

1. SUPPORTING VETERANS WITH YOGA: FEMALES REFERRED MORE BY PROVIDERS WHILE MALES AND FEMALES ATTEND AT SIMILAR RATES

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Key words: Yoga, Veterans, clinical programs

Objective: The provision of complementary and integrative health (CIH) is widespread in the Veterans Health Administration. We characterized the patients who were referred to a clinical yoga program between January 1, 2010 and September 30, 2016.

Methods: Data were extracted from electronic health records. The number of yoga classes have continued to expand since the program began in 2010. And included ten outpatient drop-in classes per week, three of which were offered via telehealth. Nine classes were offered during the work day, between 10:00 AM and 4:30 PM. Omnibus tests were conducted for predictors of interest and post-hoc analyses were utilized depending on omnibus results.

Results: A total of 953 veterans were referred to the yoga program during the period of interest. Female Veterans accounted for 27.4% of referrals, a significantly greater number than expected compared to the ratio of female to total patient enrollment in the VA facility (9.6%; $p < .001$). Attendance rates for males and females were not significantly different among those referred ($p = .705$). The most common referral reasons were stress/anxiety (38%) and back/neck pain (37%). Of those with a single referral reason, attendance rates did not differ based on referral reason ($n = 608$, $p = .303$). The average attendee was significantly older than non-attendees (62.0 vs 57.1 years old, $p < .01$). There were differences in attendance in terms of service era ($X^2 = 14.7$, $df = 7$, $p = .04$); Vietnam era Veterans attended at least one class at a higher than average frequency ($n = 359$, $p = .020$) whereas Persian Gulf War Veterans attended lower than average ($n = 207$, $p = .030$). Of those who attended VA appointments for pain, and/or PTSD, thirty-nine percent (376) had both, 44% (415) had pain only, and 5% (49) had PTSD only. There was no significant difference in counts of classes attended between those with different combinations of these conditions (Kruskal Wallis, $n = 953$, $p = .251$) or between attendance of at least one class versus no classes ($n = 953$, $p = .349$).

Conclusion: A clinical yoga program is acceptable to a broad set of Veterans. Older Veterans attended more often than younger Veterans, possibly due to limited classes offered outside business hours. The difference in attendance by age was consistent with differences observed by service era in that Vietnam Veterans, who attended at least one class at above average frequency, are older than the Persian Gulf War Veterans, who attended less. Male Veterans referred for yoga attended at similar rates to female Veterans. Providers referred female Veterans at disproportionately higher rates relative to overall demographics, indicating progress towards overcoming the historical barriers to women engaging with VA services. These results may inform referring providers about appropriate referrals to this clinical yoga program.

2. MOVING TO LEARN: EXPLORING THE IMPACT OF ANATOMY & PHYSIOLOGY ON STUDENTS IN A YOGA TEACHER TRAINING PROGRAM

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Key words: anatomy and physiology, embodied learning, yoga

Objective: The purpose of this study is to explore how yoga teacher training (YTT) students learn correct anatomy and physiology (A&P) for sustainable body alignment and how that learning connects to an embodied experience.

Methods: This current mixed method study explores the understanding of A&P training on 22 female students selected from a 200-hour YTT program. The intervention, a curriculum written and delivered by the researcher, consists of eight three-hour A&P sessions over eight months. The theoretical framework of the curriculum is embodied learning, a process that integrates the entire body as a site of knowledge creation, from the field of adult education. Curriculum learning objectives were constructed from the human anatomy and physiology society (HAPS) outcomes and consultations with yoga teachers. Each session begins with an anatomy focused yoga class followed by instruction on anatomy language, or the musculoskeletal, nervous, or respiratory systems. The researcher is collecting quantitative data from pre- post-tests and applying it to a t-test using statistical analysis software (SAS) to determine statistical significance of the intervention. Basic interpretive qualitative data was collected from journal responses, teaching observations and transcribed interviews.

Results: The class average quantitative pre-test data is 49.39%. Qualitative data from journals collected so far indicate three emerging themes: learning how they learn, understanding teachers and accurate anatomical cueing. Students identified the following ways of how they learn best: discussions during peer work, completion of learning activities, and application of information to body movement and yoga practice. Many participants commented on gaining a better understanding of anatomy references made by other yoga teachers. Finally, students recognized the importance of using accurate anatomical cues to achieve sustainable alignment.

Conclusion: Quantitative data obtained from pre-test scores indicate limited understanding of A&P prior to the intervention. Qualitative data suggests that students learn A&P through learning activities, and embodied learning. Mixed methods data point to what and how YTT students learn regarding A&P.

3. MECHANISMS OF EATING BEHAVIOR AND BMI CHANGE IN A 12-WEEK KRIPALU YOGA INTERVENTION: A PILOT CLINICAL TRIAL IN STRESSED ADULTS WITH POOR DIET

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Key words: Emotional eating, obesity, yoga, mindfulness, self-compassion

Objective: Poor eating behaviors and obesity represent two of the top three leading causes of preventable death in the U.S. (Mokdad et al., 2018). While effective interventions can facilitate eating behavior and weight change, the magnitude and maintenance of change remains a challenge, with psychosocial risk factors increasingly implicated as mitigating factors. Yoga represents a novel intervention suggested in some studies to ameliorate these processes, with potential to facilitate more sustained change. We hypothesized that participation in a 12-week Kripalu yoga program would catalyze improvements in BMI and emotional and intuitive eating that corresponded with stress reduction and gains in body awareness, mindfulness, and self-compassion. Our single-armed trial tested this among stressed adults with poor diet free of diet-impacting conditions.

Methods: 41 participants (70% female; 63% White) at two study sites (one urban, one rural) completed self-reported validated surveys at baseline (T1), 8 weeks (T2), 12 weeks (T3; post-intervention), 16 weeks (T4; follow-up). Random intercept linear mixed-effects models assessed change across time; post-hoc contrasts probed T1-T3 change and T3-T4 maintenance. To assess hypothesized mechanisms, T3/T4 scores were regressed on T1 to generate standardized change residuals, then correlated. Models covaried for sex and study site.

Results: Gains in T3 intuitive eating (IE; $p = 0.014$) further improved at T4 ($p = .023$). Improvements in T3 BMI ($p = .025$) and emotional eating (EE; $p = .002$) maintained at T4 ($p = .094$; $p = .480$). This pattern replicated for body awareness ($p = .000$; $p = .266$), mindfulness ($p = .006$; $p = .513$), self-compassion (SC; $p = .040$; $p = .852$), stress reduction ($p = .020$; $p = .536$). Reductions in BMI (T1-T4) were associated with gains in mindfulness (T1-T3; $p = .039$). Reductions in EE (T1-T3) were linked to increases in SC and mindfulness (T1-T3; $p = .033$; $p = .002$), and body awareness (T1-T4; $p = .028$). Improvements in IE (T1-T3) were associated with SC (T1-T3; $p = .041$), mindfulness (T1-T4; $p = .047$), and reduced EE (T1-T3, $p < .001$, with IE (T1-T4) linked with stress reduction (T1-T3; $p = .019$).

Conclusion: Results provide inferential support for psychosocial mechanisms through which yoga may foster healthful eating behaviors and weight maintenance among stressed adults, noteworthy given treatment recalcitrance in this population. Future research should test these hypotheses more rigorously using active controls and larger sample sizes.

4. YOGA THERAPY FOR MANAGEMENT OF PERSISTENT LYME DISEASE SYMPTOMS IN A 27-YEAR-OLD FEMALE: A CASE STUDY

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Key words: yoga, yoga therapy, complementary therapy, Lyme disease, neuroborreliosis, tick-borne illness

Introduction: The purpose of this case study is to examine yoga therapy's effects on symptoms associated with persistent neurological Lyme disease in a 27-year-old female. Lyme disease is currently confounding the medical world; physicians have yet to agree upon its pathophysiology and treatment protocols. Patients who experience persistent symptoms often encounter barriers to effective medical treatment and seek complementary modalities to manage their illness

experiences. There is no formal research on yoga therapy for patients with Lyme disease, but studies have shown yoga to be effective in working with its common symptoms in isolation, including cognition challenges, pain, fatigue, anxiety, and depression.

Methods/Results: “Jo” was diagnosed with late stage neuroborreliosis (neurological Lyme disease) in 2015. She has worked with a variety of medical providers, undergone several courses of antibiotic treatments, hyperthermia therapy, craniosacral therapy, physical therapy, “Yoga for Pain Management” group series, and dietary changes. Despite the improvements she has made since her diagnosis, Jo continues to experience persisting fatigue, “brain fog”, emotional dysregulation, and pain in her upper body. Jo reports Lyme symptoms interfere with her ability to work, experience joy, and feel connected to others.

Jo was assessed using NeuroQOL and PROMIS evaluation tools for cognition function, fatigue, pain intensity, pain interference, anxiety, depression, emotional and behavioral dyscontrol.

Yoga therapy sessions focused on enhancing interoceptive capacity and breathing to increase vagal tone, improve both overall cognitive function and psycho-emotional regulation. At home Jo used guided meditations of 10-15 minutes in supported back-bending postures 3-5 times a week, somatic practices and breathwork. After four weeks (at the third yoga therapy session) Jo responded with improvements to 33 out of 50 questions across all screening categories.

Conclusion: Yoga therapy intervention with home practice positively affected Jo’s persistent Lyme symptoms, most significantly cognition challenges, fatigue, anxiety, and depression. Yoga therapy may offer a novel approach to working with the complex experience of persistent Lyme.

5. THE EFFECTS OF A YOGA MEDITATION (YOMED) PROGRAM ON PROPRIOCEPTION AND BALANCE IN INDIVIDUALS DIAGNOSED WITH PARKINSON’S

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Key Words: Yoga intervention, Proprioception, Balance

Objective: Parkinson’s disease (PD) is the second most prevalent neurological disorder affecting the US population. PD often presents with a variety of symptoms that include decreased motor control, reduced proprioception, balance and impaired cognition. Proprioceptive acuity and balance have been linked to functional independence and fall risk across a variety of clinical populations. Though numerous interventions have been developed in effort to reduce PD symptoms, optimal training protocols to attenuate disease progression have yet to be determined. The purpose of this study was to compare the impact of a novel yoga meditation (YoMed) to an already validated proprioceptive training (PT) program on indices of proprioception and balance within a PD population.

Methods: 20 participants (M=11, F=9) were randomly assigned to the YoMed or PT group. Each participant underwent a 45-minute training session 2x/wk over the course of a 12-weeks. Primary outcome measures included assessments of joint position sense (JPS) and joint kinesthesia (JK) as well as several balance evaluations including: the Tinetti Balance and Gait Assessment (TIN), the Balance Error Scoring System (BESS) and dynamic posturography (DMA; Proprio5000). Functional ability was assessed using the times up and go (TUG). Pretest and post-test measurements were quantified to compare the effects of each training modality. An analysis of covariance (ANCOVA) was used to examine between group differences. Pre-test values were used as covariates to nullify any possible imbalances during the randomization process and between baseline values.

Results: There were no significant between-group differences in JPS or JK following either training intervention; however, there was a significant improvement in TIN for the YoMed group (MD = 1.56±.63, $p = .04$). Additionally, DMA scores significantly improved for both groups following training (YoMed: MD = -63.44±83.91, $p = .05$; PT: MD = -120.27 ± 171.41, $p = .04$). There were no significant differences in the mean time for the TUG for either training group, however, the YoMed group showed a visible decline not observed in the PT group.

Conclusion: Findings from the current study indicate that the implementation of our novel YoMed program can improve several balance measures to a greater degree than an established PT program; however, neither intervention influenced our measures of proprioception. These findings support the use of the YoMed program in individuals with PD.

6. LITTLE FLOWER YOGA: AN EVALUATION OF A YOGA AND MINDFULNESS PROGRAM FOR CHILDREN WITH EMOTION REGULATION AND ATTENTION PROBLEMS

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Key words: Yoga, mindfulness, schools, inattention, emotion regulation

Objective: Today's youth confront multiple life stressors, increasing their risk for development of a psychological disorder. Research on school-based yoga and mindfulness programs is a field that is in its infancy. Additionally, much of the research has investigated relatively short interventions, and have not included follow-up analyses. The goal of this preliminary investigation was to evaluate Little Flower Yoga, a promising yoga and mindfulness program for children, which incorporates five elements (connect, breathe, move, focus, relax) over a nine-month academic school year, and a 3-month follow-up. The program was used as the curriculum of a yoga-mindfulness class that participants attended once or twice a week for 36 weeks.

Methods: We conducted a clinical trial to evaluate the short and longer-term effects of this program in a sample of 5–7 year-olds ($n = 14$) who met a predetermined threshold based on well-validated measures of either emotion regulation and/or attentional difficulties to assess the effects of the intervention on emotion regulation, attention, and executive functioning. Objective and multi-method measures were used to assess outcomes across multiple time points (baseline, mid-treatment, post-treatment, and 3-month follow up).

Results: Results of repeated measures ANOVA revealed medium effects on child's emotional regulation (Partial $X^2=0.071$), including reductions in the child's tendency to be influenced by negative emotions (i.e. sadness, frustration, stress), as well as small effects on child's anger control (Partial $X^2=0.013$), according to teacher report after the intervention. Results also showed large effects of the intervention on improving child's observed inhibitory control (Partial $X^2=0.303$), but no effects on child's inattention and executive functioning as reported by teachers. Additional analyses will focus on if individual level changes were reliable/clinically significant.

Conclusion: The number of youth with behavioral and emotional challenges is increasing. Although, some schools have implemented yoga and/or mindfulness programs to address

these needs, these programs are not supported by research. This investigation of one such program provides preliminary findings indicating that Little Flower Yoga has some promise as an approach to addressing emotion regulation and executive functioning difficulties in children; further investigations utilizing a larger sample size and control group are warranted.

7. THE EFFECTS OF A 5-MINUTE GUIDED MEDITATION IN CONSTRUCTIVE REST FOR STRESS AND NEGATIVE SELF-IMAGE

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Research demonstrates the effectiveness of yoga to work with anxiety, stress and subjective and psychological wellbeing. In addition, it is adherence to the yoga program which has demonstrated an increased effectiveness. As such it is critical to find a practice in which the client can have optimal adherence within their schedule. This case report demonstrates the effectiveness of the implementation of simple practice, a single yoga pose (constructive rest), with guided meditation for at least five minutes a day for stress and the cultivation of a calm mental state. It is critical to be able to have a practice that fits a demanding work day schedule.

The patient is a 56 year-old female whose main concerns are to be able to deal with the stress of her high functioning job, during which she is always on her feet, and to be able to deal with fear and quieten her mind of negative self-talk. Yoga therapy musculoskeletal assessments demonstrate tight pectorals and psoas, and increased lordosis of the lower back and kyphosis of the middle and upper back.

A pose that supports the spine and shoulders, and elevates the body weight from the hips, knees and feet is chosen to address the tightness of the musculoskeletal system. This pose, commonly called constructive rest, with meditation may help to activate the parasympathetic response thereby increasing regulation of the system. Mindfulness and negative emotional regulation are supposed to increase by practicing yoga.

Theoretically, by increasing parasympathetic nervous system activity in relaxation response, client reported greater capacity to witness and observe thoughts and emotions while maintaining a calm, clear state of mind. She reports that the convenience of this brief practice enables her to consistently practice and over the 6 weeks she can feel the effects of the practice throughout the day.

This case study suggests that creating a body and breath connection and getting in touch with the flow of breath, which in many traditional disciplines are referred as some source of energy that keeps one alive, in a rested and support-

ed pose can be helpful to raise awareness over breath, body, feelings and emotions and help sustain a calm state. Further research with more practitioners and measuring tools can be considered to explore what is suggested in this case.

8. THE EFFECT OF YOGA ON PHYSIOLOGICAL AND PSYCHOLOGICAL MEASUREMENTS IN GRADUATE HEALTHCARE STUDENTS

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Key words: Yoga, healthcare students

Objective: The purpose of this study was to determine the effects of a self-determined yoga practice on vital signs and psychologic measures in graduate healthcare students.

Methods: Subjects were recruited from a 12-week online elective titled “Yoga as Medicine”, and controls from the student body of the same graduate healthcare institution. Subjects ($n = 24$) and controls ($n = 25$) were recruited over 4 cohorts for 2 consecutive years. Inclusion criteria included no mental or physical health issues in the last 2 years or yoga practice more frequent than 6 times in the last 6 months. Subjects received weekly online modules in yogic philosophy, biopsychosocial model of health, pranayama, meditation, asana, restorative yoga and inversions, yoga practice in the U.S., and Ayurveda. Subjects were encouraged but not required to participate in asana, meditation, and pranayama 4 times per week. Subjects and controls were to continue their previous exercise regimen. All participants recorded vital signs and completed subjective outcome instruments within 2 weeks of initiation of the course and at its conclusion. Outcome measures included blood pressure (BP), heart rate (HR), respiration rate (RR), the Oxford Happiness Questionnaire (OHQ), Self-Compassion Scale (SCS), and Perceived Stress Scale (PSS). Participants logged exercise and yoga practices during the 12 weeks.

Results: Subjects averaged 3 days of asana, meditation, and pranayama per week. Dependent t -tests assessed pre/post outcomes, alpha at 0.05. RR and diastolic BP (DBP) improved in subjects (RR ($t(23) = 2.50, p = 0.01$)), (DBP ($t(23) = 2.14, p = 0.02$)) but not controls (RR ($t(24) = 0.29, p = 0.39$)), (DBP ($t(24) = 0.03, p = 0.49$)). HR revealed no changes in subjects or controls, while systolic BP improved in both groups. In subjective outcomes, the SCS and PSS showed significant improvement in subjects (SCS($t(23) = -1.85, p = 0.04$)),

(PSS($t(23) = 1.83, p = 0.04$)), but not controls (SCS ($t(24) = -0.01, p = 0.50$)), (PSS ($t(24) = -0.16, p = 0.43$)) The OHQ showed significant improvements in both groups.

Conclusion: A self-determined 12-week yoga practice has positive effects on physiological measures of RR and DBP and psychological measures of self-compassion and stress in graduate healthcare students.

9. PHYSICAL AND PSYCHOSOCIAL BENEFITS OF YOGA FOR PEOPLE WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

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Key words: Yoga, intellectual and developmental disabilities, muscular strength, endurance, balance

Objective: The purpose of this study was to determine the physical and psychosocial benefits of yoga participation for adults with intellectual and developmental disabilities (IDDD).

Methods: Participants eligible for the study were: age 18+; had an IDDD; participants in a day program for individuals with disabilities; and cleared for physical activity based on their Physical Activity Readiness Questionnaire responses. Participants engaged in biweekly, 60-minute yoga sessions for eight weeks. Quantitative pre-/post-measures specific to psychosocial functioning included the Motive for Physical Activities Measure-Revised (MPAM-R), the Rosenberg Self-Esteem Scale (RSES), and the Flourishing Scale (FS). Pre-/post-physical measures included the Chair Stand Test for lower-body strength and endurance, a handheld dynamometer for upper body strength, sit-ups for abdominal endurance, the Timed Push-up Test for upper body strength, and the Four Step Square Test for balance. Wilcoxon Signed Rank tests were used to analyze quantitative data. Participants ($N = 11$) also engaged in a focus group post-yoga program to provide perspectives related to benefits of yoga, and areas for program improvement. Conventional content analysis was conducted to determine qualitative themes.

Results: A significant difference was found in the MPAM-R subscale, specific to interest and enjoyment in physical activity ($Z = 2.205, p = .027$); however, total MPAM-R and other subscale scores were not significant ($p > .05$). Scores for the RSES, upper body strength, abdominal endurance, and balance were statistically insignificant ($p > .05$). Significant improvements between pre-/post-FS scores ($Z = 2.023, p =$

.043), and lower-body strength and endurance ($Z=2.803$, $p = .005$) were found. Social support was not quantitatively measured, however, participants indicated yoga having social benefits; one participant stated, *"I enjoy yoga...yoga...is part of my life...the best friends I ever had...in this yoga class."* Participants also indicated improvements in mood: *"I feel great...more happier."*

Conclusion: Yoga has the potential to increase lower-body strength and endurance, enjoyment in physical activity, and psychological wellbeing among individuals with IDDD. However, not all participants were physically able to complete each performance measure. Future research should identify more accessible assessments for evaluating physical functioning, and psychosocial measures specific to social support and mood among individuals with IDDD.

10. EFFECTS OF PARTICIPATION IN STANDING AND SEATED YOGA CLASSES ON PHYSICAL FUNCTIONING IN COMMUNITY-DWELLING OLDER ADULTS

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Key words: Yoga, older adults, balance, gait speed, strength, flexibility

Objective: The purpose of this study was to determine the extent to which participation in an eight-week traditional Hatha yoga class, or seated Hatha yoga class influenced balance, gait, strength, and flexibility in community-dwelling older adults.

Methods: Two eight-week yoga classes (one standing, and one seated yoga class) were offered to members of a local Osher Lifelong Learning Institute. Prior to participation, individuals completed the Physical Activity Readiness Questionnaire to ensure there were not contraindications to their participation in physical activity. Yoga sequences progressively advanced in level of difficulty, and were facilitated by a yoga therapist, and trained or registered yoga teachers. Each 60-minute class involved breathing exercises, modified yoga postures, and meditation, with the same sequences being used for the standing and seated classes. Participants ($N=7$) were asked to complete: (a) the Fullerton Advanced Balance Scale (FAB) to assess balance; (b) the 10 Meter Walk Test (10MW) to assess gait speed; and (c) the six tests required of the Functional Fitness Test (FFT) to assess strength, flexibility, and balance

before the start of, and immediately following the completion of the eight-week yoga program. Wilcoxon signed-rank tests, and the calculation of percent change were used to analyze differences in pre- and post-data.

Results: Participants (seated class $n = 4$; standing class $n = 3$) were 100% female, with a mean age of 68. Participant's FFT scores showed significant change in the Chair Stand Test ($p = .034$) and 2-Minute Step Test ($p = .027$). There was no significant change in the FFT Arm Curl Test ($p = .072$), Back Scratch Test ($p = .058$), Chair Sit-and-Reach Test ($p = .833$), Timed Up-and-Go Test ($p = .176$), the FAB ($p = .611$), or the 10MW ($p = .398$). However, percent change calculations indicate positive trends in improvement for participants' scores on the FAB (increased 8.1%), 10MW (increased by 21%), FFT Arm Curl Test (increase by 18%), FFT Back Scratch Test (increased by 35%), FFT Chair Sit-and-Reach Test (increased by 36%), and FFT Timed Up-and-Go Test (decreased by 20%).

Conclusion: Both traditional and seated Hatha yoga programs have the potential to improve balance, strength, flexibility, and gait speed in community-dwelling older adults over eight weeks of participation. A randomized controlled trial should be implemented in future research to determine the potential impact of yoga on older adults' physical functioning.

11. PREDICTIVE FACTORS FOR FUNCTIONAL IMPROVEMENT IN PARKINSON'S DISEASE AFTER YOGA INTERVENTION

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Key words: Yoga, Parkinson's disease, predictive factors

Objective: The purpose of this post-hoc analysis was to determine the factors that predicted improvements in balance, gait, quality of life (QoL), and reduced fatigue for people with Parkinson's disease (PD) after an eight-week yoga intervention.

Methods: This study used an eight-week Hatha yoga intervention (2x/week, 60 minute sessions) developed specifically for people with PD by a C-IAYT and rehabilitation specialist. Twenty-seven participants were randomly assigned to either the experimental group ($n = 15$) or the wait-list control group ($n = 12$). Stepwise multiple linear regression was utilized to identify significant predictors of improvement in balance, fall control, and PD-related fatigue and QoL.

Results: The results of this analysis indicated one significant model for each outcome tested. Faster gait speed at baseline (T1) (measured by the 10 Meter Walk Test) predicted greater improvements in balance at T2 (measured by the Mini-BESTest) ($F = 4.86, p = .038, R^2 = .188$), and explained 19% of the variance. Absence of dyskinesia at T1 predicted greater improvements of postural stability at T2 (measured by the Functional Gate Assessment) ($F = 4.52, p = .046, R^2 = .177$), and explained 17% of the variance. Lower cognitive functioning at T2 (measured by the Montreal Cognitive Assessment) predicted greater improvement in participants belief they could manage falls at T2 (measured by the Falls Management Scale) ($F = 6.37, p = .020, R^2 = .234$). Lower body awareness at T1 (measured by the Body Responsiveness Questionnaire) predicted greater improvements in fatigue at T2 (measured by the Parkinson's Fatigue Scale) ($F = 5.417, p = .030, R^2 = .205$), and explained 20% of the variance. Lower body awareness at T1 (measured by the Body Responsiveness Questionnaire) also predicted greater improvements in PD-related QoL (measured by the PD Questionnaire-8) at T2 ($F = 4.355, p = .049, R^2 = .172$), explaining 17% of the variance.

Conclusion: Results from this study indicate that better performance on the 10 Meter Walk Test may indicate higher potential to improve gait function through a yoga intervention. Clients with lower body awareness scores may experience higher improvements related to QoL and fatigue than those with higher body awareness scores. Finally, the findings of this study validate previous research demonstrating people with lower cognitive functioning tend to show more improvement in self-perceived ability to control and manage falls.

12. INFLUENCE OF YOGA ON NON-MOTOR SYMPTOMS OF PARKINSON'S DISEASE

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Key words: Yoga, Parkinson's disease, quality of life, fatigue

Objective: The focus of this study was to examine changes in non-motor symptoms of Parkinson's disease (PD), specifically fatigue, balance confidence, belief in ability to manage falls, activity constraints, and PD-related quality of life (QoL), following an eight-week Hatha Yoga intervention.

Methods: Data for analyses were part of a larger randomized wait-list controlled study that investigated improvements in motor function for adults with PD after an eight-week yoga

intervention. The intervention was progressively difficult, and led by a yoga therapist (C-IAYT) who created the sequence specifically for individuals with PD. Participants met biweekly for 60-minute sessions which included breathing exercises, meditation, modified yoga postures in sitting, standing, and supine positions, with each class ending with 10-minute relaxation. Demographic characteristics were analyzed using descriptive statistics. Linear contrasts were utilized to assess the change within each group, and to compare intervention and control groups.

Results: Twenty-seven individuals completed the study with 15 in the yoga group, and 12 in the waitlist control group. Participants' average age was 67, and 66% of the sample was male. There were significant improvements within groups for fatigue, balance confidence, belief in ability to manage falls, activity constraints, and PD related QoL. There were significant improvements across groups for activity constraints. Within group improvements were statistically significant for fatigue measured by the Parkinson's Fatigue Scale ($t = 2.43, p = 0.03, d = 0.63$), balance confidence measured by the Activities Balance Confidence Scale ($t = -3.14, p = 0.01, d = 0.81$), the belief in one's ability to manage falls measured by the Falls Management Scale ($t = -2.40, p = 0.0309, d = 0.62$), activity constraints measured by the Activities Constraints Questionnaire ($t = -4.10, p = 0.00, d = 1.06$), and PD-related QoL, as measured by the PD Questionnaire-8 ($t = 2.49, p = 0.03, d = 0.64$). Across group changes were statistically significant for activity constraints ($t = 2.44, p = 0.02, d = .95$).

Conclusion: It has been recommended that treatment of non-motor symptoms of PD be systematically included in standard practice for treatment of people with PD. The results of this study demonstrate that yoga may be an effective intervention to use as a complementary and alternative treatment to reduce non-motor symptoms of PD.

13. YOGA IMPROVES POSTURAL STABILITY AND BALANCE CONTROL FOR PEOPLE WITH PARKINSON'S DISEASE

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Key words: Yoga, Parkinson's disease, postural stability, freezing gait, balance control

Objectives: The objective of this study was to evaluate the influence of an eight-week therapeutic hatha yoga intervention on the motor function, postural stability, balance control, and freezing gait of individuals with Parkinson's disease (PD). **Methods:** A wait-list controlled randomized controlled pilot study was conducted utilizing an eight-week yoga intervention. To be included in this trial, individuals had to: be diagnosed with PD with a rating of 1.5–4 on the Modified Hoehn and Yahr Scale; identify a fear of falling; be able to walk 10 meters; be >18 years old; able to speak English; and score >4/6 on the short Mini-Mental Status Exam. Individuals were randomized into the experimental group or the wait list control (WLC). The yoga intervention progressed in difficulty over eight-weeks, and was designed for individuals with PD by a yoga therapist (C-IAYT) to focus on improving motor function, postural stability, and balance control. The Unified Parkinson's Disease Rating Scale-Motor (UPDRS-M) was used to measure motor function, the Mini-BESTest measured balance control, the Functional Gait Assessment (FGA) assessed postural stability, and the Freezing of Gait (FoG) questionnaire was used to evaluate freezing gait. Descriptive analyses were conducted on demographic data, and paired t-tests were used to measure change over time. Effect sizes were estimated using Cohen's *d*.

Results: Twenty-seven individuals completed the study ($n=15$ in experimental group; $n=12$ in WLC). Across group significant improvements were seen in postural stability on the FGA ($t = 2.27, p = 0.03$), with a large effect of $d = 0.88$. Within group changes were noted in: motor function, as measured by the UPDRS-M in the experimental group ($t(14) = 2.97, p = 0.0102$); balance control on the Mini BESTest ($t(14) = -6.01, p < 0.0001$) in the experimental group and the WLC ($t(11) = -4.30, p = .0012$); postural stability on the FGA in the experimental group ($t(14) = -6.67, p < 0.0001$); and freezing of gait in the experimental group ($t(14) = 2.68, p = 0.018$). These changes yielded large effects on: the UPDRS-M ($d = 0.76$ for the experimental group), the Mini-BESTest ($d = 1.55$ for experimental group; $d = 1.24$ for the WLC), the FGA ($d = 1.72$ for the experimental group); and a medium effect on the FoG ($d = 0.69$).

Conclusion: An eight-week yoga intervention led to a clinically important difference in motor function on the UPDRS-M. Postural stability, balance control, motor function, and freezing gait all improved in the experimental group.

14. A COMMUNITY-BASED GENTLE YOGA PROGRAM FOR PEOPLE AFFECTED BY TRAUMATIC BRAIN INJURY

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Key words: Yoga, traumatic brain injury, community reintegration, quality of life, resilience

Objective: Traumatic brain injury (TBI) is a common and complex chronic health condition that can lead to debilitating cognitive, physical, emotional, and behavioral symptoms. The LoveYourBrain Foundation offers a community-based gentle yoga program for people with TBI and their caregivers to facilitate community reintegration, build skills in resilience, and promote wellbeing. LoveYourBrain has partnered with and trained yoga teachers from 35 yoga studios in 19 US states and 3 Canadian provinces to deliver this program. The objective of this study was to evaluate the acceptability, feasibility, and impact of the LoveYourBrain Yoga program.

Intervention: LoveYourBrain Yoga is a free, group-based, 6-session program that follows a manualized curriculum. Each class follows a similar structure: 10 minutes of pranayama, 45 minutes of gentle asana, 15 minutes of guided meditation, and 20 minutes of facilitated group discussion based on the science of resilience. People are eligible to participate if they have experienced a traumatic brain injury or are a caregiver, are ambulatory, are open to participating in group discussion, and can follow instructions.

Methods: A mixed-methods study evaluating participants' experience in the LoveYourBrain Yoga program. The qualitative study comprised in-depth, semi-structured interviews, which were analyzed using content analysis. The quantitative study comprised self-reported online surveys administered before and after the program that assessed quality of life on the Quality of Life after Brain Injury scale, and Resilience, Positive Affect and Wellbeing, Cognition, and Emotional and Behavioral Dysregulation using valid and reliable TBI-specific scales from the National Institutes of Health.

Results: In the qualitative study, interviews with 16 participants (i.e., 13 people with TBI and 3 caregivers) produced six emerging themes: community reintegration, physical health, self-regulation, belonging, self-efficacy, and resilience. Participants reported ongoing use of techniques (i.e., pranayama) to help regulate emotions, stress, and attention; improve-

ments in strength, balance, flexibility; a greater sense of belonging and greater capability to move forward with their lives; and appreciation of the program's community-based environment. In the quantitative study, 266 participants reported significant improvements in quality of life from baseline (42.9 SD = 17.4) to post-series (53.6 SD = 18.4, $p < 0.001$), as well as in Resilience (43.9 vs. 46.0, $p < 0.001$), Positive Affect & Wellbeing (48.5 vs. 50.1, $p < 0.001$), and Cognition (34.1 vs. 35.5, $p = 0.001$). No significant changes were found in emotional and behavioral dysregulation.

Conclusions: LoveYourBrain Yoga demonstrates acceptability, feasibility, and positive impact on physical, psychological, and social health outcomes for people affected by TBI.

15. EFFECTS OF TWO KUNDALINI YOGA MEDITATIONS ON SELF-ESTEEM, SELF-EFFICACY AND MOOD

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Key words: meditation, emotional self-efficacy, self-esteem, mood, kundalini yoga

Objective: The hypothesis guiding the research was whether brief meditation practices may contribute to greater self-esteem (SES) and emotional self-efficacy (SEF), while increasing positive mood (PM) and decreasing negative mood (NM). The study also aimed to compare the level of affective change by the type of meditation used, specifically, Kirtan Kriya (KK) that includes mantra recitation and Inner Conflict Resolver (ICR) that includes breathing techniques, both are techniques within Kundalini Yoga as taught by Yogi Bhanjan.

Methods: The study included 46 participants; 23 of them randomly assigned to KK and 23 to ICR; 80.4% had some previous experience with meditation, only 4.7% were regular practitioners. Participants were instructed to practice daily for 40 days, 11 minutes per day. Instruments to measure SES, SEF, PM and NM at pre and post-intervention were: Rosenberg Self-Esteem Scale (RSES); Positive and Negative Affect Schedule (PANAS) and Regulatory Emotional Self-Efficacy (RESE). Data were analyzed using multivariate analysis of variance (MANOVA).

Results: In both cases, participants reported greater increases of SES, SEF, PM and NM.

All changes within each group were statistically significant. There were no significant differences between participants with and without previous meditation experience.

Although numerical differences were observed, always

favoring KK meditation over ICR meditation, these differences were not statistically significant.

Conclusion: The results of the study have confirmed that, as a behavioral intervention, yoga meditation may improve well-being and quality of life by increasing the levels of SES, SEF, PM and NM. Although it is possible that different meditations may have stronger effects, the differences in this study comparing KK and ICR were not statistically significant. Studies with stronger statistical power may be necessary to evaluate this possibility.

16. A DISTRICT-WIDE QUALITATIVE STUDY OF YOGA IN THE SCHOOLS: OUTCOMES AND CHALLENGES

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Key words: School-based yoga programs; mindfulness; implementation; district; yoga curriculum and delivery

Objective: A qualitative study was conducted to explore the implementation of a district-wide yoga program within the context of a research study to detail the outcomes and difficulties as perceived by the school staff and researchers working within the Encinitas Union School District (EUSD).

Methods: Thirty-two (N = 32) staff members involved in the implementation of the yoga program across 9 elementary schools in the district were interviewed over five days by a team of researchers. Participants included the district's superintendent and assistants, school principals, administrators, classroom teachers, and Health and Wellness instructors. The majority of interviewees were female and White. Detailed demographics were not included to protect participants' confidentiality due to the lawsuit that was occurring against EUSD at the time of the interviews. During an in-depth, half-hour interview, personnel were asked questions pertaining to their experiences with yoga in the district, the district climate, program implementation, content, and perceived barriers. Staff were also asked about the program's challenges and how they were addressed, interactions with parents and staff, and student responses. Data from interviews with school personnel was analyzed using an Interpretative Phenomenological Analysis.

Results: Through an iterative process, two core constructs and their major themes and subthemes emerged: district level rollout and tips for districts. Under district level rollout, major themes included: initial phase of district-wide yoga program implementation; practical aspects of yoga implementation;

creation of yoga curriculum; delivery of yoga implementation challenges; district climate regarding yoga program; opting out of yoga; upper grade and gender challenges; and parent concerns. Under tips for districts, themes identified actionable practices useful for districts considering implementing yoga.

Conclusion: Findings of this study illuminate the challenges that accompany a district-wide rollout and implementation of a school-based yoga program. The reports and recommendations from school staff can serve to inform efforts of current yoga programs in school settings as well as those of schools and districts seeking to develop and implement yoga programs.

17. USING A MIXED-METHODS APPROACH TO DEMONSTRATE THE VALUE OF YOGA FOR IMPROVING ADOLESCENT SLEEP QUALITY

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Key words: yoga, sleep quality, adolescents, mixed-methods

Objective: This study was the first to apply a mixed-methods approach to determine whether yoga can be used as a viable technique to improve sleep quality and other peripheral factors in an ethnically diverse population of high school students.

Methods: Students at a local public high school in grades 10–12 were recruited through their physical education classes ($n = 59$) and directed to select either the yoga unit (Yoga Group) ($n = 22$) or the non-yoga exercise unit (PE-as-Usual Group) ($n = 19$). Twenty participants successfully completed self-reported questionnaires pre- and post-intervention that quantitatively and qualitatively assessed sleep quality, daytime sleepiness, and other peripheral factors such as body awareness, self-compassion, and nutritional habits. A separate component utilized actigraph tracking technology to assess sleep quality in a population of 6 students who completed a 20-minute yoga video every other night for a week to provide more objective measurements of sleep quality.

Results: Yoga was found to significantly improve body awareness ($p = 0.05$), which may in turn lead to healthier dietary choices ($p < 0.05$) but had no effect on sleep quality or daytime sleepiness. Actigraph data indicated that yoga significantly reduced the length of time it takes to fall asleep and the amount of time awake or restless during the night ($p < 0.05$). Qualitative data suggested greater body awareness and self-compassion.

Conclusion: According to self-reported questionnaire data, no significant changes in sleep quality or daytime sleepiness occurred within or between groups. However, actigraph data suggest that yoga can improve sleep quality in adolescent populations and may be useful to improve their wellbeing without the use of pharmaceuticals.

18. EFFECT OF 12 WEEKS OF YOGA THERAPY ON BAROREFLEX SENSITIVITY AND QUALITY OF LIFE IN THE PATIENTS OF RHEUMATOID ARTHRITIS—A RANDOMIZED CONTROL TRIAL

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Keywords: Autonomic dysfunction, baroreflex sensitivity, quality of life, rheumatoid arthritis, yoga therapy.

Background: The autonomic nervous system is altered in rheumatoid arthritis (RA), causing frequent cardiovascular complications and increasing the risk of cardiovascular mortality. Baroreflex sensitivity (BRS) is an accepted and reliable marker of cardiac autonomic functions. Yoga practice improves cardiovascular autonomic functions. To the best of our knowledge, there is no previous study, in which effect of 12 weeks of yoga therapy on BRS and quality of life (QOL) has been studied in newly diagnosed patients of RA.

Objectives: To assess the effect of 12 weeks of yoga therapy on baroreflex sensitivity and quality of life in the newly diagnosed patients of rheumatoid arthritis.

Material and methods: In this study, 124 patients were recruited and randomized into two groups: control group ($n = 62$) & yoga group ($n = 62$). Yoga therapy was given to yoga group (YG) for 12 weeks in addition to standard medical treatment. Control group (CG) received only standard medical treatment. Anthropometric parameters were assessed; BRS and other cardiovascular parameters were measured by continuous Blood pressure variability method using FINAPRES. QOL was assessed using the Indian version of the Health Assessment Questionnaire. All the above-mentioned parameters were measured at baseline and after 12 weeks of study period. Paired t test and Unpaired t test was used to analyse the data.

Results: We found that after 12 weeks of yoga therapy, BRS increased 48% in YG (pre: 8.37 ± 4.7 , post: 12.46 ± 4.1 , $p < 0.01$) and 18% in CG (pre: 8.46 ± 4.5 , post: 9.97 ± 3.9 , $p < 0.06$), on comparison between the groups, the difference was statistically significant ($p < 0.01$). We also found QOL was significantly improved in YG (pre: 2.42 ± 0.82 , post: 0.88 ± 0.71 , $p < 0.001$) & in CG (pre: 2.46 ± 0.78 , post: 1.26 ± 0.78 , $p < 0.001$) but the improvement was more in yoga group (63%) as compared to control group (48%) which was statistically significant ($p < 0.05$).

Conclusion: It is concluded that 12 weeks of yoga therapy improves baroreflex sensitivity and quality of life in the newly diagnosed patients of rheumatoid arthritis.

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19. EFFECT OF YOGA THERAPY ON DISEASE ACTIVITY AND HEART RATE VARIABILITY IN THE PATIENTS OF RHEUMATOID ARTHRITIS

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Keywords: Autonomic dysfunction, heart rate variability, disease activity score 28, rheumatoid arthritis, yoga therapy.

Objectives: There is paucity of data on the effect of yoga therapy on rheumatoid arthritis; therefore, the present study was undertaken to assess the effect of 12 weeks of yoga therapy on disease activity and heart rate variability in the patients with rheumatoid arthritis.

Material and methods: Present study is a part of ongoing randomized control trial done on newly diagnosed rheumatoid arthritis (RA) patients attending outpatient Department of Clinical Immunology, JIPMER. 124 patients were recruited and randomized into two groups: Control Group ($n = 62$), Yoga Group ($n = 62$). Disease activity was measured by Disease Activity Score in 28 joints (DAS28). Short term heart rate variability was measured as per Standards of Task force of the European Society of Cardiology and it was analysed using Kubios HRV software. Yoga therapy was given to the subjects in yoga group (YG) for 12 weeks in addition to standard medical treatment, whereas subjects in control group (CG) were not given yoga therapy, while they were on standard medical treatment during study period.

Results: After 12 weeks of yoga therapy we found statistically significant difference in disease activity in yoga group (pre:

4.97 ± 1.14 , post: 2.94 ± 0.89 , $p < 0.001$) and in CG (pre: 4.89 ± 1.2 , post: 3.4 ± 0.94 , $p < 0.001$). However, when the changes before and after 12 weeks yoga therapy were expressed as percentage, disease activity reduced by 40% in YG and by 30% in CG which was statistically significant ($p < 0.05$). Low frequency to High frequency ratio (LF: HF Ratio) as a marker of sympathovagal balance decreased by 29% in YG (pre: 1.64 ± 0.45 , post: 1.16 ± 0.71 , $p < 0.001$) and by 1% in CG (pre: 1.57 ± 0.47 , post: 1.55 ± 0.69 , $p < 0.001$) which was statistically significant ($p < 0.01$) between the groups. RMSSD was increased by 15% in YG and by 4.4% in CG and SDNN was increased by 21% in YG and by 10% in CG after 12 weeks of study period.

Conclusion: It is concluded that the practice of yoga therapy for 12 weeks when given as an adjunct to the standard medical treatment improves the disease activity, reduces the sympathetic over activity and enhances the parasympathetic activity thus improves the sympathovagal balance in the patients of rheumatoid arthritis.

Funding: Intramural grant from Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER).

20. PILOT STUDY OF A RESTORATIVE YOGA PROGRAM FOR CANCER SURVIVORS AND CAREGIVERS: A NEW MEANING FOR WARRIOR

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Background: Yoga is traditionally believed to have beneficial effects on physical and emotional health. Breathing exercises, postures, and meditation have been shown to significantly improve quality of life (QOL) and sleep quality (SQ) in cancer survivors. The symptom burden associated with cancer treatment often lasts long after treatment completion affecting QOL. The purpose of this pilot study was to examine the efficacy of yoga for improving QOL and SQ among cancer survivors in addition to evaluating the program through participant satisfaction at an urban comprehensive cancer center.

Methods: Sixty minute restorative yoga session for all levels are offered to all cancer survivors who completed treatment at least 2 months prior and are medically cleared. The program runs in eight-week sessions. The primary aim is to examine the efficacy of yoga interventions on improvement of QOL and SQ in cancer survivors, as well as evaluate participant satisfaction. Since June 2017, 54 cancer survivors and caregivers

attended our program (92% female, mean age 50). QOL was measured using the EORTC QOL survey and sleep quality was measured by the Pittsburgh Sleep Quality Index (PSQI). Surveys were administered pre and post each 8 week yoga session. Additional measurements include program evaluations based on participant satisfaction.

Results: Program evaluations (n=18) indicated that all participants rated the program and instructors good to excellent. When asked what changes could be made in the program, feedback included expanding to more than one day a week and continuously running the program all year. Initial analysis indicates that QOL and SQ improved with the program, findings are currently being validated. Participants have also reported feeling better overall. Program evaluation continues to further tailor the instruction to the level of attendees and improved the program. Changes in QOL and SQ measures are used to evaluate the efficacy of the program.

Conclusions: Overall, yoga appears to enhance emotional well-being and may serve to improve overall QOL and SQ. Recruitment rates increased over time with promotion of the program and satisfaction continues to be high. Limitations of the study include compliance with yoga program and the subjective nature of patient reporting potentially introducing bias. Future studies will continue to evaluate the long-term impact of the program.

21. CAREGIVER: AN INTERPROFESSIONAL YOGA AND EDUCATION INTERVENTION TO SUPPORT CAREGIVERS OF FAMILY WITH ALZHEIMER'S OR OTHER DEMENTIA

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Key words: Caregiver, Alzheimer's, dementia, yoga, self-care

Objective: Purpose of study was to investigate safety, feasibility, and preliminary effects of an inter-professional, yoga, wellness and caregiving skills program for caregivers of family with dementia.

Methods: Eight week, single arm pilot trial, once/week classes of one hour interactive educational module, followed by one hour integrated yoga class. An inter-professional team of PhDs in basic science, psychiatric rehabilitation, physical therapy, psychology, health sciences, and public health, as well as physician assistants, an occupational therapist, a registered dietician, integrative medicine MDs, yoga teachers and therapists, designed and implemented this study. Eight educational modules designed to enhance caregiver wellbeing and/or caregiving skills were designed by inter-professional teams that co-lead their modules. Progressive yoga classes were designed by a team of five experienced yoga teachers lead by the PI, with each class taught by two teachers. Inclusion: Adult caregiver of family member with Alzheimer's or other dementia for minimum of 16 hr/week, able to perform gentle yoga movements and provide permission letter from primary care doctor. Assessments (caregiver well-being, caregiver burden, resilience, mindfulness, perceived stress, sleep, SF-36), performed one week prior to intervention, and at weeks 9 and 16.

Results: Eight caregivers, ages 50–84, 6 females, were enrolled. One dropped out due to caregiving and transportation challenges. The study was feasible, with successful recruitment, retention and effective delivery of the intervention. There were no reported adverse events. Program evaluation at 9 weeks indicated most important aspects: meeting other caregivers, sharing experiences/stories, sense of camaraderie (7), Yoga, meditation, relaxation, breathing (5), emotional and spiritual benefits (2), educational component (2). Most helpful Modules: Resiliency, Spirituality & Self-Care (4), Palliative & End-of-Life Care (1), Integrative Health & Wellness (1), and Eight Dimensions of Wellness (1). Week 16 evaluation indicated most important skills utilized in the past 8 weeks: Coping skills (3), mindfulness, stretching, breathing & relaxation (2), knowledge of how others deal with situations (1), patience (1), importance of self-care (1). Additional outcomes in data analysis.

Conclusions: The study was feasible and safe, with self-care and caregiving skills benefits.

22. YOGA FOR CHRONIC LOW BACK PAIN IN VETERANS: SECONDARY OUTCOMES

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Key words: Yoga, end-stage renal disease, hemodialysis

Objective: Military veterans have higher rates of chronic low back pain (cLBP), and many treatment options such as opioid medications have limited effectiveness and significant side effects. Hatha yoga has been shown to improve cLBP in non-veteran populations, but has not been well studied among military veterans with cLBP. We present the secondary outcomes of a randomized, controlled trial (RCT) of yoga for military veterans with cLBP.

Methods: Participants were recruited through primary care and specialty clinics at a large VA medical center. Eligible patients were randomized to either yoga or a delayed treatment comparison group. Yoga consisted of 2x weekly yoga sessions for 12 weeks. Yoga home practice was strongly encouraged. Both groups were asked to not change other cLBP treatments unless medically necessary. The results for primary outcomes have been published (back-pain specific disability; pain severity). Secondary outcomes included pain interference, fatigue, depression, quality of life (SF12 and EQ5D), anxiety, sleep quality, and self-efficacy. Assessments occurred at baseline, 6-weeks, 12-weeks, and 6-months. Multivariable random effects models were used in intent-to-treat analyses of change by treatment group over time.

Results: 150 VA patients with cLBP were enrolled in 6 cohorts. Participant had a mean age of 53.4 years; 26% were women, 51% were non-White or Hispanic, 34% were employed, 18% were homeless in last 5 years, 20% were taking opioids and 15.0 years was the mean duration of cLBP. At 12-weeks, when compared to the delayed treatment control, yoga participants reported significantly less pain interference ($p = 0.04$), less fatigue ($p < 0.001$); and greater physical ($p = 0.01$). At 6-months (3-months after the formal intervention ended), when compared to the delayed treatment control, yoga participants reported significantly less fatigue ($p = 0.003$); and greater global quality of life (EQ5D; $p = 0.04$).

Conclusion: Despite low attendance by some participants, intent-to-treat analyses indicate that yoga participants reported better outcomes at the end of intervention and 6-month assessments. Thus, many beneficial effects were sustained, likely through recommended home practice.

23. EFFECT OF YOGIC BREATHING PRACTICE ON THE COGNITIVE PARAMETERS OF PATIENTS UNDERGOING CHEMOTHERAPY

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Key words: Yogic Breathing, Pranayama, CICI, depression, anxiety, cognitive function, chemotherapy

Objective: People undergoing Chemotherapy for various cancer treatments are often marked by stress, anxiety and a decreased quality of life. In addition Cancer patients have long complained of neurological side effects such as short-term memory loss and, in extreme cases, seizures, vision loss, and even dementia. Until very recently, these cognitive side effects were often dismissed as the byproduct of fatigue, depression, and anxiety related to cancer diagnosis and treatment. Now a growing body of evidence has documented the scope of these conditions, collectively referred to as chemo brain. Just like the physical body needs exercise the brain needs oxygenation in order to function at its peak. This study was performed to investigate the effects of a series of specific breathing practices (Pranayama) on cognitive functions and its effects on cancer related symptoms and quality of life (QOL). The randomized, controlled study evaluated the change in depression, anxiety, stress and cognitive function after 4 weeks of targeted Yogic breathing. The rhythm of cyclic breathing co-ordinates electrical activity across a network of brain regions associated with smell, memory, and emotions, and can enhance their functioning, according to a study by researchers at Northwestern University.

Methods: 30 Subjects 30–70 years of age undergoing Chemotherapy were recruited for the study out of which 15 underwent a guided voice intervention once a week for 8 weeks and self-practice at home in between sessions. The others were prescribed 15 minutes of quiet meditation at least 3 times a week at home. This is a controlled Research study comparing pranayama to no intervention. Patients receiving cancer chemotherapy were randomized to receive pranayama while undergoing Chemotherapy or no pranayama (control group). Self-reported cognitive function using FACT-COG was assessed at baseline, mid intervention (2 weeks), and post intervention (4 weeks). Cognitive function was also measured using Braincheck (a battery of 5 tablet based cognitive function tests). Subjects also completed a DASS questionnaire pre and post intervention to gauge the effectiveness of the intervention in improving QOL.

Results: Yogic breathing performed with stimulating various acupressure points was used to promote oxygenation in the body and stimulate the vagal response. Repeated measures analysis is being used to examine change in cognitive function over time. The study is ongoing and will be completed by August at which time we will have definitive results.

24. THE ASSOCIATIONS BETWEEN SELF-EFFICACY FOR YOGA PRACTICE TO HEALTH AND WELLBEING: DOES CONFIDENCE IN YOGA PRACTICE MATTER?

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Key words: Yoga, self-efficacy, intensive longitudinal methods

Background: The contemplative practice of yoga integrates elements of breath, physical movement, and meditation in the promotion of health and wellbeing. According to the Yoga Sutras of Patanjali (historical text of yoga) and generally consistent with Bandura's theory, self-efficacy in one's yoga practice will impact the degree to which an individual may derive physical and mental health benefits from practice. Prior research on self-efficacy for yoga to impact health outcomes is sparse, especially in the context of day-to-day life.

Methods: To address these gaps, a 21-day prospective daily diary study was conducted in community-dwelling yoga practitioners (N = 103; age range; 18-76 years, practicing at least once a week across various yoga styles and experiences) to examine the impact of yoga and the self-efficacy for yoga practice (as assessed by the Yoga Self-Efficacy Scale; Birdee et al., 2015) on health and wellbeing (i.e., daily ratings of physical health, emotional health, and life satisfaction). Multilevel models were estimated to examine the association(s) between yoga, self-efficacy for yoga, and health and wellbeing.

Results: On average, practitioners engaged in 2.23 times of yoga practice per week. Across all 21-days, yoga practice predicted enhanced health and wellbeing such that on days when practitioners reported practicing more yoga than their usual, greater health and wellbeing was reported. Overall yoga practice (i.e., a practitioner's average time in yoga practice across 21 days; $b = 0.16$, $p < .05$) and baseline self-efficacy for yoga practice ($b = 0.27$, $p < .05$) also predicted daily physical health. In multilevel models looking at yoga practice days, there was an association between overall self-efficacy for yoga and daily physical and emotional health, and life satisfaction. Daily fluctuations in self-efficacy for daily practice predicted daily fluctuations in life satisfaction (the only within-person effect, $b = 0.13$, $p < .05$).

Conclusion: This study provides preliminary evidence that perceived ability in yoga practice is related to perceptions of health and wellbeing in the context of daily practice. Strategies to enhance self-efficacy for yoga practice may assist in maximizing benefits gained through yoga.

25. THE EFFECT OF YOGA ON CANCER-RELATED FATIGUE (CRF) AND THE MEDIATING EFFECTS OF CRF ON WALKING, GENERAL PHYSICAL ACTIVITY, AND QUALITY OF LIFE

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Key words: Yoga, cancer-related fatigue, walking, general physical activity, quality of life

Objective: The purpose of this study is to assess: (1) the effect of yoga on cancer-related fatigue (CRF), walking ability, general physical activity (GenPA), and quality of life (QOL) and (2) the mediating effects of the changes in CRF stemming from yoga on the changes in walking ability, GenPA, and QOL in cancer survivors.

Methods: We conducted a secondary analysis on data collected from a nationwide, multicenter, phase III randomized controlled trial with 2 arms, standard care and standard care + 4 weeks of YOCAS©© (Yoga for Cancer Survivors). A total of 328 cancer survivors (95.7% female; mean age 54.6 ± 0.55 years; 76.5% had breast cancer) have completed a Symptom Inventory for assessing walking ability, GenPA, and QOL (each on scale 0–10) and the Multidimensional Fatigue Symptom Inventory (MFSI) for evaluating CRF at the baseline and post-intervention. Analysis of covariance was used to examine the effects of yoga vs. standard care on CRF, walking, GenPA, and QOL. Causal mediation analyses were conducted to estimate the mediating effects of changes in CRF stemming from yoga on the changes in walking, GenPA, and QOL among 328 cancer survivors.

Results: Yoga significantly improved CRF ($p < 0.01$), walking ability ($p < 0.01$), GenPA ($p < 0.01$), and QOL ($p < 0.01$), compared to standard care. CRF significantly mediated the changes in walking by 0.45 points ($p < 0.01$) in addition to the direct effect of yoga on walking by 0.57 points, suggesting that 44% of the improvements in walking ability were mediated through reducing CRF. CRF also significantly mediated the changes in GenPA by 0.54 points ($p < 0.01$) in addition to the direct effect of yoga on GenPA by 0.47 points, suggesting that 53% of the improvements in GenPA were mediated through reducing CRF. Another mediating effect was found between CRF and QOL where CRF significantly mediated

the changes in QOL by 0.43 points ($p < 0.01$) in addition to the direct effect of yoga on QOL by 0.52 points, suggesting that 45% of the improvements in QOL were mediated through reducing CRF.

Conclusions: Yoga improves cancer survivors' walking ability, engagements in general physical activity, and overall quality of life. These improvements can be partially explained (mediated) by reductions in cancer-related fatigue stemming from yoga.

26. YOGA THERAPY OFFERS A MULTIDIMENSIONAL METHOD FOR WORKING WITH A COMPLEX CLIENT: A CASE STUDY

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Key words: yoga therapy, yoga, ADD, ADHD, anxiety, depression, obesity, stress, wellbeing

Background: Yoga therapy offers a unique approach for the various concerns of the complex client. Through its versatility and adaptability, yoga therapy can address the primary concern, as well as co-existing and ongoing diagnoses. Research has shown yoga may be effective for obesity, ADHD, anxiety, depression, stress, and improved wellbeing.

Objective: The client sought yoga therapy for obesity, ADD, anxiety, and depression for complementary care to that of her medical doctor, psychiatrist and ADD coach. While her main goal for yoga therapy was to address physical concerns, she presented with self-described low back pain, low back and core weakness, concerns around "mental stress" and being "overtasked with 'should-s,'" "anxiety," "stress of 'have to-s,'" and "some fear" surrounding upcoming medical test results. She also expressed concerns with high work stress and appeared to have difficulty focusing in the first three sessions. Methods: Yoga postures, breathing practices, guided meditations, and an affirmation were introduced and adjusted to her concerns in order to invite energy into the body, calm and focus into the mind, and a sense of feeling connected spiritually. The client filled out a measure your medical outcome profile (MYMOP2) form at the beginning of each session. She attended six sessions over seven months.

Conclusion: Through yoga therapy, the client presented with more focus, an improved wellbeing score on MYMOP2, and the ability to engage in physical activity including resilience to set backs in pain. Due to the variety of concerns presented, co-occurring alongside two pre-existing diagnoses, yoga therapy offered multiple approaches and demonstrated its ability to address a variety of concerns within this one client's case.

This case demonstrates how the multidimensionality of yoga therapy allows for one complex client's variety of needs to be addressed in a holistic and comprehensive way.

27. INTEGRATING YOGA WITH COGNITIVE BEHAVIORAL THERAPY: PERCEIVED BENEFITS AND ASSOCIATED CHANGES IN MOOD IN A PARTIAL HOSPITAL SETTING

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Key words: yoga, affect, partial hospital, anxiety, depression

Objective: Evidence concerning the effectiveness of yoga in behavioral health partial hospitalization (PH) programs is limited. Yet, PH programs provide treatment for patients at a critical juncture by preventing hospitalization or bridging inpatient and outpatient care. The current study evaluated the effects of a single yoga session in a transdiagnostic sample of PH patients on three outcomes: (a) short-term psychiatric symptom changes in positive and negative affect (measured before and after the session), (b) changes in symptoms of anxiety and depression between admission and discharge, and (c) perception of the quality and effectiveness of care measured at completion of the PH.

Method: Participants comprised 104 patients in the PH program who participated in the single-session yoga intervention and completed a measure of positive/negative affect before and after the group. Participants and patients at the PH program who did not attend the yoga intervention ($n = 438$) completed measures of depression and anxiety symptoms at admission and discharge from the program. At discharge, they also rated their perceived improvement and overall quality of the care they received.

Results: Participants experienced significant increases in Positive Affect $F(1, 88) = 181.16, p < .001$, partial $\eta^2 = .67$, Cohen's $d = .84$ ($M_{pre} = 24.35, SD_{pre} = 9.29, M_{post} = 32.21, SD_{post} = 9.37$). Participants also experienced significant decreases in Negative Affect, $F(1, 88) = 44.89, p < .001$, partial $\eta^2 = .34$, Cohen's $d = .70$ ($M_{pre} = 16.47, SD_{pre} = 6.33, M_{post} = 12.57, SD_{post} = 4.68$). In addition, those who attended the yoga session ($M = 9.25, SD = .92, n = 71$) rated the quality of their care as significantly higher than those who did not ($M = 8.77, SD = 1.38, n = 319$), $F(1, 387) = 6.48, p = .01$, Cohen's $d = .41$). Participants who attended the yoga intervention experienced significant improvements in affect during the group. They did not show greater improvements in symptoms of anxiety or depression over the course of treat-

ment compared to individuals who did not attend the group. Yoga intervention participants nonetheless gave higher ratings to the quality of the care they received.

Conclusions: Findings suggested that attending a single yoga session during PH was associated with short-term mood benefits and enhanced overall perceptions of treatment. Further research is needed to determine the conditions under which participation in yoga during PH might contribute to symptom change.

28. OUTCOME SUCCESS FOR SPECIAL FORCES: INTENSIVE OUTPATIENT CHRONIC PAIN MANAGEMENT PROGRAM FOR REHABILITATION OF NEURO-MUSCULOSKELETAL INJURIES AND mTBI

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Keywords: Yoga, Chronic Pain, Multidisciplinary, Alternative Medicine, Interdisciplinary care, TBI

Objective: The purpose of this study was to compare recovery functional outcomes of Special Operators who received standard TBI treatment only to patients who received traditional TBI rehabilitation in conjunction with the Intensive Movement Recovery Program; yoga being a CAM modality to help facilitate quicker functional recovery times, return to duty status, and reduced opioid medication use.

Methods: The experimental group consists of ($n=14$) service members with comorbid diagnoses of musculoskeletal pain and TBI who received six weeks of intensive outpatient TBI rehabilitation. The intensive outpatient Movement Recovery Program consists of experimental treatment enriched in Neuroplastic-Graded Proprioceptive Stimulation (N-GPS) rehabilitation, vestibulocochlear nerve stimulation, cognitive restructuring, motor function training and task overloading. The control arm consisted of ($n=15$) SOF participants who received standard of care TBI treatment. Metrics used to evaluate their improvement included the NSI, WHO-QOL, TMT, PGIC, WAIS, Epworth, NeuroCom SOT, HIT-6, PCL-5, AUDIT, Headaches, Sit/Reach and functional performance metrics. The physical function of the Service member was tested using a FUNCTIONAL MILITARY EXERCISE (FME): (7-1 PYRAMID TEST 7-1 PYRAMID TEST=The improvement in number of repetitions of push-ups, prone rows, supine rows, squats, dips, burpees complete

in a 20 minute test cycle.) PT sessions consisted of 40 minutes total treatment 20 minutes of dynamic warm-ups (YoMo; Yoga in Motion) and 20 minutes of Physical Function Pyramid Test once a day, twice a week for 6 weeks for a total of 12 treatments. Yoga treatments consisted of 5 sessions a week for 6 weeks, for a total of 30 treatments. Yin yoga treatment was implemented immediately after PT sessions for 40 minutes for active recovery and reinforcing cognitive restructuring that was implemented throughout the duration of the activation of the neuroendocrine response. Hatha yoga was taught for 60 minutes the remaining 3 days of the week for the duration of 60 minutes. Practice included a yoga protocol of sequenced asanas, diaphragmatic breathing, guided imaginary and mediation.

Results: A series of paired-samples t-tests were used to examine pre-post differences in report of headache, dizziness, sleep, cognitive functioning, sensory organization and motor coordination, neurobehavioral symptoms, balance, functional performance as well as report of pain, pain intensity, quality of life, PTSD symptoms and overall behavioral health concerns. A standardized measure of effect size, Cohen's d , is reported to index the magnitude of the observed differences between pre- and post-treatment scores. The statistical significance level was set at $P < 0.05$ for all. Preliminary results indicate statistically significant ($p < .05$) differences on simple paired t-test for all pre-post measures between the two groups. The treatment group evidenced as high as a 188% symptom and functional improvement rate with over 80% of the cohort returning to full active duty. Significant improvement in patient symptom sequelae was observed, however more comprehensive regression analysis of the data is in process.

Conclusion: Interdisciplinary care involving CAM modalities such as yoga that incorporate a more dynamic, interactive delivery model for patients during TBI rehabilitation, achieves greater improvements in TBI symptoms, functional improvement and return success to functional duty.

29. MITIGATING CHRONIC LOW BACK PAIN THROUGH YOGA THERAPY UTILIZING THE METHODS AND PROPS OF AERIAL YOGA: A CASE REPORT

K. Patterson

Background: CLBP has proven very difficult to treat, and it is one of the most commonly reported reasons for the use of complementary and alternative medicine. Research has found yoga therapy is effective for sub-acute or CLBP. Yoga therapy

including props such as the aerial hammock may be useful for facilitating rest and relaxation, avoiding unnecessary strain, and for helping the client achieve correct body position and movement in postures. It also provides controlled traction, which assists active or passive forms of movement.

Clinical case: The subject of this case report is a 45 year old athletic female whose primary concern is chronic low back pain that ranges on the PROMIS Pain Intensity Scale from 3–10. Yoga therapy assessment demonstrates guarding through her muscles when engaged in movement, increased rajas in prana kosha as exhibited through client report of frustration. Sessions with the client resulted in an immediate dropping of PROMIS Pain Intensity Scale score by one point each session. Sessions were comprised of utilizing the aerial hammock to decrease compression in the lower back by lengthening back extensor muscles and reversing compressive effects of gravity on intervertebral discs through supported inverted poses. The aerial hammock was also utilized in using the weight of the body to create a traction effect on the spine to help relieve compression in the SI joints and possibly on the sciatic nerve. Aerial hammock was also used for linking movement and breath with postures and restorative based postures to release the hamstrings, iliopsoas and overall body tension.

Conclusion: To the authors knowledge, this is the first case demonstrating the possible role and benefit for the use of an aerial hammock as a prop of therapeutic benefit in the practice of yoga therapy. It is thought that methods of aerial yoga may help to facilitate rest and avoid unnecessary strain while creating traction to assist in active and passive forms of movement beneficial to the mitigation of chronic low back pain.

30. TAILORING YOGA PRACTICES FOR CHEMOTHERAPY PATIENTS: RESULTS OF A QUALITATIVE STUDY

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Key Words: Yoga, Chemotherapy, Sleep Disturbance, Yoga Instructor

Objective: This study aims to identify and understand common factors that contribute to ease, difficulties and preferences of specific yoga practices by chemotherapy patients as observed by yoga instructors.

Methods: We focused on qualitative data obtained from yoga instructor's session notes from a study that evaluates different

approaches to yoga and its effects on sleep disturbance and fatigue in chemotherapy patients. Each participant received six individual sessions (either breathing, static, or flowing poses) from a yoga instructor who guided them through their assigned practice and provided instructions for weekly self-guided sessions at home. Two yoga instructors completed notes after each yoga session detailing their observations of the participant's yoga practice and their experiences with home practice. A content analysis was performed on yoga instructor notes to identify and understand aspects of the patient's practice experience.

Results: We report here on instructor notes for 15 patients enrolled in the study: flowing yoga (n=6), static yoga (n=4), and breathing yoga (n=5). The following themes were identified:

- Participants experienced adverse effects from chemotherapy that affected their yoga practice (e.g., 'Normally in toes but after legs up the wall... her entire foot was tingling and hot...therefore stopped any further viparita karani')
- Instructors identified participants' difficulties with the practice and subsequently modified poses or breath to accommodate (e.g., "She found the 1/2 forward fold to be stressful to chest/shoulders, so we will modify it into full forward fold this next session")
- Participants expressed benefits from specific yoga practices (ex: "Loves queens pose and the twist. Helped with belly distension and gas")

Conclusions: This study identifies perceived patient benefits and difficulties with specific yoga practice. Findings from this study may guide choosing yoga practices for future studies in cancer patients and may inform the use of yoga in clinical practice.

31. ATHLETE PERSPECTIVES ON 10-WEEKS OF YOGA PRACTICE

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Key words: athletes, sport performance, yoga therapy, yoga benefits.

Introduction: Commonly accepted benefits of yoga typically include an increased flexibility (FLX) and reduction in stress. As the yoga sutras are the perfect manual on how to practice, tune & employ the instrument that we call the human body

the modern expression of yoga is at best being underutilized. Despite a strong understanding of the array of potential benefits, alternative approaches to athletic training have included yoga. As such, yoga-athletes typically reported limited benefits (prevention of injury and improved FLX). If done effectively, it would seem that yoga should provide athletes with rich opportunities for optimizing sport performance. In an effort to extend insights of potential benefits of yoga in athletics, this study examined outcomes from the athletes perspective. **Methods:** After taking part in 10 weeks of yoga, college athletes ($N=19$) completed a reflective questionnaire. In 2 separate groups pitchers (BB; $n = 10$) & soccer players (SCR; $n = 9$) met 2x week for a 1hr session. Qualitative analysis consisted of coding self-reported values in terms of topics and themes. Themes included: Stress Management (SM), Physical Gains (PG), & Application to Sport (APP). Themes were groups of related topics (ex: PG contained FLX & balance). Analysis consisted of ranking ordering the average % scores for BB, SCR & Both (BB+SCR). Additional insights were reported as unique responses (UR).

Results: Themes: Both: PG = 48, SM = 41, APP = 32; BB: PG = 44, SM = 40, APP = 23; SCR: PG = 51, SM = 42, APP = 42. Topics (>50): Both: FLX = 95, Body Awareness (BA) = 84, Relaxation (R) = 62, Concentration = 52; BB: FLX = 90, BA = 90, Concentration = 60, R = 60, Breathing = 50; SCR: FLX=100, BA=80, R=80, Energized=80; Anxiety=70. UR: need more sessions for improving performance; learned about body & how to stretch; certain poses relate to sport; learned importance of breath; indirectly related to performance.

Conclusion: Both groups described gains in PG, yet did not readily relate yoga to sport performance (APP). This view is supported with reported gains in FLX & BA without improved game performance. Groups differed in reported benefits; BB gained use of breath while SCR felt more energized. Interestingly, despite many positive impacts athletes lacked a high report of sport performance and connection with injury prevention. Further inquiry would include improved connection of yoga-sport through integrating gains of FLX and BW as tools for injury prevention, rehabilitation and optimization of movement.

32. MINDFULNESS AND YOGA IN HIGHER EDUCATION: PEDAGOGY AND PRACTICE TO SUPPORT STUDENT WELLBEING

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Key words: mindfulness, yoga, flourishing, wellbeing

Objective: The purpose of this study was to examine the benefits of mindfulness and yoga integrated into health education curricula for undergraduate students as compared to didactic health education lectures. Specific outcomes of interest included flourishing, self-compassion, and self-regulation.

Methods: Study participants were randomly assigned into one of two groups, treatment ($n = 50$) or active control ($n = 103$), based on the section of the health course for which they registered. Both groups met weekly for 2 hours across the semester. The treatment group engaged in an 8-week mindfulness-based practice, including weekly meditation (20–25 minutes per session) and yoga (15–20 minutes per session), as part of their health curriculum; the course instructor was a certified MBSR instructor. The active control, taught by another faculty member in the same department, served as a referential group to account for inherent changes in the outcomes that may naturally occur over the course of an academic semester. Surveys were administered to participants in both groups at pre-test (T1; prior to the intervention) and post-test (T2; 1-month after the final intervention session) using a secure web-based interface. Measures of wellbeing included the Flourishing Scale, the Self-Compassion Scale-Short Form (SCS-SF), and the Healthy Self-Regulation Scale (HSR). Focal analyses included a series of via Analysis of Covariance (ANCOVA) models with pre-test score and group entered as covariates.

Results: The results of the ANCOVA models indicated that group status was significant for flourishing, $F(1, 145) = 4.32$, $p = .04$, partial $\eta^2 = .03$, self-compassion, $F(1, 137) = 19.81$, $p = .01$, partial $\eta^2 = .13$, and self-regulation, $F(1, 141) = 31.99$, $p = .01$, partial $\eta^2 = .19$. Specifically, for flourishing, the treatment group demonstrated an increase over time ($M_{T1} = 46.15$; $M_{T2} = 49.03$) while the control declined ($M_{T1} = 48.22$; $M_{T2} = 47.01$). For self-compassion, the treatment group demonstrated an increase ($M_{T1} = 5.70$; $M_{T2} = 7.25$), while the control group remained stable ($M_{T1} = 6.53$; $M_{T2} = 6.48$). A similar pattern was found for self-regulation, with the treatment showing an increase over time ($M_{T1} = 31.98$; $M_{T2} = 37.04$) and the control remaining stable ($M_{T1} = 34.26$; $M_{T2} = 33.46$).

Conclusion: The infusion of yoga and mindfulness in health education supported critical indices of wellbeing among undergraduate students.

33. THE EFFICACY OF A MINDFUL YOGA PROGRAM ON MINDFULNESS, STRESS RESPONSE AND AWARENESS AMONG URBAN ELEMENTARY SCHOOL STUDENTS

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Key Words: yoga, mindfulness, school-based interventions

Objective: The purpose of this study was to evaluate the effectiveness of a mindful yoga program on mindfulness, stress and empathy among urban youth.

Methods: Participants included 60 5th and 6th grade students (51.7% female; mean age = 10.87 years; 58.3% African American) from three faith-based elementary schools located in Philadelphia. Forty-one students were in the intervention group and nineteen were in the control group. The intervention group had approximately 40 minutes of programming weekly administered by certified yoga instructors for the school year. Programming included breath work, yoga poses, and mindful meditation. Participants completed self-report assessments in the fall (T1; pre-test) and at the end of the spring (T2; post-test). Student mindfulness was assessed using the revised Mindfulness Attention Awareness Scale for children (MAAS-C). Stress responses were measured using the Involuntary Engagement Scale from the Responses to Stress Questionnaire (RSQ). Empathy and perspective taking skills were assessed using the Thoughts and Feelings Questionnaire (TFQ).

Results: Focal analyses included ANCOVAs with intervention (IV) status and pretest scores as covariates. Results indicated a significant effect of the intervention on empathic ability such that IV students maintained their level of empathic awareness while students in the control group experienced a significant decline, $F(1,57) = 15.05, p < .01$. There was a similar trend for perspective taking skills; IV students maintained their skills while those in the control group experienced decline, $F(1,57) = 3.6, p < .10$. Intervention status was also significant for two of the five Involuntary Engagement subscales: 1) time spent ruminating, $F(1,57) = 4.56, p < .05$; IV students experienced an increase while control students saw a decrease; 2) physiological arousal, $F(1,57) = 4.88, p < .05$; IV students maintained their level while students in the control experienced a significant decrease. Planned analyses include

examining baseline mindfulness as a moderator of the intervention.

Conclusion: The mindful yoga program helped students sustain empathic awareness, physiological arousal, involuntary engagement and perspective taking skills. Increased rumination among IV students may be linked to increased awareness of this activity and needs additional examination.

34. PERCEIVED IMPACT AND EXPERIENCE OF LONG-TERM YOGA INVOLVEMENT FOR PEOPLE WITH CHRONIC PAIN

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Key words: yoga, chronic pain, community-based, occupational performance, occupational satisfaction

Background: Chronic pain is a biopsychosocial condition impacting 10 percent of the world's population. Current treatment is based on a costly, ineffective biomedical model that predominantly treats the person's physical symptoms. Yoga is a low cost, holistic mind-body intervention that targets the person's physical, psychological, and social factors. Previous research has indicated that short-term yoga interventions positively impact the symptoms of chronic pain. However, little to no research has investigated the long-term impact of yoga occurring in the community for chronic pain or the experience of practicing yoga for chronic pain.

Objective: The purpose of this study was to investigate the perceived impact and experience of long-term involvement in a community-based group yoga class for people with chronic pain.

Methods: Eleven participants, who previously completed an 8-week yoga intervention and continued attending yoga at a community pain clinic for 2 years, took part in the study. A mixed methods approach was employed. Two-year follow-ups of the Canadian Occupational Performance Measure (COPM) were collected and compared to baseline COPM scores to measure changes in perceived occupational performance and satisfaction. Individual qualitative interviews were conducted to explore participants' perceived impact and experience of long-term yoga involvement. COPM data were analyzed using Wilcoxon sign ranked non-parametric tests and qualitative interviews were analyzed using an inductive approach.

Results: COPM performance and satisfaction scores significantly improved between baseline and follow up after 2 years of yoga. Performance scores improved by 64% (4.10 ± 1.32

vs. 6.76 ± 1.50 , $p < .005$). Satisfaction scores improved by 154% (2.44 ± 2.28 vs. 6.20 ± 2.03 , $p < .008$). Three main themes emerged from the qualitative interviews: 1) Occupational shift from “existing” to “living,” 2) The change process is “progressive,” and 3) Yoga is “a positive thing I do in my life.”

Conclusion: Results indicate that long-term involvement in community-based group yoga may improve and sustain occupational health and well-being in people with chronic pain. Additionally, participants expressed that group yoga may possess unique characteristics for effective pain management including social support, individualized care, and transferability to daily life.

35. YOGA MEDITATION HAS POSITIVE EFFECTS ON SLEEP QUALITY OF HEALTHCARE PROFESSIONALS

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Objective: To investigate the effects of a Yoga-based meditation training on sleep quality and polysomnography of healthcare professionals of the paediatrics division of a tertiary public hospital.

Methods: In this randomized controlled trial, 64 health professionals from the Paediatrics division of the hospital volunteered and signed a written consent to participate in the study (age 35.8 ± 12.2 years, 84% female). Subjects were randomized into 2 groups: Yoga Meditation (Meditation) and waiting-list control (Control). Meditation group ($n=32$) underwent an 8-week yoga meditation training (2 30min classes/week), while Control group ($n=32$) remained on a waiting list, awaiting the end of the intervention process; after this period, Control group was offered the same Meditation program. All volunteers filled the Pittsburgh Sleep Quality Inventory (PSQI) for subjective sleep evaluation and were submitted to a polysomnography both at study entry (baseline) and after ending the meditation protocol (8 weeks). Data were tested for normality and a 2-way analysis of variance (ANOVA) was used for significance verification ($p < 0.05$); Bonferroni post-hoc was applied.

Results: At baseline, 59.4% of the entire sample had inadequate sleep quality; while after the Yoga-Meditation training, 12.5% had significant improvements of sleep quality, which occurred only in 3.1% of the Control group. Meditation group had shorter waking time after sleep onset when com-

paring baseline vs. 8-weeks, which did not occur in Control group. Mean heart rate during sleep was also reduced after the intervention only in Meditation group. Both groups presented increased time in N3 sleep, which may indicate an adaptive effect to the exam site.

Conclusion: Results indicate that the practice of Yoga Meditation promotes positive changes both in sleep quality and polysomnography of healthcare professionals, and may represent a strategy of interest in the prevention of chronic sleep-related diseases.

36. GREATER RESTING-STATE MOTOR BRAIN FUNCTIONAL CONNECTIVITY IN ELDERLY WOMEN WHO PRACTICE YOGA

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Objective: Since the aging brain presents functional connectivity losses both in motor and attentional networks and there is some evidence that yoga may be cognitively beneficial for the elderly, the purpose of this study was to compare brain resting state functional connectivity of motor and attentional networks in elderly women who practice Yoga and healthy paired non-practitioners.

Methods: Two groups of right handed elderly women (>60 years), Hatha Yoga practitioners ($n=20$, at least 8 years) and control ($n = 20$, Yoga naive) paired by age, physical activity and years of education, underwent resting-state functional magnetic resonance imaging. Functional connectivity analysis was performed comparing groups for regions of interest (ROIs) of motor and attentional networks.

Results: Control group had greater correlation between some ROIs of frontoparietal attentional network and motor regions compared to Yoga group (superior frontal gyrus with precuneus and left superior lateral occipital cortex; right angular gyrus and right superior lateral occipital cortex, right and left superior parietal lobule; left angular gyrus and inferior frontal gyrus and middle frontal gyrus), while in the Yoga group, connectivity was greater from motor to frontoparietal networks (between left precentral gyrus and right thalamus and left caudate; right precentral gyrus and right hippocampus, postcentral gyrus and cerebellum; right thalamus and cerebellum and left occipital fusiform gyrus; left thalamus and occipital pole; right putamen and right middle frontal gyrus and right precentral gyrus; and posterior cerebellum with crus1 and 2).

Conclusion: Women who practiced at least 8 years of yoga presented greater resting-state brain functional connectivity of motor network while than non practitioners, while non practitioners had greater resting-state brain functional connectivity of frontoparietal network. Yoga practice seems to be a good intervention for a healthy aging cognitive process.

37. INDIVIDUAL YOGA THERAPY CASE REPORT OF YOUTH WITH HIGH FUNCTIONING AUTISM

K. Searl, M. Sullivan

Key Words: Yoga Therapy, High Functioning Autism, Attention Deficits Disorder with Hyperactivity, Youth, Anxiety, ADHD

Objective: This case report is valuable to help determine the feasibility and benefit of a yoga therapy (YT) program for children with High Functioning Autism (HFA) to help with anxiety, tolerance to stimuli and change, sleep disturbance, socialization, connection and the relationship to vagal tone. The outcome measurement tools used pre and post interventions are ABC-C, Neuro-QOL Item Bank 2.1 Pediatric Fatigue Short Form, The Journey to Wild Divine Biofeedback Software to assess self-regulation for tolerance to change, sleep disturbances, anxiety and vagal tone.

Methods: This particular youth with autism was struggling with social stress, anxiety, Attention Deficient Hyperactivity Disorder (ADHD) and occasional insomnia. The client presents with rapid and shallow breath and several musculoskeletal imbalances. The YT intervention included greeting, poses for strength and flexibility, breathing regulation, chanting, meditation and ending practices were introduced and built upon over a series of visits. The initial intake was conducted over the phone with the parent. The first session, informed consent and outcome measurements, a breath and postural assessment were taken with a few yoga techniques practiced during the first 25-minute session. The YT intervention followed with 29 sessions ranging from 30 minutes up to 55 minutes of focused hatha yoga techniques. The first 10 sessions were done with a two time per week frequency and then the remaining 19 sessions have been done with a once per week frequency. The home practice mirrored the in-session work; along with suggested games for the family to play together and build retention to reinforce in sessions techniques.

Results: The client showed improved focus and stillness by the end of this individualized YT program. The main finding of

this case report is yoga therapy may help reduce the stereotyped behavior, abnormal repetitive movements such as repetitive hand, body or head movement. Yoga therapy may be a cost-effective, activity that can be done at home to help develop self-regulation. The limitations of this case report is the short intervention time and the vagal tone tracking based on the need for the software upgrade or switch.

Conclusion: This individual case report determines the feasibility and benefit of a yoga program for children with HFA to help with anxiety, tolerance to stimuli, and toleration to change, sleep disturbance, connection, socialization and the relationship to vagal tone.

38. YOGA THERAPY PILOT STUDY FOR CHRONIC PELVIC PAIN AN EVIDENCE INFORMED PROTOCOL: RATIONALE AND STUDY DESIGN

K. Searl

Key Words: Yoga Therapy, Chronic Pelvic Pain Syndrome, Pancamaya Model, Trauma Informed, Depression

Background: Chronic Pelvic Pain Syndrome (CPPS) is pain in the area below the belly button and between the hips lasting six months or longer. One in seven women suffers from CPPS, outpatient visits in the United States for CPPS is estimated at \$881.5 million per year for women between the ages of 18 to 50. Comorbidities for CPPS are depression. The association between abuse, psychological morbidity, pathology, and CPPS are sufficiently consistent and suggest they may be causally related.

Objective: This poster describes the rationale and development of a Yoga Therapy (YT) intervention study design for females suffering from CPPS to provide self-regulatory strategies to chronic pain, healing past trauma (if applicable) and depression.

Methods: An evidence informed protocol designed to study 12 females between the ages of 18-55 with a medical diagnosis of CPPS that addresses a four-prong treatment plan of creating awareness, releasing and relaxing the Pelvic Floor Muscles (PFM), engaging PFM, and using yoga philosophy. A pilot study was developed to look at the feasibility and benefit of offering yoga-based intervention to this population to help with chronic pain, trauma and depression. Twelve individuals referred from local OBGYN's will be enrolled. Initially, six will receive this intervention, and six will be in a control group and given the opportunity to receive the intervention later. Each participant will be given an intake assess-

ment; the same YT will see the participants for 16 private YT sessions (2 times per week over 2 months) and then move to a 16 semi-group sessions (1 time per week over 4 months) for a total of 32 YT sessions over a 6 month period of time. Measure Yourself Medical Outcome Profile (MYMOP) aims to measure the outcomes that patient considers the most important. This measurement tool will be given pre, mid, and post during the intervention time to assess PTSD symptoms, chronic pain and depression.

Conclusion: Studies designed with long-term follow-up would be useful in establishing yoga-based intervention as a treatment modality for functional pain disorders. YT maybe a cost effective and safe means for self-regulation and to gain self-efficacy tools to aid in management of CPPS. Also, relevant to mention that men also suffer from CPPS, feel uncomfortable walking into OBGYN facilities to have their CPPS treated, and YT intervention from an integrative medicine facility maybe found as a comfortable treatment facility for men.

39. PARENTAL PERCEPTIONS OF YOGA BENEFITS ON THE SOCIAL-EMOTIONAL DEVELOPMENT OF INDIVIDUALS WITH DISABILITIES: A SURVEY STUDY

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Keywords: Yoga, social-emotional learning, disabilities, special educational needs

Objective: The purpose of this study was to examine parental perceptions of yoga benefits in enhancing the social-emotional development of their children with disabilities.

Methods: A survey study of parents of individuals with disabilities. Parent participants were recruited from yoga training organizations in the Bay Area, California. The two inclusion criteria were: (a) parents must have a child with an identified disability enrolled in a yoga training program (at present or in the past); and (b) permission from yoga training organization for the participants to be included in data collection. Participants were also recruited through social media platforms (Facebook and LinkedIn) and websites for individuals with disabilities (Council for Exceptional Children) by posting a link to the electronic survey on these websites. The survey instrument was a paper/electronic questionnaire that included 6 demographic questions and 18 close-ended Likert-scale questions. The survey was designed to collect data on the perceptions of parents about yoga benefits for their child with

regards to three major components of social-emotional learning: (a) self-regulation skills, (b) social skills, and (c) behaviors and decision-making skills.

Results: 20 survey responses were recorded in this study; 2 responses did not meet the inclusion criteria and were excluded. A quantitative analysis of data was utilized with the Qualtrics survey software. Descriptive statistics (i.e., percentage scores) were utilized to analyze response scores of the 18 participants. Results showed that majority of the participants reported a positive change in their child's self-regulation skills after practicing yoga. Comparatively less positive changes were observed for social-skills and decision-making skills. Almost 80% of the participants agreed that yoga was helpful in enhancing their child's ability to focus, stay calm, regulate their emotions, and be aware of their surroundings. Almost 50% of participants disagreed that yoga had no influence on their child's ability to communicate and understand the emotions of others. Over half i.e. 63% of participants agreed that after practicing yoga, their child was more organized, flexible to changes, and had improved ability to follow directions and resolve conflicts.

Conclusion: Yoga is effective in enhancing the social-emotional learning of individuals with disabilities.

40. WELLBEING AND YOGA: YOGA PHILOSOPHY MEASURE DEVELOPMENT, VALIDATION, AND MENTAL HEALTH OUTCOMES

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Key words: yoga, philosophy, mental health, yama, niyama, klesa, factor analysis

Objective: Despite evidence for the effectiveness of yoga-based interventions in mental-health settings, there is limited extant research on which aspects of yoga may differentially impact this association. Specifically, there is currently no valid measure of yoga philosophy. As such, the present study aims were to (1) develop a measure of yoga philosophy, (2) assess its construct validity, and (3) examine its associations with mental health outcomes.

Methods: Participants were MTurk workers (N = 402; male = 58.2%) who self-identified as yoga teachers or practitioners. Participants completed the preliminary version of the Yoga Assessment for Students and Teachers (YAST), which measures yoga practice and yoga philosophy. As well, participants completed measures of depressive and anxiety symptoms,

borderline personality disorder (BPD) features, attention deficit hyperactivity disorder (ADHD) symptoms, mindfulness, religious and spiritual experiences, perceived stress, and difficulties in emotion regulation.

Results: Exploratory Factor Analysis (EFA) indicated the best fit was a 2-factor model, with factor 1 explaining 26% of the variance and factor 2 accounting for 17.5%. Factor 1 included items that assessed how much an individual is externalized and factor 2 included items that assessed an individual's inner resources, for a final measure of 24-items. Factor loadings were strong (.55-.71) and Cronbach's alpha indicated good reliability ($\pm = .83-.89$). No significant difference were found for YAST total score by self-identification with yoga [$F(2.374) = .32, p = .73$]. Significant Pearson correlations were found between the YAST measure and frequency of meditation practice ($r = .16, p = .004$), frequency of studio yoga practice ($r = -.13, p = .018$), and any yoga practice at the level of the trend ($p = .057$). Highly significant ($p < .001$) zero-order associations and hierarchical regressions were found between yoga philosophy and anxiety, depression, emotion dysregulation, ADHD symptoms, BPD features, perceived stress, and mindfulness. Even with yoga practice controlled for, the YAST measure accounted for a significant amount of variance ($p < .001$) in each mental health outcome.

Conclusion: The YAST measure appears to be a reliable and valid measure of yoga philosophy that is particularly sensitive to meditative practices. The YAST measure may be a robust predictor of mental health.

41. EFFECT OF THREE-MONTHS IAYT TECHNIQUE ON BLOOD GLUCOSE LEVEL OF TYPE 2 DIABETIC PATIENT

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Background: Diabetes has been a massive killer in recent years in India, as being the Diabetic Capital of the world. Yoga is used to treat and prevent, control the same as a support to the billions who are suffering from diabetes.

Aim: To see the "Effect of Three month Integrated approach of yoga therapy technique on blood glucose level of type 2 Diabetic patient.

Methodology: Thirty Type 2 Diabetes mellitus volunteer with age range 30-60 years (mean age 47 ± 11.75 years) were screened and underwent Integrated Approach of Yoga therapy for three months.

Demographic data and Biochemical parameters such as Fasting blood glucose(FBS) and (Post prandial blood

sugar)PPBS levels were analyzed at baseline and end of the intervention.

Results: We found significant decrease in FBS & PPBS in IAYT group after three months compared to baseline.

Conclusion: These findings suggest that practice of 3 months IAYT is an effective intervention in reducing the blood sugar levels and has a positive impact on clinical variables (FBS & PPBS) in type II Diabetes Mellitus participants.

42. IMPROVEMENTS IN PSYCHOLOGICAL WELL-BEING IN EDUCATORS FOLLOWING A 3-DAY RESIDENTIAL YOGA-BASED PROGRAM FOR PROFESSIONALS

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Objective: The purpose of this pragmatic, real-world controlled trial was to examine changes in psychological well-being in educators that attended a residential yoga-based program.

Methods: The 3-day RISE (resilience, integration, self-awareness, engagement) program was administered at the Kripalu Center for Yoga & Health. RISE included 5 hours per day of yoga classes, meditation training, lectures, and didactic/experiential activities to promote physical and psychological health. Adult professionals recruited from nearby schools in the Pittsfield MA District School Board attended the 3-day RISE program and had the option of either staying at Kripalu or commuting each day. Self-report measures of psychological well-being, health-related behaviors, work engagement, and burnout were completed before the RISE program (baseline), immediately after RISE (post-program), and two months after RISE (follow-up). Twenty-nine participants completed baseline and post measures and were included in the analysis. Of those, sixteen participants also completed the follow-up measures. Paired samples t-tests were used to compare scores between time points.

Results: Compared to baseline, at post-RISE, participants showed improvements in perceived stress ($p = .001$), resilience ($p = .036$), positive affect ($p = .001$), negative affect ($p = .004$), mindfulness ($p = .001$), empowerment ($p = .001$), self-compassion ($p = .002$), professional efficacy ($p = .017$), exhaustion ($p = .015$), total work engagement ($p = .009$), and vigor ($p = .004$). Participants also reported increased fruit ($p = .022$) and vegetable ($p = .009$) intake and sleep quality ($p = .010$).

Compared to baseline, at the 2-month follow-up, participants showed improvements in self-reported mindfulness ($p = .001$), empowerment ($p = .001$), professional efficacy ($p = .035$), and vigor ($p = .038$). There were marginally significant improvements in positive affect ($p = .077$), self-compassion ($p = .051$), and total work engagement ($p = .067$).

Furthermore, there were no statistical differences between those who elected to stay at Kripalu ($n = 18$) and those who commuted ($n = 11$).

Conclusions: These findings suggest that the 3-day residential RISE program improves multiple measures of psychological well-being, work engagement, and burnout in educators, both immediately following RISE and 2-months later.

43. EVALUATION OF EXTENDED PRACTICE AND WORKPLACE INTEGRATION FOLLOWING A YOGA-BASED PROGRAM FOR WORKPLACE PROFESSIONALS

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Objective: This study examined the level of integration of practices learned in a yoga-based program into their workplace and daily life, which has been a challenge for previous mind-body programs.

Methods: The 5-day residential Kripalu RISE program included daily yoga, meditation, lectures, and didactic/experiential activities to promote physical and psychological health. Importantly, long-term integration of RISE practices into the workplace and daily life is a key component of RISE. Eighty-three frontline professionals completed RISE and completed the surveys at baseline and immediately post-RISE. Of those, fifty-seven participants also completed measures at the 2-month follow-up. Quantitative responses were scored on a visual analog scale from 0 (not at all) to 100 (very much) and qualitative responses were recorded in text.

Results: At post-RISE assessment, participants generally reported a plan to practice the skills/approaches learned in RISE ($M = 69.1$, $SD = \pm 27.9$), were likely to share the skills/approaches they learned with others ($M = 88.7 \pm 12.0$), and indicated that it was feasible to accommodate RISE practices into their work/home-life schedule ($M = 79.0 \pm 23.6$). At follow-up, participants reported that they continued RISE approaches ($M = 62.0 \pm 25.9$). Most participants reported that they observed a positive shift in their workplace ($M = 67.2 \pm 17.8$) and that they shared skills/approaches with oth-

ers ($M = 69.3 \pm 19.5$). Qualitatively, as in the post-RISE assessment, participants indicated continued practice of yoga, mindfulness, breathing techniques, meditation, and experienced greater self-care, compassion, and health due to RISE. Participants also incorporated and shared breathing techniques, mindfulness, mindful communication, and self-care practices in their workplace. The breathing techniques were the most often reported practices used throughout the day. Participants described that their organization had benefitted from RISE by increasing the self-care and mindfulness of colleagues.

Conclusions: The 5-day RISE program resulted in participants reporting a wide range of psychosocial and organizational benefits. Participants reported continued long-term use of the RISE practices in their workplace and home.

44. IMMEDIATE AND LONG-TERM IMPROVEMENTS IN PSYCHOLOGICAL WELL-BEING FOLLOWING A RESIDENTIAL YOGA-BASED PROGRAM FOR PROFESSIONALS: A PRAGMATIC CLINICAL TRIAL

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Objective: The purpose of this pragmatic, real-world controlled trial was to examine changes in psychological well-being in professionals that attended a residential yoga-based program.

Methods: The 5-day RISE program was administered at the Kripalu Center for Yoga & Health. The RISE program included 5 hours per day of yoga classes, meditation training, lectures, and didactic/experiential activities to promote physical and psychological health. Adult professionals recruited from human services, education, and corrections institutions were pragmatically assigned in partially matched pairs to the experimental or waitlist control group. Self-report measures of psychological well-being were completed before the RISE program (baseline), immediately after RISE (post-program), and two months after RISE (follow-up). The wait-list group completed measures at comparable time points in a parallel fashion. Eighty-three participants (experimental $n = 41$, control $n = 42$) completed baseline and post measures and were included in the analysis. The experimental group also completed 4- and 6-month follow-up assessments. ANOVAs were conducted to compare change scores between groups. Paired samples t -tests were used to compare scores between time points.

Results: Relative to the control group, the experimental group showed improvements in perceived stress ($p = .001$),

resilience ($p = .031$), positive affect ($p = .001$), negative affect ($p = .001$), mindfulness ($p = .026$), and job satisfaction ($p = .047$) from baseline to post-program.

From baseline to follow-up, the experimental group showed improvements in perceived stress ($p = .001$), resilience ($p = .001$), positive affect ($p = .003$), negative affect ($p = .006$), mindfulness ($p = .001$), empowerment ($p = .002$), and self-compassion ($p = .005$), compared to controls.

The experimental group showed improvements in resilience ($p = .007$), negative affect ($p = .015$), mindfulness ($p = .001$), self-compassion ($p = .042$), satisfaction with life ($p = .009$), and exhaustion ($p = .014$), at the 4-month follow-up compared to baseline ($n = 19$), and sustained improvements in negative affect ($p = .017$), and mindfulness ($p = .014$), at the 6-month follow-up compared to baseline ($n = 16$).

Conclusions: These findings suggest that the RISE program improves multiple measures of psychological well-being immediately following the program which were sustained at the 2-month follow-up. Preliminary results also suggest sustained improvements in some measures up to 6-months post-RISE.

45. IMPROVEMENTS IN PSYCHOLOGICAL WELL-BEING FOLLOWING DIFFERENT ITERATIONS OF A YOGA-BASED PROGRAM FOR PROFESSIONALS

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Objective: Our purpose is to examine changes in psychological and occupational well-being following different iterations of a yoga-based program for professional populations.

Methods: The RISE (resilience, integration, self-awareness, engagement) program was developed at the Kripalu Center for Yoga & Health. RISE includes 5 hours per day of yoga classes, meditation training, lectures, and didactic/experiential activities to promote physical and psychological health. RISE can be administered at Kripalu as a residential or nonresidential program, or on-site at organizations.

We examined results from three iterations of RISE: 1) A single arm trial of a 5-day residential RISE program with a heterogeneous population of frontline professionals ($n = 55$); 2) A pragmatic waitlist controlled trial of a 5-day residential RISE program with a heterogeneous population of frontline professionals (experimental $n = 41$, control $n = 42$), 5-day residential RISE; Study 3) A single arm trial with educators, 3-

day residential or optional commuter ($n = 29$). For all studies, self-report measures were taken before RISE (pre), immediately following RISE (post) and 2-months following RISE (follow-up).

Results: Overall, results from all three studies suggest that RISE improves multiple measures of psychological well-being in these participants. Immediately following RISE, participants from all studies reported improvements in perceived stress, resilience, positive affect, negative affect, empowerment, and mindfulness. The frontline professionals from the waitlist controlled study also showed improvements in job satisfaction. The educators from the single arm trial showed additional improvements in self-compassion, work engagement, and burnout.

At the 2-month follow-up, RISE participants' level of mindfulness, empowerment, and self-compassion were significantly higher than baseline in all three studies. The heterogeneous frontline professionals from both studies also showed improvements in stress, resilience, positive and negative affect, and compared to controls in the case of the waitlist control study. The educators showed additional improvements in work engagement and burnout.

Conclusions: These findings suggest that RISE improves multiple measures of psychological well-being in frontline professionals immediately following the program which were sustained at the 2-month follow-up. On-going research continues to investigate RISE in different populations and programming lengths.

46. MAPPING SYSTEMATIC REVIEW EVIDENCE ON YOGA INTERVENTIONS: WHAT HAS BEEN DONE AND WHERE ARE THE GAPS?

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Key words: Yoga, systematic reviews, randomized controlled trials

Objective: Many randomized controlled trials (RCTs) and systematic reviews (SRs) of yoga interventions have been conducted in recent years. The purpose of this study is to comprehensively identify current yoga SRs to 1) Describe the characteristics and topic coverage of yoga SRs, to highlight

duplication and prevent research waste; and 2) Compare health conditions in yoga SRs and yoga RCTs, to identify answerable questions for yoga SRs.

Methods: We searched 8 databases from inception to January 2017 and two authors independently screened and selected yoga systematic reviews for inclusion. We extracted bibliographic data and health conditions for all protocols and reviews. For completed SRs focusing solely on yoga, we dually extracted information on conclusions. We mapped topics of yoga SRs against those of yoga RCTs described in previous research.

Results: We identified 209 ongoing and completed SRs of yoga interventions. Half of completed SRs focused solely on yoga ($n = 96$). Among these SRs, 80% were published in 2012 or later, 50% originated from the USA or Germany, 55% were published in specialty journals, and 40% did not explicitly state review funding. Most SRs clearly stated that yoga had positive effects; only 1 was negative. SRs most often addressed cardiovascular ($n = 16$), psychiatric ($n = 15$), musculoskeletal ($n = 14$), cancer ($n = 14$) and metabolic ($n = 9$) topics, corresponding to the most common topics in yoga RCTs. Within topics, some conditions (e.g. depression) had many SRs and RCTs, while others (e.g. schizophrenia) had many SRs but few RCTs, and yet others (e.g. stress) had few SRs but many RCTs. The extent of question overlap in multiple SRs covering the same condition is currently being examined.

Conclusion: Initial findings suggest consistency between the general topics focus of RCTs and SRs but there are potential mismatches for specific conditions. There may also be duplication between SRs for some conditions, depending upon the specific SR questions. We will present an overview of topics coverage in yoga SRs and RCTs, followed by a structured identification of overlap, and suggest how these results may inform the SR research agenda in yoga.

47. MILITARY-TAILORED YOGA FOR VETERANS WITH POST-TRAUMATIC STRESS DISORDER

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Key words: Yoga, PTSD, Veterans

Objective: The purpose of this study was to determine whether trauma sensitive yoga following Warriors at Ease pro-

tolocol can improve PTSD symptoms in the post-9/11 Veteran population.

Methods: Participants were 18 yr of age or older and veterans of post-9/11 conflicts. They had subthreshold or diagnostic-level PTSD related to their combat military service, as determined by a score of 30 or higher on the PTSD Checklist-Military version (PCL-M). Veterans participated in 60-min weekly yoga sessions for 6 weeks taught by a Warriors at Ease-trained yoga instructor who is a post-9/11 veteran. The yoga sessions incorporated Vinyasa-style yoga and a trauma-sensitive, military-culture informed approach advocated by two separate organizations: Warriors at Ease and Meghan's Foundation. Data were collected at baseline and again after 7 weeks. The primary outcome was PCL-M score. Participants also completed the Patient Health Questionnaire, the Beck Anxiety Inventory, the Pittsburgh Sleep Quality Index, and the Mindful Attention Awareness Scale at both time points.

Results: Age ranged from 26 to 62 yr (median = 43 yr), length of service ranged from 2 to 34 yr (median = 18.8 yr), and 13 (72.2%) had completed college. Decreased PTSD symptomatology was demonstrated in the three-symptom clusters represented in the PCL-M (i.e., hyperarousal, re-experiencing, and avoidance). In addition, the total score on the PCL-M decreased significantly, by both statically and clinical measures. The participants also demonstrated improved mindfulness scores and reported decreased insomnia, depression, and anxiety symptoms.

Conclusion: The study demonstrates that a trauma-sensitive yoga intervention may be effective for veterans with PTSD symptoms, whether as stand-alone or adjunctive therapy. The impressive decrease in PTSD symptomatology may be due to the tailored military-specific nature of this intervention and the fact that it was led by a veteran of post-9/11 conflicts. More research is needed with a larger sample and a more diverse veteran population.