Published in final edited form as:
Am J Geriatr Psychiatry. 2014 March ; 22(3): 272–273. doi:10.1016/j.jagp.2013.01.065.

An Observational Study of the Health Benefits of Yoga or Tai Chi compared to Aerobic Exercise in Community-Dwelling Middle-Aged and Older Adults

Divya Siddarth[1], **Prabha Siddarth, Ph.D.**[2], and **Helen Lavretsky, M.D., M.S.**[2]
[1]Harvard-Westlake School, North Hollywood, CA 91604

[2]Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, CA 90095

Mood and sleep disturbances are common problems in middle-aged and older adults. This observational study explored whether participation in mind-body exercise classes (e.g., yoga and Tai Chi) that have elements of both physical activity and mindfulness is associated with better mood, mental health, and sleep compared to aerobic physical exercise.

Forty-two middle-aged and older adults (mean age 64.6 (SD = 13.6) years) were recruited from the West Valley YMCA, Reseda, CA. Twenty individuals participated in a yoga (N=8) or Tai Chi (N=12) class and 22 participated in an aerobic exercise class. All classes met twice a week for 60 minutes and all participants attended at least one 60-minute class per week. All participants signed a written informed consent form in accordance with the procedures set by the LA County Office of Education Institutional Review Board.

In addition to demographic data (age, gender, educational level, ethnicity, height and weight), participants were asked about their class attendance, number of years of participation and class satisfaction on a scale of 1 to 10. All participants were administered the following instruments: (1) the Profile of Mood States (POMS)[1], (2) the Short Form Health Survey-12 (SF-12)[2], and (3) the Patient Reported Outcomes Measurement Information System[3] Pain Intensity and Sleep Disturbance Short Form questionnaires. The two groups (mind-body vs. aerobic exercise) were compared on demographic and class participation variables using two-sample t-tests for continuous and chi-squared tests for categorical measures. Because of the significant difference in gender distribution, all further analyses controlled for gender. Two separate multivariate analyses of covariance (MANCOVA) were used to compare the two groups, one with the POMS subscales and the other with the SF-12 scores as the dependent variables. Significant MANCOVAs were followed up by post hoc univariate analyses. We compared the Pain and Sleep T-scores using two separate ANCOVAs. We estimated effect sizes (Cohen's d) for all group differences.

All demographic and outcome measures of the participants are shown in Table 1. Controlling for gender, both the POMS and SF-12 MANCOVAs were significant, and post hoc univariate ANCOVAs revealed that participants in mind-body exercise classes scored significantly better on all POMS mood subscales (with greater levels of Vitality and lower levels of Tension, Depression, Anger, Confusion, and Fatigue), and the SF-12 Mental Health

Corresponding author: Helen Lavretsky, MD, MS, Professor of Psychiatry, Department of Psychiatry and Biobehavioral Sciences, And Semel Institute for Neuroscience and Human Behavior, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA, Address: 760 Westwood Plaza, 37-360A, Los Angeles, CA 90095, Phone 310- 794-4619, Fax 310- 206-4399, hlavretsky@mednet.ucla.edu.

Composite scores compared to the aerobic exercise group, but not in the Physical Health Composite scores. Further, the mind-body group reported significantly less sleep problems than the aerobic exercise participants but did not differ in pain levels.

This study thus demonstrates that participants in mind-body exercise show significantly better mood, mental health, and sleep compared to participants in aerobic exercise classes. The groups did not differ on measures of physical health and pain. Major limitations of the study include cross-sectional comparison of a convenience sample, and potential self-selection bias in those attending mind-body classes versus aerobic exercise classes. Despite these limitations, the results of this study suggest the potential mental health benefits of interventions using mind-body techniques in the aging population,[4,5] that should be examined in a randomized prospective study.

REFERENCES

1. McNair, D.; Lorr, M.; Droppleman, L. Profile of mood states. San Diego: Educational and Industrial Testing Services; 1971.
2. Ware, JE.; Kosinski, M.; Keller, SD. SF-12: how to score the SF-12 physical and mental health summary scales. 3rd edn. Lincoln: Quality Metric Incorporated; 1998. Ware JE, Kosinski M, Keller SD. A 12-item short-form health survey. Medical Care. 1996; 34:220–223. [PubMed: 8628042]
3. Cella D, Yount S, Rothrock N, Gershon R, Cook K, Reeve B, Ader D, Fries JF, Bruce B, Matthias R. on behalf of the PROMIS cooperative group. The Patient Reported Outcomes Measurement Information System (PROMIS): Progress of an NIH Roadmap Cooperative Group during its first two years. Medical Care. 2007; 45:S3–S11. [PubMed: 17443116] Gershon RC, Rothrock NE, Hanrahan RT, Jansky LJ, Harniss M, Riley W. The Development of a Clinical Outcomes Survey Research Application: Assessment Center. S. 2010; 19:677–685.
4. Meeks TW, Wetherell JL, Irwin MR, Redwine LS, Jeste DV. Complementary and alternative treatments for late-life depression, anxiety, and sleep disturbance: a review of randomized controlled trials. J. Clin. Psychiatry. 2007; 68:1461–1471. [PubMed: 17960959]
5. Patel NK, Newstead AH, Ferrer RL. The effects of yoga on physical functioning and health related quality of life in older adults: a systematic review and meta-analysis. J Altern Complement Med. 2012; 18:902–917. [PubMed: 22909385]

Table 1

Demographics, class characteristics, and outcome measures for mind-body and aerobic exercise groups

Measure*	Mind-body	Aerobics	Statistics*	p-value	Effect Size#
Demographics					
Age (years)	67.4 (14.0)	62.0 (13.1)	1.26	0.21	
Gender (female)	17 (85%)	10 (45%)	7.1	0.01	
Ethnicity (Caucasian)	11 (55%)	13 (59%)	0.07	0.79	
Education (college degree)	12 (60%)	13 (59%)	0.004	0.95	
Body mass index	24.5 (3.8)	25.3 (3.7)	0.72	0.47	
Class Characteristics					
Class attendance$	12 (60%)	16 (72.7%)	0.77	0.38	
Class satisfaction&	9.0 (1.0)	8.6 (1.0)	1.6	0.11	
Length of participation (years)	5.9 (4.1)	5.9 (5.6)	0.02	0.98	
POMS Subscales^					
Tension	4.05 (3.49)	9.68 (7.39)	−4.14	0.0002	−1.2
Depression	1.70 (1.84)	8.77 (10.09)	−3.77	0.0005	−1.4
Vitality	25.50 (4.58)	20.59 (5.81)	2.08	0.04	0.8
Anger	2.20 (2.07)	8.82 (7.92)	−4.44	<0.0001	−1.4
Confusion	2.30 (2.18)	4.59 (3.71)	−2.22	0.03	−0.9
Fatigue	2.80 (2.12)	6.41 (4.77)	−2.05	0.05	−0.7
SF-12 Scores+					
MCS	59.63 (5.23)	47.35 (8.13)	5.33	<0.0001	1.8
PCS	47.32 (8.91)	50.38 (9.53)	−1.03	0.31	−0.3
PROMIS T-Scores++					
Sleep T-score	41.44 (5.91)	47.28 (7.53)	−2.93	0.006	−0.9
Pain T-score	50.61 (6.78)	49.77 (8.42)	0.36	0.72	0.1

Am J Geriatr Psychiatry. Author manuscript; available in PMC 2015 March 01.

[*] Mean (SD) and t-statistics are reported for continuous measures and frequency (%) and χ^2 statistics are reported for categorical measures.

[#] Effect sizes are estimated as Cohen's d.

[$] Class attendance is reported as frequency (%) of participants who attended both classes a week, the others attended once a week.

[&] Class satisfaction was measured on a scale of 1 to 10, with 10 being most satisfied.

[^] Profile of Mood States subscale; raw means (SD) are reported; t(39) statistics are from ANCOVAs of log-transformed POMS subscales scores, controlling for gender.

[+] Short Form Health Survey-12MCS = Mental Health Composite Score; PCS = Physical Health Composite Score; values are reported as mean (SD);t(39) statistics are from ANCOVAs, controlling for gender.

[++] Patient Reported Outcomes Measurement Information System; Higher T-score represents greater difficulty with sleep and more pain; values are reported as mean (SD); t(39) statistics are from ANCOVAs, controlling for gender