of their experience with yoga, whether or not they continued to attend yoga classes currently: Participants stated that yoga became a “tool in the toolbox”, such that they had gained new skills to use in their everyday lives for managing symptoms of depression and stress. Some of the “tools” they cited including breathing, centering, relaxation, gentle stretching, healthy visualizations, and physical movements to “get out of my head and have some control”. They also stated that their experience with yoga provided them with the “courage to do more”, such as get out of the house, try new things, and even eat more nutritious foods. One common long-term benefit is that they gained a “new narrative about depression” whereby participants suggested that, over the past year, they had been able to either occasionally separate themselves from their depression saying “I am more than my depression” or they had been able to be honest with themselves and others about their feelings. Participants suggested that the group yoga classes provided them with the experience that it is okay to “just be who I am” and “just show up”. Of note, almost all of the women suggested that they continued to use techniques learned from the yoga intervention, even if they did not “formally” practice yoga currently.

Theme #2-- Methods to overcome barriers to sustained practice: Participants acknowledged that sustaining a consistent yoga practice over a long period of time, especially when constrained by time, anhedonia, and financial concerns, can be difficult. However, they all consistently provided ideas for ways to overcome these barriers. First, most participants suggested that it would be helpful to have a “yoga buddy” or someone with whom to encourage each other to practice. Second, participants consistently stated that emails, phone calls, or text messages could be quite helpful for reminders to practice or even to “refocus your thoughts”. Finally, multiple participants thought that having recommendations to practice yoga by their healthcare providers would be a helpful and encouraging method, especially for those who are more externally motivated and “tend to listen to people who are in that position”.

Quantitative Data—Table 4 presents the adjusted means from the mixed model analysis of depression, stress, anxiety, rumination, and the mental component of health-related quality of life by group and week. The data met all assumptions for mixed model analysis. Statistically significant differences between the groups in the change from baseline to each subsequent are indicated. We have previously reported short-term outcomes (over the 8-week intervention period; Kinser et al., 2013b), thus the focus of this table and subsequent figures is on long-term (1 year/52 weeks) outcomes and our reporting of significance is related solely to the long-term group differences. Specifically, although participants in both groups experienced decreases in depression over time, there was a statistically significant difference ($p=0.0017$) between groups over time whereby the yoga group sustained a decrease in depression severity to a “mild” level one year after completion of the intervention. In addition, there was a difference between the groups over time ($p=0.0172$) on the ruminative responses scale, where the yoga group sustained a significant decrease in ruminations over the one year period. Longitudinal changes in other study variables revealed a significant time effect in which both groups experienced decreases in perceived stress, state anxiety, and the mental health component of health-related quality of life; however, there were no sustained significant group differences at 52 weeks (1 year) in these three variables.

In an attempt to understand the potential benefit of sustained yoga practice (versus those who did not sustain a yoga practice) one year post-intervention, plots of the raw (or unadjusted) means and standard errors are presented in Figures 2–6. In these plots, the yoga group means are divided into those participants who sustained yoga versus those who did not at 52 weeks. Because the sample sizes are very small, no formal statistical analysis was performed on these means. However, the trends revealed in these plots warrant close attention because they suggest that sustaining yoga practice, no matter infrequent, can help participants maintain or further decrease depression symptoms. For example, in Figures 2, 3, and 4, it is clear that sustaining yoga practice may confer a decrease in ruminations, stress, and depression beyond simply having had the experience of yoga practice one year ago.

Discussion

The purpose of the current study was to evaluate the long-term outcomes of participation in an intervention study for depression in women with major depressive disorder. We evaluated

these women one year after the intervention period, and the key findings from this study are that: (1) previous yoga practice has long-term positive effects, as revealed in both qualitative reports of participants' experiences and in the quantitative data about depression and rumination scores; and (2) sustained yoga practice, even if infrequent, may lead to the continued improvements in depression, stress, and ruminations over time. Despite limitations of a very small sample size, the trends in the data suggest that exposure to yoga conveyed a sustained positive effect on depression, ruminations, stress, anxiety, and health-related quality of life in our sample of women with MDD.

To our knowledge, this is one of the few studies evaluating long-term outcomes, and, as such, the findings from this study provide important insights into the potential long-term impact of yoga for depression. Our initial short-term studies revealed that a yoga intervention is feasible, acceptable, and beneficial for depressed women (Kinser et al., 2013a; Kinser et al., 2013b). This study builds upon those findings by suggesting that depression and rumination scores appear to be improved by a yoga intervention not only in the short-term but also one year after exposure to yoga. Whether or not an individual continues with yoga practice, simple exposure to a yoga intervention appears to provide sustained benefits to the individual. This is important because it is rare that any intervention, pharmacologic or non-pharmacologic, for depression conveys such sustained effects for individuals with major depressive disorder, particularly after the treatment is discontinued. While numerous studies have shown the efficacy of antidepressant medications in preventing relapse and recurrence of depression, the antidepressant effects are not sustained once the medication is discontinued (Geddes et al., 2003). On the other hand, there is evidence that cognitive behavioral therapy for the treatment of residual symptoms after pharmacotherapy does have long-term beneficial effects on the course of MDD, with reduced rates of relapse even 6 years after treatment is discontinued (Fava et al., 2004). Yoga may be a similarly effective intervention for enacting sustained beneficial effects.

The generalizability of the study findings is limited because of the very small sample size. In addition, it is very possible that volunteer bias occurred in this study, wherein the participants who volunteered for long-term follow-up had enhanced mental wellness compared to those who were lost to follow-up (Kinser & Robins, 2013). Considering that this was a pilot study, it is suggested that future research studies include larger sample sizes with long-term follow-up of participants and a careful consideration of retention methods.

Future large-scale studies should include methods to help participants identify when and how yoga could be helpful for their mood in the short and long-term and methods to help participants identify how to continue integrate yoga into life without the support of a structured intervention study. For example, researchers might consider creating an intervention protocol in which participants are integrated into community-based classes in the last few weeks of the intervention or using motivational interviewing techniques to assist participants in identifying how to maximally integrate and utilize yoga techniques in their lives. Furthermore, researchers must carefully consider how to enhance the rigor of yoga research by establishing robust yoga treatment protocols and utilizing clear reporting mechanisms, while health care providers must consider ways to integrate recommendations

about mind-body modalities into practice (Kinser & Robins, 2013; Park, 2013; Sherman, 2012).

In conclusion, findings from our pilot study suggest that individuals with MDD may benefit from yoga practice both in the short-term and in the long-term. Participants in our study who had either participated in the yoga intervention and/or sustained even a minimal degree of a yoga practice over a one-year period had trends in decreased depression, ruminations, stress, anxiety, and mental health-related quality of life. If these findings can be replicated in additional rigorous studies with larger sample size, then there will be important implications for clinical practice such that a yoga practice may be recommended to individuals to help them manage their depression and related symptoms.

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Highlights

- We evaluate effects of a yoga intervention for women with MDD over one year
- Exposure to a yoga intervention appears to provide sustained long-term benefits
- Depression, ruminations, stress, anxiety, and quality of life may improve with yoga
- It is rare that any intervention for depression conveys such sustained effects

Figure 1.
CONSORT diagram

Figure 2.
Changes in Depression over Time

Figure 3.
Changes in Stress over Time

Figure 4.
Changes in Ruminations over Time

Figure 5.
Changes in State Anxiety over Time

Figure 6.
Changes in Mental Component of Health-related Quality of Life over Time

Table 1

Description of Intervention Activities

Yoga Intervention Group	Health-Education Control Group
<ul style="list-style-type: none"> ▪ Length: 75 minutes Location: local yoga studios ▪ Gentle Hatha yoga class led by certified yoga teachers ▪ Basic components of each class: <ul style="list-style-type: none"> ○ Intention-setting and centering ○ Breathing practices ○ Physical movements ○ Meditative self-inquiry & relaxation practices 	<ul style="list-style-type: none"> ▪ Length: 75 minutes Location: public libraries ▪ “Health & Wellness Program” - health education sessions led by registered nurses on multiple topics: <ul style="list-style-type: none"> ○ alcohol safety, sleep, nutrition, heart health, bone health, depression, anxiety, stress

Table 2

Demographic Characteristics: All Initial Participants and 52 weeks (One-Year) Follow-Up Participants in Yoga and Health-Education (HE) Control Groups

Demographic Characteristics	All Initial Participants			52 weeks (One-Year) Follow-Up Participants		
	Overall (n = 27) mean (SD) or n (%)	Yoga (n = 15) mean (SD) or n (%)	HE Control (n = 12) mean (SD) or n (%)	Overall (n=9) mean (SD) or n (%)	Yoga (n=7) mean (SD) or n (%)	HE Control (n=2) mean (SD) or n (%)
Age	43.3 (15.6)	40.9 (15.8)	46.2 (15.4)	38.9 (12.6)	38.3 (13.3)	41.0 (14.1)
Ethnicity/ Race						
White (non-Hispanic)	17 (63%)	10 (67%)	7 (58%)	3 (33%)	3 (43%)	0 (0%)
Non-White	10 (37%)	5 (33%)	5 (42%)	6 (67%)	4 (57%)	2 (100%)
Education*						
<college degree	10 (37%)	3 (20%)	7 (58%)	3 (33%)	2 (29%)	1 (50%)
college degree	17 (63%)	12 (80%)	5 (42%)	6 (67%)	5 (71%)	1 (50%)
Marital/Partner Status						
Single/ divorced	20 (74%)	11 (73%)	9 (75%)	7 (88%)	5 (71%)	2 (100%)
Married/partnered	6 (26%)	4 (27%)	3 (25%)	2 (22%)	2 (29%)	0 (0%)
Employment Status						
Full-time	13 (48%)	8 (53%)	5 (42%)	4 (44%)	3 (43%)	1 (50%)
Part-time/ not working	14 (52%)	7 (47%)	7 (58%)	5 (56%)	4 (57%)	1 (50%)

Table 3

Study Variables by Group at Baseline and 52-weeks Follow-Up

Study Variable	All Initial Participants				52-weeks Follow-Up Participants			
	Overall (n= 27) mean (SD)	Yoga (n=15) mean (SD)	HE Control (n=12) mean (SD)		Overall (n=9) mean (SD)	Yoga (n=7) mean (SD)	HE Control (n=2) mean (SD)	
Depression (PHQ9)	15.44 (5.90)	14.67 (4.58)	16.42 (7.33)		16.67 (5.07)	15.86 (5.37)	19.50 (3.54)	
Perceived Stress (PSS)	38.26 (5.66)	38.47 (4.58)	38.00 (6.95)		36.89 (4.65)	37.86 (4.88)	33.50 (0.71)	
Anxiety (STAI)	53.37 (12.81)	52.53 (13.51)	55.08 (12.32)		51.89 (14.08)	50.86 (15.13)	55.50 (13.44)	
Ruminations (RRS)	26.30 (5.74)	27.40 (5.05)	24.92 (6.45)		27.44 (3.54)	27.43 (3.55)	27.50 (4.95)	
Mental component of Health-related Quality of Life (SF-12)	25.09 (10.74)	24.52 (8.01)	25.79 (13.78)		24.36 (11.45)	23.44 (10.41)	27.59 (19.27)	

Table 4

Adjusted Means and Standard Errors for Depression and Ruminations by Group at Baseline, 2, 4, 6, 8, and 52 weeks

	Depression (PHQ9) [*]		Stress (PSS)		Ruminations (RRS) [*]		State Anxiety (STAI)		Mental Component of HRQoL [‡] (SF-12)	
	Yoga	Control	Yoga	Control	Yoga	Control	Yoga	Control	Yoga	Control
BL	14.9(1.3)	16.4(1.5)	38.5(2.1)	38 (2.3)	27.4(1.6)	24.9(1.8)	52.5(3.5)	55.1(3.9)	24.5(2.8)	25.8(3.2)
2	11.6(1.4)	14.4(1.8)	-	-	-	-	-	-	-	-
4	7.9(1.4)	8.9(1.9)	35.6(2.2)	37.4(3.2)	24.1(1.7)	23.7(2.2)	47.1(3.7)	48.9(5.3)	36.8(3)	33.3(4.3)
6	7.1(1.4)	7.7(1.9)	-	-	-	-	-	-	-	-
8	4.8(1.4)	8.4(1.9)	31.7(2.3)	33.4(3.2)	20.6(1.7)	22.2(2.3)	41.5(3.8)	46.5(5.3)	45.9(3.1)	38.9(4.7)
52	6.6(1.7)	21.3(2.8)	37.3(2.9)	38.5(5.4)	20.8(1.8)	29.7(3.2)	38.5(4.7)	56.5(8.5)	36.8(4.2)	32.9(6.9)

* significant difference between groups over time, $p < .05$

[‡] Health Related Quality of Life

Note: lower scores indicate decreased symptoms in the PHQ9, PSS, RRS, and STAI; in the mental component score of the SF-12, a higher score indicates better mental health