1. THE IMPACT OF PRENATAL YOGA ON MATERNAL ATTITUDES AND BEHAVIOR ON EXERCISE IN PREGNANCY: TEACHABLE MOMENTS FROM A BLINDED RANDOMIZED CONTROLLED TRIAL

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Key words: pregnancy, yoga, prenatal

Objective: Pregnancy serves as an opportune time for “teachable moments”; a time where women have an increased perception on personal risk prompting a strong emotional response leading to behavioral change. The purpose of this study was to evaluate the changes in exercise perception, behavior and gestational weight gain in those who engaged in a one-hour a yoga or educational experience.

Methods: This is unpublished data from a single blinded, randomized trial on prenatal yoga. Yoga naïve women with low risk singleton pregnancies between 28 0/7 to 36 6/7 weeks were randomized in a 1:1 ratio to either a one-hour yoga group or control discussion group. A 19-question validated survey assessing maternal perception of yoga, exercise effects and health status was conducted before and after the intervention. Gestational weight gain (GWG) and body mass index (BMI) were assessed. A postpartum survey was conducted at least 6 weeks after delivery to determine reported behavioral changes during and after pregnancy. Wilcoxon rank, Mann Whitney U, McNemar and chi squared tests were used for comparison.

Results: Of the 52 women randomized, 46 (88%) completed the study. At baseline, the overall group had a positive view on their health which was not significantly different between groups and did not change after the intervention. In the yoga group, 26% (n = 6) felt yoga to be a low intensity exercise, however, after performing the yoga intervention, 48% (n = 11) of women identified yoga as low intensity. Those in the yoga group were significantly more likely to disagree that yoga is difficult to perform (p = 0.007) and agree that yoga is a relaxing exercise (p=0.03). The total GWG were similar (yoga 32.94 versus control 32.82 pounds, p = 0.98). Moreover, when stratified by pre-pregnancy BMI, the mean GWG was higher in the yoga group. There was no significant difference between BMI at baseline, time of intervention or delivery (p = 0.77, 0.76, 0.34 respectively). Of the women who were not exercising prior to the intervention, 60% of the yoga group and 75% of the control group began to exercise in pregnancy (p = 0.50) and 50% of each group continued to exercise after delivery (p = 1.00).

Conclusion: Teachable moments in pregnancy can lead to behavioral changes and improved pregnancy outcomes. A one-time, one-hour intervention of either participating in a new exercise or educating women during their pregnancy positively impacts pregnancy behaviors.

2. CURRICULUM INFUSION OF YOGA FOSTERS SELF-REGULATION AND MINDFULNESS AMONG ADOLESCENTS

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Key words: mindfulness, yoga, self-regulation

Objective: There is growing interest in developing effective school-based primary prevention programs for youth that cultivate habits of mind and behavior to foster self-regulation, resilience, and well-being in the face of everyday adversity. Self-regulation is an important protective factor highlighted by extant prevention research, as it represents a critical asset for healthy development. Yoga and mindfulness-based curricula have been successful in enhancing both emotional and behavioral regulation among pre- and early-adolescents. The goal of our study was to evaluate a school-based mindful yoga curriculum infusion program to promote self-regulation among early adolescents.

Methods: Participants included 214 (52% female) adolescents (mean age = 11 years). Mindful yoga was systematically implemented and integrated into sixth grade English Language Arts (ELA) curricula in a public middle school in the greater Boston area. The ELA teachers introduced brief elements of mindful breathing, simple yoga poses, and breath work for 3–5 minutes at the start of each ELA class (3–4 times/week) across the academic year. Students from a grade-matched comparison school in the same district served as the control group. Participants in the intervention (n = 141) and control (n = 73) groups completed self-report assessments at pre-test (T1; early fall) and post-test (T2; late spring). Self-regulation was measured using the Adolescent Self-Regulatory Inventory (ASRI), which includes subscales for short- and long-term regulation, as well as a total SR score; mindfulness was assessed via the Mindful Attention
3. DEVELOPMENT AND EVALUATION OF A MIND-BODY AWARENESS INTERVENTION TO ENHANCE SELF-REGULATION AND PROMOTE HEALTHY WEIGHT AMONG YOUNG CHILDREN


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Key words: mindfulness, yoga, obesity, self-regulation

Objective: Self-regulation has important implications for children’s behavior across multiple contexts, as it allows children to control impulses with respect to eating and behavioral conduct. Cultivating self-regulation through mind-body-awareness-based programs (MBP) is a novel approach to childhood overweight and obesity prevention, as it can support the development of mind-body awareness and self-regulation to develop a healthy and nourishing relationship with food at an early age. The goal of this project was to adapt and further develop a MBP involving mindful eating and yoga for use with children aged 3–5 years; and pilot test it in childcare centers.

Methods: A six-week intervention to promote children’s self-regulation of energy intake and behavior was conducted in one childcare center (n = 24 participants) while another center (n = 20) served as the control site. The intervention included two 30-minute visits a week. The first weekly session was a mindful eating lesson and cooking activity administered by a licensed nutritionist; the second was mindful yoga administered by a certified YogaKids instructor. The quasi-experimental design captured environmental factors, anthropometric and diet assessment measures, and children’s self-regulation for eating and behavior through a combination of direct assessment and parent report measures.

Results: Chi-square analysis revealed significant pre-post differences within the intervention (IV) group for weight status with a shift toward healthier weight categories. The IV group consumed significantly more calories during the Eating in the Absence of Hunger task from pre- to post-test. After their hunger was neutralized, however, there were no differences in the number of calories consumed. Children’s behavioral regulation was examined using the Head Toes Knees and Shoulders Task. ANCOVA showed a main effect of the intervention on behavioral regulation, F(1, 38) = 4.10, p < .05, η² = .10. Further exploration of the data showed that the intervention was most effective in promoting self-regulation for children with lower levels of initial competence. Parents reported on children’s executive function using the BRIEF-Preschool; the scores were similar across the groups at all three times.

Conclusion: A brief mindful eating intervention holds promise in promoting behavioral self-regulation among preschoolers. Future work should address whether changes in behavioral regulation lead to subsequent changes in eating behaviors.

4. IMPACT OF SIX MONTHS OF VARIOUS MODALITIES OF EXERCISE ON STRESS IN POST-TREATMENT BREAST CANCER SURVIVORS

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IAYT 2016 SYMPOSIUM ON YOGA RESEARCH
Key Words: Stress, Breast Cancer, Yoga

Objective: To study the impact of three modalities of exercise on self-reported and physiological stress markers for post-treatment breast cancer survivors.

Methods: Participants were randomized to either a yoga-based exercise program (YE), a “conventional” comprehensive exercise (CE) program (aerobic, resistance, flexibility) or to a group (C) of participants who chose their own form of exercise. All groups were asked to exercise three hours per week. Measures in our model included the Perceived Stress Scale (PSS), salivary cortisol, Medical Outcomes Short-Form-36 (SF-36) scales, Pittsburg Sleep Quality Index, Family Quality Index, Motivational Profile and Inflammatory Markers. Cortisol samples were collected over five different daily time-points on two consecutive days at the start of the study (pre) and at six month conclusion (post). PSS and SF-36 measures were collected pre and post as well as six months later as a follow-up assessment. All other markers were measured at pre and post except the Motivational Profiles.

Results: All cortisol measures improved (slope, area under the curve, mean level) in the expected direction but did not reach statistical significance. PSS improved ($p < .001$), as did the SF-36’s Mental Component Scale (MCS) ($p < .001$), Social Functioning ($p < .001$), and Mental Health ($p = .001$) subscales. Also improving were Physical Component Scale (PCS) ($p < .001$) and Physical Functioning ($p < .001$). These improvements in the self-reported measures continued at the six-month follow-up. There were also improvements in Sleep Quality (sleep latency ($p = .032$) and improved day functioning from better sleep ($p = .008$).

Conclusion: Incorporating a holistic model, results indicated a favorable impact on self-reported stress and a trend toward improvement in the physiological stress response. However, it is difficult to interpret the clinical impact of the improvements from our results. Our study also suggests that it is the consistent engagement in some form of exercise that has a greater impact on the reduction of stress rather than any one particular modality of exercise. The Yoga protocol used in the study produced results approaching the Comprehensive Exercise group’s results in stress reduction.

5. YOGA-BASED PREVENTION OF EATING DISORDERS: CONTROLLED, REPEATED MEASURES STUDY OF PRE-ADOLESCENT FEMALES

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Key words: Yoga, Girls’ Group, prevention, eating disorders, preadolescents, self-care

Objective: Girls Growing in Wellness and Balance is an established yoga-based intervention designed to decrease eating disorder risk and increasing protective factors among girls. The purpose of this study is to extend this program with increased dosage via more in-depth processing and sessions as a prevention program for eating disorder risk among fifth grade females.

Methods: The study was carried out in three different Western New York schools. The yoga-group was held one day a week for 90-minutes, and ran for a total of 12 weeks, in 9 separate trials. Pre and posttest surveys were completed before the first session, and again after the final session. The girls to rated their levels of eating disorder risk via subscales of drive for thinness (DT) and body dissatisfaction (BD), and eating disorder symptoms on the Eating Disorder-3 (Gardner, 2001). They also assess their level of self-care based on the Mindful Self-Care Scale (MSCS; Cook-Cottone, 2015). Correlations were calculated for between the variables of interest and repeated measures were completed to compare the outcomes for the 91 girls who completed the yoga intervention and the 41 controls.

Results: Participants were female, 76.5% being Caucasian, 18.2% as “other” (African American, Asian, Hispanic, and Native American) and 5.3% did not respond. Results indicated that DT and BD were significantly lower after the yoga intervention compared to controls ($M = 5.65$, $SD = 5.79$ vs. $M = 4.36$, $SD = 4.83$ and $M = 6.41$, $SD = 7.20$ vs. $M = 4.59$, $SD = 6.19$, respectively). Mindful Self-Care significantly increased for intervention group compared to controls ($M = 31.36$, $SD = 5.05$ vs. $M = 32.46$, $SD = 4.25$).

Conclusion: Yoga was correlated with lower eating disorder risk and higher levels of self-care in our study. Participants reported feeling more attentive to their bodies in their relationships with others, self, and food, and also more appreciative of their body size and abilities.
6. EVALUATION OF A SPECIALIZED YOGA PROGRAM FOR PERSONS WITH SPINAL CORD INJURY: A RANDOMIZED CONTROLLED TRIAL

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Key words: Yoga, Spinal Cord Injury, Psychological Inflexibility

Objective: The purpose of this study is to evaluate a specialized yoga intervention for individuals with spinal cord injury who are out-patients or community members connected with a rehabilitation hospital.

Methods: This prospective, pilot randomized controlled trial (RCT) was designed in accordance with CONSORT guidelines and registered with clinicaltrials.gov. This trial has one primary outcome: psychological inflexibility, and a number of secondary outcomes: depression, anxiety, self-efficacy, post-traumatic growth, resilience, mindfulness, self-compassion, pain, and pain catastrophizing. Participants (N = 23) were randomized to an experimental condition (yoga condition: YC, n = 11) consisting of a twice-weekly, six-week Hatha yoga program (Yoga Program 1) or to a six-week wait-list control condition (WLCC, n = 12); the WLCC will receive the same yoga intervention after Yoga Program 1 is complete. Data will be collected at two time points for both conditions and at a third time point for the WLCC: pre- (T1) and post- (T2) Yoga Program 1 for both conditions and at post- (T3) Yoga Program 2 for the WLCC. This study uses a pragmatic design with explanatory features to balance feasibility of testing a yoga intervention for a complex population in a hospital setting with experimental rigor. The participants were allocated using a 1:1 ratio, blocked for gender, and the sample size was determined by a sample size calculation, therefore considered fixed. The Hatha yoga program was modified for wheelchair users or to be done from a seated position and consists of yoga philosophy, upper body yoga postures, and mindfulness practices.

Results: The study will follow both a protocol compliant and intention-to-treat analysis. To evaluate changes in both primary and secondary variables, two-way, between groups, repeated measures ANOVAs will be conducted to measure changes of scores, using Group (YC, WLCC) as the between-subjects factor. Main effects will be evaluated using Bonferroni pairwise comparisons.

Conclusion: Trial limitations and generalizability will be discussed and results will be interpreted balancing benefits and harms and considering other evidence.

Note: This study will be completed in July, 2016 and data will be analyzed prior to SYR 2016 and included in the poster presentation. At present, the experimental group is completing Yoga Program 1.

7. EVALUATION OF A SPECIALIZED YOGA PROGRAM FOR IN-PATIENTS RECEIVING MEDICAL REHABILITATION OR COMPLEX CONTINUING CARE: A PILOT STUDY

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Key words: Yoga, Multi-Morbidity, Medical Rehabilitation, Complex Continuing Care

Objective: The purpose of this study was to evaluate a specialized yoga intervention for in-patients in a rehabilitation and complex continuing care hospital.

Methods: This study used a single cohort, repeated-measures design. Participants (N = 10) admitted to a rehabilitation and complex continuing care hospital were recruited to participate in a 50–60 min. Hatha yoga class (modified for wheelchair users/seated position) once a week for eight weeks, with assigned homework practice using MP3 players. Questionnaires on pain (pain, pain interference, pain catastrophizing), psychological variables (depression, anxiety, experiences with injustice), mindfulness, self-compassion, and spiritual well-being were collected at three intervals; pre-, mid-, and post-intervention.

Results: Repeated measures ANOVAs were conducted to
determine main effects of time according to both protocol compliant (PC, \( n = 6 \)) and intention-to-treat analysis (ITT; \( N = 10 \)). Repeated measures ANOVAs did not reveal significant changes in any variable across time for the PC analyses. Using ITT analysis, repeated measures ANOVAs revealed a significant main effect of time indicating improvements over the course of the yoga program on the (1) anxiety subscale of the Hospital Anxiety and Depression Scale, \( F(2, 18) = 4.74, p < .05, \eta^2_p = .35 \), (2) Self Compassion Scale-Short Form, \( F(1.89, 16.98) = 4.29, p < .05, \eta^2_p = .32 \), and (3) Magnification subscale of the Pain Catastrophizing Scale, \( F(2,18) = 3.66, p < .05, \eta^2_p = .29 \). Non-parametric bootstrapping analysis showed that the total effect of HADS-A scores at baseline on HADS-A scores at the end of the intervention was significantly reduced when SCS-SF scores at mid-intervention (the mediator) were added to the model (Mean = 0.40, SEM = 0.35; CI.95 = 0.05, 1.41). It can be concluded that the indirect effect significantly different than zero, \( p < .0 \) and that mid-treatment SCS-SF scores mediated the relationship between baseline and end-of-treatment HADS-A scores.

**Conclusion:** The results suggest that an 8-week Hatha yoga program improves pain-related factors and psychological experiences in individuals admitted to a rehabilitation and complex continuing care hospital. As well, the results highlight a mediating role of self-compassion in changes in anxiety from pre-to post-yoga intervention.

8. SUDARSHAN KRIYA YOGA IMPROVES CARDIAC AUTONOMIC CONTROL AND CARDIORESPIRATORY COUPLING IN PATIENTS WITH ANXIETY AND/OR DEPRESSION DISORDERS

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**Background:** Several studies have demonstrated that adjuvant therapies as exercise and breathing training are effective in improving cardiac autonomic control (CAC) in patients with affective spectrum disorders. However, the effects of Sudarshan Kriya Yoga (SKY) on autonomic function in this population is unknown. To answer this question, we investigated the effects of SKY training on CAC and cardiorespiratory coupling in patients with anxiety and/or depression disorders.

**Methods:** Forty-six patients with a diagnosis of anxiety and/or depression disorders (DSM-IV) were consecutively enrolled and divided in two groups: 1) conventional therapy (Control, \( n = 22, 42 \pm 2 \) years) and 2) conventional therapy associated with SKY for 15 days (Treatment, \( n = 24, 42 \pm 2 \) years). Hamilton rating scale for anxiety (HRSA) and depression (HRSD) were applied at baseline (T0) and 15 days after (T1). ECG and respiration using a thoracic piezoelectric belt were recorded for 10 min at T0 and T1 in resting conditions. For the assessment of CAC, cardiorespiratory traces were analyzed using autoregressive spectral analysis of heart rate variability (HRV). Briefly, HRV identifies two main oscillatory components, low frequency band (LF), marker of sympathetic modulation and high frequency band (HF), marker of parasympathetic modulation; the LF/HF ratio is a marker of sympato-vagal balance. Cardiorespiratory coupling was evaluated by bivariate autoregressive analysis through coherence function between R-R interval and RESP in HF band (K^2_HF).

**Results:** At T0, demographic characteristic, prevalence of anxiety and/or depression disorders, HRSA, LF, HF and LF/HF ratio were similar between groups. Moreover, Control group showed higher HRSD, proportion of patients using benzodiazepines and lower K^2_HF than Treatment group. Compared to T0, at T1 we observe a reduction in HRSA, HRSD, LF and LF/HF (\( p < 0.01 \)) and an increased HF component (\( p < 0.01 \)) and K^2_HF (\( p = 0.04 \)) only in Treatment group. No significant changes occurred in Control group after 15-days. At T1, HRSA, HRSD, LF and LF/HF (\( p < 0.01 \)) were significantly lower and HF and K^2_HF (\( p < 0.01 \)) were significantly higher in Treatment group compared to Controls.

**Conclusion:** Intensive breathing training using SKY approach improves CAC and cardiorespiratory coupling in patients with anxiety and/or depression disorders. These finding suggest that the SKY training may be a non-pharmacological intervention to reduce cardiovascular risk in these patients.
9. EFFECTS OF YOGA AS A MINDFULNESS-BASED INTERVENTION IN THE SCHOOL SETTING: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Key Words: Mindfulness, yoga, systematic review, meta-analysis, school-based interventions

Objective: The purpose of this systematic review was to examine and synthesize evidence of the effects of yoga used as a Mindfulness-Based Intervention (MBI) with primary and secondary school students on cognitive, behavior, and socioemotional outcomes to inform practice and policy.

Methods: Systematic review methodology was employed to retrieve and analyze studies examining effects of yoga as an MBI with primary and secondary students. Meta-analytic methods were used to quantitatively synthesize outcomes. A comprehensive search strategy was implemented to locate published and unpublished studies including 13 electronic databases and research registers, websites of relevant government and university research centers, and reference lists of retrieved studies and related articles. Inclusion criteria included: (a) randomized or quasi-experimental design; (b) conducted/published between January 1990 and January 2016; (c) conducted in a public or private school setting (pre-K-12); (d) measured at least one of the following outcomes: cognitive, behavioral, socioemotional (e) involved yoga as an MBI. Two of the authors independently coded all of the qualifying studies. Risk of bias was assessed using Cochrane’s Risk of Bias tool. Effects sizes were calculated (Hedges’ g) for each outcome of interest within each study. Meta-analysis, assuming random effects models, was used to quantitatively synthesize results across studies.

Results: The full text of 92 potential studies were located, reviewed, and screened for eligibility. Of those, 19 studies met inclusionary criteria. Small and non-significant effects were found for cognitive outcomes (n = 5 studies; g = 0.24, 95% C.I. = -0.08, 0.56) and behavioral outcomes (n = 6 studies; g = 0.19, 95% C.I. = -0.15, 0.53). Small, statistically significant effects were found for socioemotional outcomes (n = 16 studies; g = 0.14, 95% C.I. = 0.04, 0.25). The homogeneity analysis indicated a moderate degree of heterogeneity for cognitive (F = 45.76%; Q = 7.37, p = .12) and behavioral outcomes, and a small degree of heterogeneity (F = 0.00%; Q = 8.03, p = .92).

Conclusion: Findings of this systematic review suggest mixed results of using yoga as an MBI across the outcomes of interest in this review, with finding favorable impacts of yoga on socioemotional outcomes but a lack of significant effects on cognitive and behavioral outcomes.

10. YOGA FOR VA PATIENTS WITH CHRONIC LOW BACK PAIN

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Key words: Yoga, back pain, veterans, military

Objective: Hatha yoga has been shown to improve CLBP in non-veteran populations but has not been studied in VA settings. We present the results of a randomized, controlled trial (RCT) of yoga for CLBP conducted with VA patients.

Methods: Participants were recruited at VA San Diego primary care and specialty clinics. After being screened by a physician, eligible patients were randomized to yoga therapy or a delayed treatment comparison group. Yoga consisted of 2x weekly yoga sessions for 12 weeks. Regular home practice of yoga was encouraged via a home practice manual. Assessments occurred at baseline, 6 weeks, 12 weeks, and at a 6-month follow-up. Measures included the primary outcomes of back-pain specific disability (RMDQ), pain (BPI), depression, fatigue, sleep quality, and SF-12.

Results: The study enrolled 150 VA patients with CLBP across six cohorts over 30 months. Participant had a mean age of 53.4 years, and were 25% women, 51% non-White, 66% single, divorced, or widowed, 33% employed, and 18% were homeless in the last 5 years. The mean duration of back pain was 15.0 years and 20% of participants were on opioid pain medications at baseline. At 12 weeks, no differences were found on the RMDQ (p = 0.11) or depression (p = 0.14), but yoga participants did have significantly better reductions in pain severity (p = 0.006), pain interference (p = 0.04), fatigue (p = 0.002), and SF-12 Physical Component Scale (p = 0.004). Attendance was lower than expected with
53% of yoga group participants attending 50% or more of the 24 sessions, other measures confirm the benefits of yoga for reducing pain and improving health outcomes in VA patients. The lack of RMDQ result may be related to a more impaired population, and/or lower attendance. Additional analyses with outcomes at 6-months follow-up will be available.

11. EFFECTS OF A 6-WEEK CYBERMEDITATION PROGRAM FOR HOSPICE PROFESSIONALS ON MEDITATION ENGAGEMENT, INTEROCEPTIVE AWARENESS, AND COMPASSION FATIGUE

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Key words: Yoga, Yoga Therapy, Meditation, Interoceptive Awareness, Cybermeditation

Objective: Meditation can relieve stress, cultivate self-regulation and attention-regulation skills, improve ability to focus, and modify risk for compassion fatigue and burnout in healthcare professionals (HCPs). To achieve these benefits, HCPs need to be introduced to meditation and motivated to practice. This pilot study examined engagement with and effects of a 6-week cybermeditation program that combines five 10 to 12-minute seated meditation smartphone apps with bi-weekly emails from a yoga therapist. Each meditation integrates breathing, physical postures, and mental attention based on the system of yoga. Emails serve as a relational container to introduce the new meditation each week, explain related principles of yoga for healing, and urge participants do the meditation once each day. The program offers a convenient, effective on-ramp to meditation and motivates engagement in regular practice.

Methods: Salaried hospice and palliative care professionals at a large Midwestern United States healthcare network (n=36) participated in the cybermeditation program. Smartphone apps delivered and tracked usage of five meditations. Pre- and post-surveys assessed outcome measures.

Results: Participant engagement was high. One fourth of participants averaged fewer than two meditations per week over 5 weeks; 42% completed between 2–4 meditations per week; 33% completed more than 4 meditations per week. Two-thirds of participants reported being somewhat or very likely to continue to use the apps after the program ended. Pre-post survey responses were compared using paired t-tests for six Multidimensional Assessment of Interoceptive Awareness scales. Significant improvements were found (p < .001) for all six—Noticing (awareness of bodily sensations), Attention Regulation (ability to sustain and control attention to bodily sensations), Emotional Awareness (awareness of bodily sensations’ connections to emotions), Self-Regulation (ability to regulate distress by attention to bodily sensations), Body Listening (tendency to actively listen to the body for insights), and Body Trusting (experiencing one’s body as safe and trustworthy). Significant improvements (p < .05) were found in compassion fatigue and burnout. Focus group interviews revealed diverse approaches individuals adopted in how they used the apps.

Conclusion: The cybermeditation program motivated regular use and improved multidimensional interoceptive awareness and professional quality of life.

12. RANDOMIZED PILOT TRIAL OF PRENATAL YOGA FOR PREGNANCY-RELATED BACK PAIN AND MATERNAL WELLBEING

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Purpose: Literature supports yoga for back pain and well-being in the general population. Less is known for pregnant women. Pregnancy-related back pain is a common problem that is compounded by increased risk of falls and other morbidity. The purpose of this study is to explore prenatal yoga’s potential to prevent and/or treat pregnancy-related back pain, enhance maternal wellbeing, and impact objective measurements of mobility and balance.

Methods: A randomized, controlled pilot study of women ages 18–39 with uncomplicated pregnancies starting at 12–26 weeks of gestation. Subjects attended either a weekly, prenatal yoga class developed by an expert consensus panel for at least 12 weeks or a time-matched educational support group. Randomization was stratified by baseline presence of back pain. Measurements of back pain disability, pregnancy symptom burden, depression, stress, childbirth self-efficacy, instrumented gait/balance, and falls were done at baseline, every 4 weeks, and 6-weeks post-partum.
Results: Of the 168 potential subjects contacted, a majority (59%) were interested in participating. Most (94%) were willing to be randomized. Twenty women were randomized (N=11 yoga; N=9 support; mean gestational age 20.2wks). Retention was 81% and 77% in the respective groups. Baseline back pain prevalence was 65%. Their mean Roland Morris Disability Questionnaire score was 3.6 (range 1–16). Preliminary analyses show no clear trends in back pain disability or severity in either group. Analyses using autoregressive linear mixed effects model adjusted for baseline gestational age show a significant difference between the two groups at 12 weeks in pregnancy symptom inventory (PSI) score (estimated difference 13.1 points, 95%CI 5.1–21.1, \( p < 0.01 \)) with improvement in the yoga group. Mobility assessments, including the proportion of each walking stride spent in double support also show trends towards improvement with yoga. There were no adverse events related to yoga.

Conclusion: This study is feasible based on recruitment and retention goals. Our prenatal yoga intervention was safe. Preliminary analysis suggests that prenatal yoga may benefit the overall burden of pregnancy symptoms and may help a pregnant women’s stability. Further analysis of the measures will provide data to design a larger study.

13. EFFECTS OF MANTRA MEDITATION VS. MUSIC LISTENING ON KNEE PAIN, FUNCTION, AND RELATED OUTCOMES IN ADULTS WITH KNEE OSTEOARTHRITIS: A PILOT RANDOMIZED CONTROLLED TRIAL (RCT)

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Key words: Meditation, music, osteoarthritis, pain, sleep, mood, stress, quality of life, mind-body

Objective: Osteoarthritis (OA) is a highly burdensome disorder and a leading cause of disability among adults.

Unfortunately, there is no cure and commonly used pharmacological treatments can have serious side effects. Although meditation and music listening have been shown to reduce pain and improve other outcomes in certain chronic pain populations, research in OA is sparse. The goal of this pilot RCT was to compare the effects of these two simple mind body therapies on knee pain, function and related outcomes in older adults with knee OA.

Methods: Twenty-two ambulatory adults with an established diagnosis of primary OA of the knee were recruited from the community and randomized to a mantra meditation (MM, N=11) or a music listening program (ML, N=11). All participants received brief training in their respective programs, and were asked to practice 15 minutes, twice daily for 8 weeks with the aid of an instruction sheet and a program CD. Core outcomes included knee pain (Knee Injury and Osteoarthritis Outcome Score [KOOS] and Numeric Rating Scale [NRS]), knee function (KOOS), and perceived OA severity (Patient Global Assessment). Additional outcomes included perceived stress (Perceived Stress Scale), mood (Profile of Mood States), sleep (Pittsburgh Sleep Quality Index), and health-related quality of life (QOL, SF-36).

Participants were assessed at baseline and following completion of the 8-week program. Changes in outcome measures were analyzed using repeated measures ANOVA.

Results: Participants included 15 women and 7 men, aged 51 to 74 (X=58.5 ± 1.4) years; 82% identified as white. Twenty participants (91%) completed the study (9 MM, 11 ML). Compliance was excellent overall, with participants completing an average of 12.1 ± 0.83 sessions/week. Relative to baseline, participants in both groups demonstrated improvement at 8 weeks in all core outcomes, including knee pain (KOOS, \( p \leq 0.03 \); NRS, \( p \leq 0.05 \)), function (MM, \( p < 0.02 \), ML \( p < 0.1 \)), and perceived OA severity (\( p<0.05 \)), as well as improvement in mood (\( p < 0.05 \)), perceived stress (\( p < 0.05 \)), and QOL (Physical Health Component, \( p < 0.01 \)). Relative to ML, the MM group showed greater improvements in mood, sleep (\( p's < 0.04 \)), and QOL-Mental Health (MH) (\( p < 0.07 \)).

Conclusions: Findings of this pilot RCT suggest that a simple MM or ML program may offer an effective intervention for reducing knee pain and dysfunction, decreasing stress and improving mood, sleep and QOL in older adults with knee OA, with gains in mood, sleep, and QOL-MH that were particularly pronounced in the meditation group.
14. MEDITATION AND MUSIC LISTENING IMPROVE MEMORY AND COGNITIVE FUNCTION IN ADULTS WITH SUBJECTIVE COGNITIVE DECLINE: A PRELIMINARY RANDOMIZED CONTROLLED TRIAL (RCT)

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Background: Despite decades of research, effective therapies for preventing or slowing progression of cognitive decline in populations with or at risk for Alzheimer’s disease (AD) remain elusive. Subjective cognitive decline (SCD) has been strongly linked to subsequent cognitive impairment, accelerated cognitive decline and incident AD and may represent a critical therapeutic window. However, intervention studies in this population are few, and no studies have yet assessed the effects of any mind-body therapy in adults with SCD.

Methods: In this RCT, we assessed the efficacy of two simple home-based mind-body therapies for improving memory and cognitive performance in 60 older adults with SCD and concerns regarding their memory. Participants were randomized to one of two 12-week programs: Kirtan Kriya meditation (KK) or music listening (ML). Following training in their respective programs, participants were provided with a program CD and instruction brochure, and asked to practice 12 minutes/day for 12 weeks, then as often as they wished for the remainder of the study period. At baseline, 12 weeks, and 6 months we measured subjective memory function (Memory Functioning Questionnaire (MFQ)) and cognitive performance (Trail-making Test A and B (TMT_A/B) and Digit Symbol Substitution Test (DSST)).

Results: Fifty-three participants (88%) completed the study. Prevalence of additional AD risk factors in the study population was high, with 94% of participants reporting at least one, and 66% reporting 2 or more metabolic/vascular risk factors for AD. Adherence was excellent, with participants completing an average of 93% (91% KK, 94% ML) of sessions in the first 12 weeks, and 71% (68% KK, 74% ML) during the 3-month, practice-optional, follow-up period. Participants in both groups showed marked and significant improvements at 12 weeks in all measures of memory function and cognitive performance (MFQ total, DSST, and TMT_A/B (p’s < 0.04)). Improvements in all outcomes were sustained or further improved at 3 months post-intervention (p’s < 0.006). Changes were not related to treatment expectancies, nor were cognitive performance gains explained by alterations in mood.

Conclusions: Findings of this preliminary RCT suggest these two simple mind-body therapies may be effective in enhancing memory and cognitive function in adults with SCD, with improvements sustained at 6 months.

15. DEVELOPING A NEW SYSTEM OF YOGA THERAPY ASSESSMENT IN JAPAN BASED ON TRADITIONAL YOGIC SCRIPTURES: 5 CASE STUDIES

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Key Words: yoga therapy assessment, Integrative Medicine, psychosomatic disorders

Introduction: Traditional yogic theories of human structure and function can be found in traditional yogic scriptures, such as Patanjali’s Yoga Sutras and the pancha kosha (5 sheaths) theory in the Taittiriya Upanishad. Yoga attributes causes of disease to imbalances in structures and functions deeper than the physical body. Conventional medicine assesses and treats only the physical manifestations of these imbalances. Yoga Therapy research usually uses conventional medicine diagnoses. For more effective research and application of yoga therapy techniques, more analysis of the causes of illnesses as they relate to the mind-body relationship of each patient is required.

Method: We used traditional yogic teaching to develop new Semi-Structured Interview Manuals (SSIM) and psychometric tests. We have begun using them to clinically assess psychosomatic patients. They enable assessment of all 5 koshas, especially the vijnanamaya kosha, so that yoga therapy techniques can better target root causes of illness that were overlooked by medical diagnoses. Counseling/treatment was designed based on the assessment.
Results: We will present case studies using our SSIM. For example, Case 1 is a 45 years old female with depression. Her psychiatrists only diagnosed depression and prescribed SSRI. Using the Five Sheath Theory assessment revealed problems in each kosha, the root problem being an excessive desire to please others in the vijnamaya Kosha. This made her anxious, leading to disturbances in the mind (manomaya) and breath (pranamaya), causing fatigue (annamaya) and the depression diagnosed by psychiatrists. Yoga therapy techniques prescribed included sukha pranayama for the Pranamaya Kosha, mindfulness meditation for the Manomaya Kosha, and introspection to help her understand her own cognitive characteristics in Vijnanamaya Kosha. Over 3 years, she gained self understanding and regained a healthy life. The SSIM scores changed as follows: Ability to Regulate Attachment, extremely weak to strong; Ability to Regulate Suspicion, extremely weak to strong.

Conclusion: This traditional yogic assessment-treatment method using SSIM is in its beginning stage. The mental assessment of psychosomatic patients is complex and needs an Integrative Medicine approach using both Western psychotherapy and traditional methods from Asian and other traditions. We need statistical analysis to develop more tangible and effective assessment methods using traditional yoga philosophy.

16. IS YOGA RELATIONAL? UNVEILING THE INTRA- AND INTERPERSONAL EFFECTS OF YOGA UTILIZING A PERSON-SPECIFIC APPROACH

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Key words: Yoga, Individual differences, (Self-)compassion

Objective: While the yoga literature has certainly proliferated over the past decades demonstrating a wide-array of salutary benefits, it has also suffered from methodological shortcomings and lack of quality randomized control trials. Moreover, previous research has heavily focused on individual outcomes, with a clear scarcity of research examining potential “relational” outcomes that may be derived from practice.

This study takes a person-specific approach to examine the effects of yoga on intra- and interpersonal relationships using a single-case research design which averts the potential influence of confounding between-person characteristics.

Methods: A single-case research design was conducted with twenty-one college students enrolled in a yoga course throughout an academic semester (Spring 2016). Participants attended lab assessments at the beginning and end of the semester and were asked to complete 8 brief consecutive Internet-based daily surveys across 6 separate bursts (with 7 days of rest in between each burst), yielding 48 data points for each participant. Within-person analyses were conducted analyzing data for each participant separately; both cross-lagged and simultaneous effects were evaluated.

Results: Participants (N = 21) were on average 20.9 years old (SD = 1.4), with a mean BMI of 23.4 (SD = 3.9). The majority of the participants were Caucasian (81%), Female (81%), and novice practitioners of yoga (76.2%). Participants completed 798 out of the total 1008 possible daily surveys (79.2% compliance). Paired sample t-tests demonstrated improvements across self-compassion (d = -.57, t = -3.05, p < .05), and connectedness (d = -.54, t = -3.06, p < .05). No pre to post between-person differences were found across compassion (t = -1.98, p = .06) and gratitude (t = -0.59, p = .56). Person-specific trajectories in associations amongst connectedness, (self-)compassion, and gratitude across the 15-week semester will be presented (analysis ongoing).

Conclusions: Through a person-specific approach, this study helps unveil how yoga practice influences relational outcomes and helps overcome some of the methodological shortcomings in present yoga research, focusing on person-specific trajectories rather than on mean differences.

17. ASSESSING THE FEASIBILITY OF A WEEKLY YOGA THERAPY GROUP IN A BEHAVIORAL HEALTH PARTIAL HOSPITAL SETTING

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Key Words: Yoga Therapy, CBT, Yoga for Mental Health, Yoga for Wellness

Objective: Yoga addresses not only bodily health but also the health of the mind. Studies have demonstrated its efficacy in treating anxiety and other behavioral disorders. The objective of this investigation was to study the feasibility of a yoga group as complementary treatment in a behavioral health partial hospital.
Methods: 60 patients in treatment at McLean Hospital’s Behavioral Health Partial Hospital Program attended the Yoga for Wellness group between July and October 2015. The group teaches yogic breathing, moving and grounding techniques in weekly 50-minute sessions of guided mindful meditation, pranayama and asana. Group discussions emphasize yoga’s complementary relationship to CBT. Respondents (34) to a quality assurance Feedback and Evaluation Form documented overall and specific satisfaction.

Results: Respondents reported that the group informed them about yoga for mental health “very well” (70.6%), practiced yoga postures and breathing techniques “very well” (88.2%), provided rationale for various types of movement “very well” (61.8%) and discussed mind body connection through yoga “very well” (64.7%). The group was deemed “very helpful” by 70.6% of respondents and 76.5% of respondents reported they were “very likely” to try yoga again in the future. Additional comments expressed appreciation for the relaxing/calming/invigorating effect of the group and suggested the Partial Hospital have more frequent yoga groups.

Conclusion: These data suggest that yoga holds strong therapeutic potential as a complement to Cognitive Behavioral Therapy (CBT) in a behavioral health partial hospital setting. These respondents found yoga highly acceptable, enjoyable and helpful. Results indicate future research might investigate the impact of similar interventions on clinical outcomes across diagnoses.


18. CHARACTERISTICS OF STUDENTS PURSING YOGA THERAPY TRAINING IN A UNIVERSITY SETTING: A MIXED-METHODS APPROACH

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Key words: Yoga, yoga therapy, higher education, career

Background: The professionalization of Yoga Therapy in the West has seen the first Masters of Science in Yoga Therapy program implemented at Maryland University of Integrative Health (MUHI). The first cohort of graduate students recently graduated and little is known about the characteristics of students pursuing yoga therapy training in university settings.

Objective: To characterize students pursuing an MS in Yoga Therapy, including demographics, yoga and academic training, motivations and future career plans.

Methods: A mixed methods, nested study design was used. Students were recruited during their second year in the program. Participants completed a short written survey and semi-structured interviews were conducted by three trained interviewers from other academic departments at MUHI.

Trained qualitative coders identified major themes from transcribed interviews and achieved consensus on the final codebook and theme assignment. NVivo 11 Pro was used to organize and analyze coded text.

Results: 19/22 students from the first cohort completed the written survey and 18 completed interviews. Participants were mostly female (89%), married (53%) with a mean age of 51 years (range, 28-64), and lived mostly in Maryland and surrounding states. None relocated, but almost half slept away from home on class weekends. A wide variety of undergraduate majors were represented, with 5 students already having earned a graduate degree. Most had been practicing yoga for 10+ years and teaching an average of 12.6 years (range, 2-39). Overall, former training in yoga included 16 different styles with Ashtanga and Integral being the most common and most students listing multiple styles. Half were already practicing yoga therapy, and most described their current job as “yoga teacher.” Major themes from interview transcripts included: Yoga Experience, Yoga Teaching Career, Yoga Therapy Career, and Program Recommendations. Participants discussed motivations for a yoga therapy career, why a university setting, level of preparation for graduate school and for a future in yoga therapy, post-graduation plans, and recommendations for strengthening the program.

Conclusion: Students in the first cohort of the nation’s only MS in Yoga Therapy tended to be middle-aged female yoga teachers from surrounding states. Prior experience and training was heterogeneous for both yoga and previous educational degrees. The credibility of a graduate degree was a strong motivator for enrollment and preparation for the rigor of the program was varied. As this represents the first cohort of a unique program, findings may not be representative of future cohorts at MUHI or other universities offering graduate degrees. Future research should compare characteristics of yoga therapists trained in universities with those trained in other settings.
19. MEDITATION FOR EATING DISORDERS: YOGA AND TAI CHI’S ASSOCIATIVE THERAPEUTIC EFFECT

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Keywords: eating disorders, yoga, t'ai chi

Objective: The purpose of this pilot study is to examine the effects of yoga and Fung Loy Kok Taoist Tai Chi™ on anorexia nervosa (AN), bulimia nervosa (BN) and eating disorders not otherwise specified (EDNOS).

Method: People with a diagnosis of AN, BN, or EDNOS that were 16 years of age or older and had a primary care provider were recruited. Participants chose to participate in either intervention group or as waitlisted controls. Each intervention group consisted of 10 weekly 90-minute classes. Classes were taught by certified yoga and t'ai chi instructors. Each series of movements were standardized. The primary outcome was eating disorder disease specific outcomes measured by the Eating Disorder Examination Questionnaire 6.0 (EDE-Q). Secondary outcomes included clinical impairment, depression and mindfulness skills. A qualitative questionnaire measuring participant experience and satisfaction with the classes was also administered. Participants completed questionnaires at baseline, post-intervention and one month after intervention completion. Participants attended five of ten classes to be included in analysis. One-way Student-Newman-Kuels ANOVA was performed on pooled data from both intervention groups for each variable comparing baseline data to post-intervention data.

Results: 18 participants (3 t'ai chi, 10 yoga, 5 control) completed the study. Significant reductions in global, restraint, eating concern and shape concern scores on the EDE-Q were observed in those that engaged in yoga or t'ai chi from baseline to post intervention (p < 0.05) with large effect size reported in global and restraint scores (0.965 and 0.795 respectively). A significant 24% reduction in depression was also observed from baseline to post intervention with a large effect size (0.826, p < 0.01). Significant improvements in overall mindfulness (0.852, p < 0.01), as well as skills of observation (p < 0.01), non-judgement (0.63, p < 0.05) and non-reactivity (0.677, p < 0.05) were also reported.

Conclusion: Yoga and t'ai chi delivered in a community setting significantly reduces disease specific outcomes, depression and improves mindfulness skills in those with eating disorders. Further studies are warranted to standardize the yoga series and understand the therapeutic mechanism of these interventions.

20. A QUALITATIVE COMPARISON OF EXPRESSION AND PERFORMANCE OF YOGA INSTRUCTION

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Key words: Yoga, instruction, philosophy, strategies

Objective: The instruction of yoga has grown rapidly in last few decades. According to the National Health Interview Survey (NHIS), in 2007 yoga was the sixth most popular 'complementary health activity and is on the rise (Barnes & Bloom, 2008). However, most of this research has relied on outcomes. The current work focuses on instruction, to identify instructor understanding and performance of yogic philosophy.

Methods: In order to gain a rich description of yoga instruction a qualitative case study using grounded theory (Charmez, 2003) and comparative analysis was used. The participant for this work, chosen through purposeful sampling (Patton, 1990), is a popular yoga instructor, RTY200, who teaches classes in numerous studios and a regularly held recreation center class at a mid-south university. Data collection included interviews that were semi-structured as conversational partners (Rubin & Rubin, 2012) and participant observations with audio recordings across eight classes. The interviews and classes were transcribed verbatim. Iterative coding with thematic analysis, using a theoretical lens derived from yoga, were used to identify themes in both interviews and classes.

Results: Within the instructor interviews, expressed understanding of yoga instruction themes of energetic state, personality of instruction, inviting experience and student vulnerability were identified. Within the class observations, observed instruction themes of scoping, cadence, silence, and inviting practice were identified. Overlap in expressed understanding and observed instruction were found in each theme. An example of the expressed understanding of a thematic concept is inviting experience: “If someone comes in the very first time and the teacher is very invasive and says, ‘Do this.’ And the next pose the teachers is hovering over them, you are not going to go back. You are going to hate it so much. [I] let people be really all over the place at the beginning as long as they are safe. [I] allow them that kind of freedom, initially.” This was supported in the observed instruction; an example of this is: “We’re going to play with [a posture]. … that firmness in your abs, engage the core so a foot might lift. Maybe both feet.” And “… with the arms firm, maybe the legs straighten.”

Conclusion: The current study yields preliminary insight into yoga instruction strategies to support further development of yoga curriculum and instruction.
21. YOGA AS A COMPLEMENTARY THERAPY FOR SMOKING cessation


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Key Words: Yoga, Smoking

Objective: Cigarette smoking is the leading preventable cause of morbidity and mortality in the U.S. Each year, over 41% of smokers report failed attempts to quit. Although several medications have proven effective for helping smokers quit, most smokers do not use medications during quit attempts because of concerns about side effects, medical contraindications, and the perceived desirability of a chemical-free quit. Effective non-pharmacological interventions are needed to increase cessation rates. BreathEasy is the first large-scale research study funded by the National Institutes of Health (NCCIH) to examine the efficacy of yoga as a complementary therapy for quitting smoking. Methods: To be eligible, persons had to smoke at least 5 cigarettes/day for the previous year, be age 18–65, generally healthy, and not have practiced yoga or mind/body therapies in the past year. Approximately half of all callers were ineligible; the most common reason being medical conditions that would interfere with ability to participate, scheduling conflicts and obesity (body mass index > 40). A total of 102 men and 127 women enrolled and were randomly assigned to either Iyengar yoga or a health & wellness class which acted as a comparison/control condition. Classes were delivered for 1 hour twice weekly for 8 weeks. All participants were also given a 1-hour smoking cessation program based in cognitive behavioral therapy once weekly for 8 weeks. Results: From September 2012 to April 2016, we enrolled 229 participants. At enrollment (participants average age 46.2, 90.4% white, 56% female, 13% racial and/or ethnic minority) smoked on average 16.7 cigarettes per day (SD=7.8), and were moderately nicotine dependent (Fagerstrom scores=4.9, SD=2.1). Overall participants randomized to the yoga study arm attended 68.7% of classes offered, while those in the Wellness arm attended 69.0% of offered classes. Fully 85.4% of all enrolled participants completed the 8-week intervention. Conclusions: Outcome data will include changes in secondary outcomes including factors associated with quitting (such as motivation, confidence, perceived stress and nicotine dependence). As of June 30, 2016 the final participants completed the 8-week treatment program but remain enrolled in follow-up visits; outcome date is embargoed until 2017.

22. QUALITATIVE REFLECTIONS ON YOGA AS A COMPLEMENTARY THERAPY FOR SMOKING cessation

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Key words: yoga, smoking cessation, qualitative research

Study Objective: BreathEasy is an NCCIH-funded study examining the efficacy of yoga as a complementary therapy for smoking cessation. From September 2012 through June 2016 12 cohorts of smokers [N = 255] received 8 weeks of cognitive behavioral therapy for smoking cessation and either Iyengar yoga or a wellness class. Smoking cessation met once a week and yoga or wellness met twice a week for 8 weeks. Qualitative participants: Focus groups were conducted in 8 of the 12 cohorts. 61 yoga participants (range 5-12 participants per group) attended focus groups. Methods: Qualitative investigation explored participant experiences of yoga and smoking cessation including withdrawal, mood changes, stress, attention and mindfulness. This abstract is based on focus group notes and debriefs; formal thematic content analysis, is currently underway. Findings: Most participants described their experience with yoga as positive and helpful; yoga made them feel relaxed, centered and good in their bodies. Many reported a heightened sense of awareness of their bodies as a result of the yoga and their quitting experiences. Yoga was also perceived as helping with life generally and with life-related stress. Enthusiasm for continuing to practice yoga varied. Many planned to attend classes and/or to practice at home, some sought out more challenging classes. Several participants, however, did not enjoy the yoga and did not plan to practice in the future. While some participants saw no connection between yoga and smoking cessation, many reported benefitting from concepts learned in yoga (such as breathing, stress relief, self-talk.
instructions from the instructor) and explicitly identified learning yoga as helpful to quitting. Some used yoga breathing or postures during times of stress, including while craving nicotine. The group experience was described as important, because 1) they were with other yoga novices and 2) they created strong connections to others in the group.

**Conclusion:** This is the first large scale trial of yoga for smoking cessation with men and women; qualitative data provides insight into the phenomenology of participant experiences. Preliminary analysis suggests yoga provided relevant life and smoking cessation skills and that the experience of learning with others who were both new to yoga and also seeking to quit was important.

**23. BHASTRIKA PRANAYAMA CAN BE TAUGHT IN MILITARY ENVIRONMENT AS A MEANS TO INCREASE PARASYMPATHETIC HEART MODULATION AND DECREASE STRESS IN PHYSICALLY FIT SOLDIERS**

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**Key words:** hatha yoga; breathing exercise; heart autonomic modulation; army

**Background:** Although Yoga and its techniques such as pranayamas are traditionally considered to have anti-stress effects, there is poor information derived from randomized controlled trials which address physiological parameters for scientific verification of this statement. Besides, in a typically stressful environment such as an army headquarter, yoga has yet to prove its applicability as an aid on soldiers education and stress management. Controlled randomized trials may produce strong arguments which may help convincing military leadership about the benefits of yoga, and open a path to its introduction in military policy.

**Objective:** To investigate the applicability of bhastrika pranayama as an educational aid for stress management and its effects on heart rate variability of physically fit soldiers in a headquarter environment.

**Methods:** Thirty male volunteers (18 ± 1 years) were randomized into bhastrika (B, n = 15) and waiting control (C, n = 15) groups; after 5 dropouts, B had 13, and C had 12 subjects. Heart rate and respiration were continuously collected for 10 minutes (2.000Hz) at baseline and after 1 month of 30-min everyday bhastrika practice or waiting period. Subjects had 2 classes a week, and received a recorded compact disk to perform a guided practice at home. Autoregressive and symbolic analysis were applied to R-R interval and respiration. Significance was set at p < 0.05 (Two-way ANOVA).

**Results:** At study entry, groups were similar for all frequency domain variables as well as for symbolic analysis ones. One month of training led to a significantly smaller low/high frequency ratio and to a significantly bigger 2UV component of symbolic analysis in the bhastrika group compared to control.

**Conclusion:** One month of bhastrika training changes positively LF/HF ratio and 2UV in physically fit soldiers, indicating a shift of the sympathovagal balance and of the autonomic heart modulation to the parasympathetic branch. Thus, bhastrika pranayama has proven to be applicable on a stressful environment as army headquarters. These findings allow us to state that it may be used as an aid on stress management education for physically fit soldiers, and military leaderships should consider introducing it as a part of military training policy.

**24. YOGA VIA TELEHEALTH PROVIDES COMPARABLE SATISFACTION AND HEALTH IMPROVEMENTS TO IN-PERSON YOGA**

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**Objective:** The purpose of this study is to compare satisfaction with yoga classes and improvement in 15 physical and mental health conditions between veterans who attended yoga classes in-person to those who attended via telehealth. Background: The veteran population presents unique challenges to healthcare. These challenges include treating patients with complex physical and mental health comorbidities, a large volume of patients seeking care, and making specialty care accessible to patients who have limited availability for appointments and/or live far from medical cen-
25. EFFECT OF YOGA ON QUALITY OF LIFE, MOOD, AND MINDFULNESS IN WOMEN WITH DEPRESSION

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Key words: Yoga, quality of life, depression, mindfulness

Objective: Research indicates that mindfulness-based interventions may be an effective intervention for improving quality of life and mood. The purpose of this prospective, randomized, controlled intervention pilot study was to examine the efficacy of a 12-week mindfulness-based yoga intervention relative to a comparison condition among sedentary, depressed women (n = 40) on reported quality of life scores, mood, and mindfulness.

Methods: Women who were currently depressed and had a history of diagnosed depression were randomized to a mindfulness-based yoga condition or a comparison condition. The yoga intervention consisted of a home-based yoga asana, pranayama and meditation practice with mindfulness education sessions delivered over the telephone. The comparison condition consisted of home-based walking sessions and health education sessions delivered over the phone. Quality of life, depression, and mindfulness scores were assessed at baseline, post-intervention (12 weeks), and one-month follow-up.

Results: Statistically significant between group differences were observed at one-month follow-up, F(1,31) = 8.032, p < .001; effect size of 1.04., with the yoga condition reporting a greater increase in quality of life enjoyment and satisfaction than the comparison group. Participants in the yoga group demonstrated that depression scores were significantly related to change in overall mindfulness scores at one-month follow-up (r = -.589, p < .01). Subscale mindfulness measures of non-judgment, (r = -.522, p<.05), and non-reaction scores (r = -.745, p < .001), were statistically significant post-intervention and at follow-up. In other words, participants in the yoga group who reported greater decreases in depressive symptoms also reported higher levels of non-judgmental thoughts, higher instances of non-reaction to events and experiences, and acting with greater awareness.

Regardless of assigned condition, all participants who reported greater decreases in depressive symptoms reported higher levels of mindfulness at post-intervention assessments and appeared to retain the effect at follow-up, r = -.543, p < 0.01 and one-month follow-up, r = -.618, p < 0.01.

Conclusion: Results indicated that a mindfulness-based yoga intervention may be beneficial in improving quality of life and mindfulness for women with depression. Longer interventions with a larger sample size and extended follow-up should be considered for future studies.

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26. CHARACTERISTICS OF YOGA THERAPISTS CURRENTLY PRACTICING IN NORTH AMERICA: A CROSS-SECTIONAL DESCRIPTIVE SURVEY

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Background: Despite advances in yoga therapy research, education and practice, little is known about the characteristics of the current yoga therapy workforce.

Objective: To describe the personal, professional, practice, service and consumer characteristics of the North American Yoga Therapist workforce.

Design: Cross-sectional, descriptive survey design

Methods: Development of a 27-item yoga therapy workforce survey was informed by the contemporary workforce literature and the expertise of the research team. Self-identified, practicing yoga therapists residing in North America (US and Canada), who were members of the International Association of Yoga Therapists, were invited by email to participate in the e-survey.

Results: 367 (7.1%) members responded. Most were aged 40-69 years (88%) and female (91%). Many held a Bachelor or Master’s degree (67%), almost half identified as a “seasoned yoga therapist” (42%) and only a few graduated from an accredited 800-hour program (9%). An average of 8 hours per week was spent in clinical practice with many (41%) earning an annual income of less than US$10,000 from yoga therapy practice. 20 different styles of yoga therapy were practiced. Urban (39%) and suburban (38.1%) were the most common locations of practice. Most therapists conducted therapeutic yoga classes (91%) and 1:1 sessions (94%), with more than half delivering 1-10 therapeutic yoga classes a month (53%) and 1–10 1:1 sessions a month (52%). The cost and duration of therapeutic yoga classes averaged US$15 for 60–75 minutes; for 1:1 sessions, it was US$80 for 60–90 minutes (initial consult) and US$75 for 60–75 minutes (follow-up). Conditions seen most frequently among yoga users were anxiety (77%), back/neck pain (77%) and joint pain/stiffness (67%).

Conclusion: While yoga therapists shared similar demographic profiles with yoga users and other complementary and integrative health (CIH) providers, they tended to work less and earn less than their CIH counterparts. Yoga therapists were less likely to work in rural settings, possibly contributing to the underutilization of yoga in underserved populations. Several obstacles will need to be addressed for greater acceptance of yoga among health consumers and healthcare providers including: increasing access to yoga for underserved populations, identifying common core principles and practices in the various styles of yoga and building a stronger evidence-base for indications for which consumers seek yoga.

27. SUSTAINED IMPROVEMENTS IN PSYCHOLOGICAL WELLBEING AND HEALTH BEHAVIORS FOLLOWING A 5-DAY RESIDENTIAL YOGA-BASED PROGRAM

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3. Penny George Institute for Health and Healing, Alina Health

Objective: The purpose of this single-arm study was to examine the impact of a residential yoga-based program on psychological wellbeing and health behaviors with the ultimate goal of initiating large-scale effectiveness research.

Methods: We evaluated the 5-day Kripalu Approach to Healthy Living (KAHL) program conducted at the Kripalu Center for Yoga & Health, a non-profit educational organization in western Massachusetts focused on yoga, health, and holistic living that sees over 50,000 participants per year in its facility’s programs. The KAHL program includes approximately 5 hours per day of lectures, yoga classes, meditation training, and didactic/experiential activities to promote physical and psychological health. Seventeen adult frontline professionals from a range of fields including education, healthcare, human services, and corrections participated in the program and completed questionnaires immediately before (pre-KAHL), after (post-KAHL), and two months following the program (follow-up). Self-report measures included the Perceived Stress Scale, Positive and Negative Affect Schedule, Subjective Vitality Scale, Psychological Empowerment Scale, Resilience Scale, Five Facet Mindfulness Questionnaire, and Lifestyle Questionnaire.

Results: Repeated measures analysis of variance revealed statistically significant decreases in perceived stress and negative affect; and significant increases in positive affect, subjective vitality, psychological empowerment, resilience, and mindfulness over time (all \(p < .05\)). Paired samples t-tests revealed
that all measures improved from pre-KAHL to post-KAHL (all $p < .05$), and that these improvements were sustained at the two month follow-up (all $p < .05$) with the exception of positive and negative affect ($p > .05$). Additionally, participants’ resilience scores were significantly higher at the two-month follow-up compared with post-KAHL ($p < .01$). Participants also reported significant increases in daily fruit and vegetable consumption and sleep quality, all of which persisted at the two-month follow-up (all $p < .05$).

**Conclusion:** These findings suggest that the KAHL program improves many measures of psychological wellbeing and health behaviors, and that these improvements persist two months after the program.

### 28. THE EFFECTS OF YOGA CLASS ON COLLEGE-AGED STUDENTS’ SELF-EFFICACY TO REGULATE EXERCISE AND EATING & SELF-ESTEEM


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**Key Words:** Yoga, self-efficacy to regulate eating, self-efficacy to regulate exercise, self-esteem

**Objective:** The purpose of this research is to study the effects of a university yoga class on college students; and to compare pre-and post-intervention changes in self-efficacy to regulate eating habits, self-efficacy to regulate exercise, and also changes in self-esteem.

**Methods:** Students ($N = 34$) in this study were between the ages of 17 and 35 and were enrolled in an activity yoga class at a university for 8 weeks. They practiced yoga three times per week for 60 minutes. The style of yoga was T.Krishnamacharya Vinyasa, a vigorous form of yoga designed for young people. Students included in the study had to be present and complete both pre- and post- assessments. These assessments were self-reported questionnaires. The first questionnaire was the Self-Efficacy to Regulate Exercise; students had to rank approximately 18 statements from 0 to 100 (0 representing less motivated and 100 being most motivated). The second questionnaire was Self-Efficacy to Regulate Eating. It was also a self-reported, 30 statement scaled questionnaire from each student with a ranking of 0–100 for each item. Finally, the Rosenberg’s Self Esteem Scale was used to test for self-esteem. The study was conducted on a voluntary basis and had IRB approval from the university. The data was run on SPSS Program with paired-sample t-test.

**Results:** Results of the study showed statistically significant results, after just 8 weeks of yoga class. The first test was self-efficacy to regulate exercise. The pre-test average score was 866, and after 8 weeks of Yoga the average score rose to 891. Second, the self-efficacy to regulate eating went from an average score of 1410 on pre-test to 1436 on the post-test. This was statistically significant at the < .000 level. Finally, pertaining to the Rosenberg Self-Esteem Scale, the pre-test showed an average score of 22.15 and the post-test was 22.61. This finding was significant at the < .000 level.

**Conclusion:** A vigorous university-based yoga class positively associated with changes in self-efficacy to regulate eating, self-efficacy to regulate exercise and also positive changes in self-esteem.

### 29. TRAUMA SENSITIVE YOGA (TSY) FOR VETERANS WITH POSTTRAUMATIC STRESS DISORDER: A PILOT STUDY

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**Key words:** Yoga, PTSD, Veterans, response inhibition, cortisol

**Objective:** Examine the impact of yoga on the stress response system, response inhibition, and mental health in Veterans with posttraumatic stress disorder (PTSD).

**Methods:** Mental health clinic referred Veterans ($n = 16$; 9 male, 7 female) diagnosed with PTSD from a Pacific Northwest VA Health Care System participated in 10 weeks of outpatient TSY. Inclusion criteria were: existing diagnosis of PTSD and medical clearance to participate. Exclusion criteria were: recent severe substance use/dependence, comorbid bipolar or psychotic disorders, pregnancy or color-blindness. Participants were administered cognitive (color-word interference test, trail making test, and digit span test) and self-report (mental health symptoms, sleep quality and psychological function) measures, pre- and post-intervention. Cortisol saliva samples were collected pre- and post-intervention (washing, 30 minutes post-waking, and evening on the same day) to measure cortisol awakening response and daily
output using enzyme-linked immunosorbent assays. Interim data analyses were conducted using paired samples t-tests to evaluate changes in cognitive performance and other mental health variables before and after the yoga intervention.

**Results:** Preliminary analyses revealed post-TSY improvement in verbal response inhibition ($p = .05$). In addition, participants reported fewer symptoms of PTSD ($p = .017$), depression ($p = .004$) fewer subjective cognitive complaints ($p = .015$), greater satisfaction with life ($p = .013$), and improved sleep quality ($p = .048$). Evaluation of salivary cortisol levels is in progress.

**Conclusion:** Posttraumatic stress in active duty service members and Veterans compromises cognitive and emotional functioning, physical health and quality of life. Consistent with previous research our interim findings suggest that participation in TSY positively impacts response inhibition and cognitive flexibility, subjective cognitive complaints, symptoms of PTSD and depression, sleep quality, and satisfaction with life in Veterans. Data collection is expected to be completed by July 2016. Final analyses (including cortisol results) are expected to support more definitive conclusions about the effects of TSY on HPA axis functioning, PTSD symptoms, and TSY efficacy as a non-pharmacological treatment for PTSD.