HHS Public Access

Author manuscript

J Am Geriatr Soc. Author manuscript; available in PMC 2018 March 01.

Published in final edited form as:

J Am Geriatr Soc. 2017 March ; 65(3): 592–597. doi:10.1111/jgs.14717.

A Pilot Randomized Controlled Trial of the Effects of Chair Yoga on Pain and Physical Function Among Community-Dwelling Older Adults With Lower Extremity Osteoarthritis

Juyoung Park, PhD[a], **Ruth McCaffrey, DNP, ARNP, BC, FNP, GNP, FAAN**[b], **David Newman, PhD**[c], **Patricia Liehr, PhD, RN**[c], and **Joseph G. Ouslander, MD**[d]

[a]Florida Atlantic University School of Social Work

[b]Mercer University Georgia Baptist College of Nursing

[c]Florida Atlantic University Christine E. Lynn College of Nursing

[d]Florida Atlantic University Charles E. Schmidt College of Medicine

Abstract

Objectives—To determine effects of *Sit 'N' Fit Chair Yoga*, compared to a Health Education program (HEP), on pain and physical function in older adults with lower extremity osteoarthritis (OA) who could not participate in standing exercise

Design—Two-arm randomized controlled trial

Setting—One HUD senior housing facility and one day senior center in south Florida

Participants—Community-dwelling older adults (N = 131) were randomly assigned to chair yoga (n = 66) or HEP (n = 65). Thirteen dropped after assignment but prior to the intervention; 6 dropped during the intervention; 106 of 112 completed at least 12 of 16 sessions (95% retention rate).

Interventions—Participants attended either chair yoga or HEP. Both interventions consisted of twice-weekly 45-minute sessions for 8 weeks.

Correspondence concerning this article should be addressed to Juyoung Park, PhD, Florida Atlantic University School of Social Work, 777 Glades Road, Boca Raton, FL 33431, jpark14@fau.edu; 561-297-4537; fax 561-297-2866.

Author Contributions

Juyoung Park: As the correspondent author of this paper and Co-PI of this funded study, she (a) contributed to concept development and design of the study; (b) conducted the literature review; (c) designed the survey; (d) monitored data collection; (e) interpreted the data; (f) drafted the introduction and methods sections and parts of the results, discussion, limitations, and implication sections; (g) integrated co-authors' comments and revised the manuscript; (h) revised a manuscript based upon the reviewer's comments, and (i) completed the responses to the reviewer's comments.

Ruth McCaffrey: Dr. McCaffrey contributed to concept development and design of the study, (b) conducted a literature review, (c) designed the survey, (d) monitored data collection, (e) drafted a part of the introduction and method sections, and (e) revised a manuscript based upon the reviewer's comments.

David Newman: As Co-I, Dr. Newman contributed to concept development and design of the study, data analysis, interpreting data, and results (HLM section), and completed a portion of the reviewer's comments (data analyses section).

Patricia Liehr: As Co-PI, Dr. Liehr contributed to concept development and design of the study, monitored data collection, interpreted data, and reviewed and edited the manuscript.

Joseph Ouslander: As CO-I, Dr. Ouslander contributed to concept development and design of the study, interpreted data, reviewed the draft, and provided comments

Measurements—Primary: pain, pain interference; secondary: balance, gait speed, fatigue, functional ability measured at baseline, after 4 weeks of intervention, at the end of the 8-week intervention, and post-intervention (1 and 3 months).

Results—The chair yoga group showed greater reduction in pain interference during the intervention ($p = .01$), sustained through 3 months ($p = .022$). WOMAC pain ($p = .048$), gait speed ($p = .024$), and fatigue ($p = .037$) were improved in the yoga group during the intervention ($p = .048$) but improvements were not sustained post intervention. Chair yoga had no effect on balance.

Conclusion—An 8-week chair yoga program was associated with reduction in pain, pain interference, and fatigue, and improvement in gait speed, but only the effects on pain interference were sustained 3 months post intervention. Chair yoga should be further explored as a nonpharmacologic intervention for older people with OA in the lower extremities.

Trial Registration—ClinicalTrials.gov: NCT02113410

Keywords

Chair Yoga; Osteoarthritis; Pain Management; Randomized Controlled Trial

INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis in older adults. Consequences associated with OA include pain, joint stiffness, and functional limitation of activities of daily living.[1] OA is the leading cause of long-term disability among older adults,[2] affecting 33.6% of those over age 65 (12.4 million persons) in the United States.[3] OA annually accounts for more than 11 million physician and outpatient visits, 662,000 hospitalizations, and an estimated $81 billion in costs for medical and surgical treatments.[4]

To manage pain and OA symptoms, older adults commonly use pharmacological treatments (prescription and over-the-counter) that predispose them to adverse events[5] and increase health care costs for outpatient and emergency room visits and hospitalization.[6] Safe and effective nonpharmacological treatments to reduce pain and improve physical function in older adults with OA are needed.

Consistent exercise has demonstrated effectiveness in relieving OA pain and stiffness and improving physical function.[7] However, the ability to participate in exercise declines with age; more than 50% of community-dwelling older adults who begin an exercise program drop out before receiving benefits.[8]

Yoga is a promising *mind-body* practice with four standard components: physical postures, breathing practices, relaxation, and meditative mental focus.[9] Yoga is recommended by the Arthritis Foundation[10] to reduce joint pain, improve flexibility and balance, and decrease stress and tension. It has demonstrated positive effects on OA pain, stiffness, swelling,[11] and mobility.[12] However, many persons with OA cannot participate in standing exercise due to problems with pain and balance, lack of muscle strength, or fear of falling due to impaired balance.[13]

Chair yoga (CY) is practiced sitting in a chair or standing while holding the chair for support[14]; it is well suited to older adults who cannot participate in standing yoga or exercise.[15,16] However, very few studies[11,15,16] have examined its effectiveness for older adults with OA. The objective of this pilot study was to determine immediate and sustained effects of *Sit 'N' Fit Chair Yoga* on pain and physical function in older adults with OA.

METHODS

Study Design and Randomization

A two-arm randomized controlled trial was used to examine the effects of an 8-week CY intervention. One week prior to the initiation of the intervention, participants were randomly assigned to either the CY program (treatment group) or the health education program (HEP; attentional control group) by an independent statistician who was not involved in the study, using a random computer-generated program at each of two community sites over the three different time periods.

Participants

Participants were recruited from two settings—a U.S. Housing and Urban Development (HUD) senior housing facility and a senior day center—through an information session conducted at each site by the principal investigators. Participants were not limited to those who registered at the sites; community people were welcomed via a local newspaper article. Inclusion criteria were age 65 years or older, living in the community, self-reported joint pain caused by OA verified by a geriatric nurse practitioner and present in one or more lower extremity joints (e.g., knee, hip, foot, or ankle), moderate chronic pain (at least 4 on a pain bother scale [0 = no pain to 10 = *excruciating pain*]) at least 15 days per month for 3 months or longer, ability to ambulate independently with or without assistive devices, and inability to participate in standing exercise. Exclusion criteria were knee surgery (or knee arthroscopy) or hip surgery within 12 weeks prior to enrollment, systemic or intra-articular corticosteroid in the past 60 days, and serious comorbidity that could interfere with the participant's ability to complete the CY program (e.g., heart failure [level IV] causing shortness of breath on exertion, Meniere's disease causing nausea with twisting and bending forward while seated).

Interventions

The *Sit 'N' Fit Chair Yoga* intervention was developed by a master yoga instructor with more than 20 years of experience with older adults. It was built on the Iyengar Hatha Yoga technique, recommended by the National Center for Complementary and Integrative Health (NCCIH) as safe for older adults because of its emphasis on proper body alignment.[17] The yoga intervention consisted of twice-weekly 45-minute sessions incorporating four components—physical postures, breathing, deep relaxation, and meditation—while using the support of a chair. The yoga instructor at each site was certified by the Yoga Alliance and spent two 8-hour days being trained on the *Sit "N" Fit Chair Yoga* program by the program developer. The instructors also received a 4-hour safety class taught by one of the investigators. Post intervention (after 8 weeks), CY participants were given a manual with instructions and pictures for yoga practice at home. To monitor continuing practice at home,

CY participants were asked to report frequency, duration, and components of yoga home practice at the 3-month data collection point.

To control for attention and time, HEP participants attended twice-weekly 45-minute sessions for 8 weeks led by health care providers trained by the principal investigators. The instructors received two 4-hour days being trained on HEP teaching instructions and serving as an arbitrator of any disagreements between participants on a certain topic. HEP participants discussed general health education information and specific facts regarding OA; they did not participate in any form of yoga.

Fidelity of CY was ensured by the program developer and fidelity of HEP was ensured by the site coordinators; 20% of the sessions were assessed through observation using a standardized checklist.

Measures

Demographic information and physical measures were collected by blinded data collectors at five time points: baseline, 4 weeks into the intervention, 8 weeks at completion of the intervention, and 1 and 3 months post intervention. All measures were completed on paper by participants using Likert-type response choices, which were summed to obtain an overall score for each measure at each data point. Pain and fatigue measurement tools were from the Patient Reported Outcome Measurement System (PROMIS), a collection of highly reliable, precise measures of patient-reported physical status. PROMIS is part of a National Institutes of Health (NIH) Roadmap project.[18] All PROMIS measures were scored using standardized scoring manuals.

The PROMIS Pain Interference-Short Form (PI-SF) V. 1.0–8a[18] measures interference due to pain on a 5-point scale. Alpha reliability ranges from .96 to .99 and construct validity is adequate.[19]

The PROMIS Fatigue-V 1.0 SF-8a[18] measure uses a 5-point scale to measure level of fatigue.[18] Higher scores indicate higher levels of fatigue.[18] Pearson's correlation was .94 when the fatigue scale was evaluated against the Functional Assessment of Chronic Illness Therapy-Fatigue[20]

The Berg Balance Scale (BBS)[21] is an observational 14-item measure with a 5-point scale. Intrarater reliability (ICC = .68–.99), interrater reliability (ICC = .88–.98), and internal validity[22] are acceptable.

The Gait Speed Test[23] was used to measure physical function. Intrarater reliability and test-retest reliability are high (ICC = .90–.96, r = 89–100; r = .93, ICC = .78) in older adults.[23]

The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)[24] measures pain and functional ability using 24 items. Cronbach's alpha is .95 for the pain scale and .91 for the functional ability scale in tests with persons with OA.[25]

Data Analysis

Analyses were performed using SPSS software, version 23.0 (IBM) and HLM 7.01 (SSI International). The Missing Value Analysis[26] function in SPSS was employed to ascertain the extent, randomness, and pattern of missing data. Hierarchical linear models (HLM)[27] were used to analyze change over time for each participant. Depending on the nature of the change function, parameter estimates were calculated for intercept, slope and, if necessary, curvature to create the best predictive model fit. Because HLM shows longitudinal changes as a function of time, the time variable was centered at the baseline. The results for the fixed-effects model were used to report the treatment effects for both 8-week intention-to-treat (ITT) assessment and 3-month post-intervention. The random effects model assessed overall changes on all outcomes over the same time periods in the study.

RESULTS

Study Sample

A total of 137 were screened for eligibility; 6 failed eligibility. Of the 131 participants assigned to CY ($n = 66$) or HEP ($n = 65$), 13 dropped after randomization but prior to intervention due to unwillingness to be in the control group or for personal reasons and 6 dropped during the intervention, resulting in a sample of 112 (Cohort 1 [$n = 36$], cohort 2 [$n = 40$], cohort 3 [$n = 36$]); 106 completed at least 12 of the 16 sessions (see CONSORT flow diagram, Supplemental Appendix S1), for an overall retention rate of 95%. Group differences in attendance were not significantly different, $t(106) = .823$, $p = .823$. There were no adverse events for participants.

Demographic characteristics and health-related descriptive information are presented in Table 1. Figure 1 is a line graph of outcomes comparing CY and HEP over ITT and sustainability periods.

Intervention Phase: Linear Growth Trend

For each of the outcome measures, no significant group differences existed prior to intervention (Supplemental Appendix S2). There were significant decreases for CY and HEP combined (Supplemental Appendix S2) for pain interference ($p = .009$), WOMAC pain ($p < .001$), WOMAC physical function ($p < .001$); and fatigue ($p = .043$). The following findings are indicative of analyses indicating significance using a fixed effects model.

Pain interference—There was a significantly greater decrease in pain interference for the CY group over 8 weeks (CY $\beta = -1.9$, HEP $\beta = -0.2$, $p = .010$) and 3 months (yoga $\beta = -1.1$, HEP $\beta = -0.2$, $p = .012$) compared to the HEP group. As in the 8-week period, there was statistically significant sustained effect of CY on pain interference at the 3 months ($p = .022$; Supplemental Appendix S3).

WOMAC pain—There was a significantly greater decrease for the yoga group over 8 weeks (CY $\beta = -1.0$, HEP $\beta = -0.4$, $p = .048$).

Gait Speed—There was a significantly greater improvement in gait speed for the yoga group over 8 weeks (CY β = −0.2, HEP β = 0.4, $p = .024$).

Fatigue—There was a significantly greater decrease in fatigue for the yoga group over 8 weeks (CY β = −1.1, HEP β = 0.0, $p = .037$).

There was no other statistically significant sustained effect of CY at the 3 months post intervention for any other variables except pain interference. However, balance approached statistical significance ($p = .082$; Supplemental Appendix S3).

Regarding home practice after the intervention, anonymous data were available for 37 of the 63 yoga participants; of those 37 participants, 31 reported regular practice at home. Participants practiced for 10 to 20 minutes a couple of times a week ($n = 14$) or daily ($n = 12$); 15 completed all four yoga components (physical pose, breathing, deep relaxation, and meditation), 9 completed two components (usually physical pose and breathing), and 2 completed three components (usually physical, breathing, and relaxation).

DISCUSSION

Results of this pilot study suggest that *Sit 'N' Fit Chair Yoga* is a safe and effective treatment for older adults with OA who are unable to participate in standing yoga or exercise. Although there is evidence[11] that standing yoga provides reduction in OA-related stiffness and balance, this is the first randomized controlled trial to examine the effect of CY on pain and physical function in older adults with OA.

The study results support use of an 8-week CY program to reduce pain and pain interference, improve gait speed, and reduce fatigue. With OA-associated pain, there is interference in everyday living, limiting functional and social activities and diminishing life enjoyment.[2] The effect of pain on everyday living is most directly captured by pain interference. Findings from this study demonstrate that CY reduced pain interference in everyday activities. Although this pilot study was not designed to assess mechanisms of action, the documented effects of CY in this population may be related to the mind-body-spirit nature of yoga. Future study focusing on the mechanisms of action that distinguish the effects of each of the four components (physical postures, breathing, deep relaxation, and meditation) is warranted.

The yoga group showed greater improvement in gait speed and fatigue during the intervention, although this improvement was not sustained 3 months post intervention. It is plausible that the participants in the CY group may not have followed the yoga program correctly or completed all four yoga components (physical postures, breathing, deep relaxation, and meditation) during home practice. Given the home practice survey data, it is evident that the intensity of yoga practice diminished over 3 months. Future research could incorporate an interview component to understand challenges of home practice.

Balance was not significantly different between groups during the intervention but it nearly reached significance at 3 months. This finding is inconsistent with previous findings on improvement in balance after 8-week standing yoga practice[28] in older adults. Because CY

does not have a balance demand comparable to standing yoga, it may take longer to demonstrate the effect.

This study has notable strengths: rigorous randomization process, use of blind-to-group assessment, and development of CY and HEP manuals. In addition, the study was rigorously monitored by external reviewers to ensure compliance with NIH clinical trial guidelines.[29]

Limitations and Implications

The major limitations were a short post-intervention period (3 months), differential attrition rates among CY and HEP groups, and failure to document home practice with daily logs completed by participants. An attempt was made to collect daily logs; however, participants failed to keep logs. As an alternative strategy, surveys were used to document home practice; however, survey data relied on participants' memory about practice over the past 3 month, seriously limiting the integrity of the data.

It is reasonable to provide more exercise-based activities for older adults to reduce pain interference and enhance physical function associated with OA. Although the *Sit 'N' Fit Chair Yoga* program requires further testing, the effects on pain interference over the 3-month pilot study time period are promising. Public health concerns about OA may be managed through an evidence-based CY program in community settings.

Research should determine effective treatment intensity (i.e., dose effect) with attention to sustaining effects over long terms. Also, research may provide booster sessions post intervention to remind participants of correct poses, correct body alignment, and breathing and relaxation techniques and examine sustained effect on pain and physical function.

With the increasing popularity of CY and a growing number of older adults adopting alternative modes of pain management, these findings have significant clinical implications. CY could be considered as an alternate therapy to decrease pain, improve physical function, and increase community participation by older adults. CY offers another option for non-invasive treatment of OA in older adults. Based on the observed high adherence rate of yoga home practice, this CY program offers promise for OA self-management.

CONCLUSION

The long-term goal of this research is to address the non-pharmacologic management of lower extremity OA pain and physical function in community-dwelling older adults. This study provides evidence that CY may be an effective approach for achieving this goal.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This manuscript is based on original research supported by a grant from the National Institutes of Health, National Center for Complementary and Integrative Health (1R15AT007352-01A1).

We thank Kristine Lee, who designed *Sit 'N' Fit Chair Yoga*. We also acknowledge contributions by site coordinators Jacinto Garrido and Mary Lou Riccio.

Appendix

Conflict of Interest Disclosures:

Elements of Financial/Personal Conflicts	J. Park		R. McCaffrey		D. Newman		P. Liehr J. Ouslander	
	Yes	No	Yes	No	Yes	No	Yes	No
Employment or Affiliation		√		√		√		√
Grants/Funds		√		√		√		√
Honoraria		√		√		√		√
Speaker Forum		√		√		√		√
Consultant		√		√		√		√
Stocks		√		√		√		√
Royalties		√		√		√		√
Expert Testimony		√		√		√		√
Board Member		√		√		√		√
Patents		√		√		√		√
Personal Relationship		√		√		√		√

REFERENCES

1. Centers for Disease Control and Prevention. [accessed on June 17, 2015] Arthritis. 2014. Available at http://www.cdc.gov/arthritis/basics/osteoarthritis.htm
2. Ettinger WH, Burns R, Messier SP, et al. Physical activity and health related quality of life among people with arthritis. J Epidemiol Commun H. 2011; 59(5):380–385.
3. Lawrence RC, Felson DT, Helmick CG, et al. Estimates of the prevalence of arthritis and other rheumatic conditions in the United States: Part II. Arthrit Rheum. 2008; 58(1):26–35.
4. American College of Rheumatology, Subcommittee on Osteoarthritis Guidelines. Recommendations for the medical management of osteoarthritis of the hip and knee, 2000 update. Arthritis Rheum. 2000; 43:1905–1915. [PubMed: 11014340]
5. Podichetty VK, Mazanec DJ, Biscup RS. Chronic non-malignant musculoskeletal pain in older adults: Clinical issues and opioid intervention. Postgrad Med J. 2003; 79(937):627–633. [PubMed: 14654573]
6. Schieffer BM, Pham Q, Labus J, et al. Pain medication belief and medication misuse in chronic pain. J Pain. 2005; 6:620–629. [PubMed: 16139781]
7. Hughes SL, Seymour RB, Campbell RT, et al. Fit and strong! Bolstering maintenance of physical activity among older adults with lower-extremity osteoarthritis. Am J Health Behav. 2010; 34(6): 750–763. [PubMed: 20604699]
8. Chao D, Foy CG, Farmer D. Exercise adherence among older adults: Challenges and strategies. Controlled Clin Trials. 2000; 21:212S–217S. [PubMed: 11018578]
9. Taibi DM, Vitiello MV. A pilot study of gentle yoga for sleep disturbance in women with osteoarthritis. Sleep Med. 2011; 12(5):512–517. [PubMed: 21489869]
10. Arthritis Foundation. Yoga benefits for arthritis (online). Available at http://www.arthritistoday.org/what-you-can-do/staying-active/activity-types/index.php.

11. Cheung C, Park J, Wyman JF. Effects of yoga on symptoms, physical function, and psychosocial outcomes in adults with osteoarthritis: A systematic review. Amer J Phys Med Rehabil. (in press).
12. McCaffrey R, Park J. The benefits of yoga for musculoskeletal disorder: A systematic review of the literature. J Yoga Phys Therapy. 2012; 2(5):1–11.
13. Croft P, Peat G, Van Der Windt D. Primary care research and musculoskeletal medicine. Prim Health Care Res Dev. 2010; 11:4–16.
14. Jerard P. Chair yoga and the mobility of seniors (online). [Accessed January 10, 2016] Available at http://ezinearticles.com/?Chair-Yoga-and-the-Mobility-of-Seniors&id=195911.
15. Park J, McCaffrey R, Newman D, et al. The effect of Sit 'N' Fit Chair Yoga among community-dwelling older adults with osteoarthritis. Holistic Nurs Pract. 2014; 28:247–256.
16. Park J, McCaffrey R. Benefits of participating in chair yoga for community-dwelling older adults with osteoarthritis. J Gerontol Nurs. 2012; 38(5):12–24.
17. National Center for Complementary and Integrative Health [NCCIH]. [Accessed July 12, 2015] Yoga (online). Available at https://nccih.nih.gov/health/yoga
18. National Institutes of Health. Patient-Reported Outcome Measurement System (PROMIS) 2015. About Promis (online). Available at http://www.nihpromis.org/measures/instrumentoverview.
19. Amtmann DA, Cook KF, Jensen MP, et al. Development of a PROMIS item bank to measure pain interference. Pain. 2010; 150(1):173–182. [PubMed: 20554116]
20. Lai JS, Cella D, Choi S, et al. How item banks and their application can influence measurement practice in rehabilitation medicine: A PROMIS fatigue item bank example. Arch Phys Med Rehabil. 2011; 92(10):S20–S27. [PubMed: 21958919]
21. Berg K, Wood-Dauphinee S, Williams JI, Gayton D. Measuring balance in the elderly: Preliminary development of an instrument. Physiother Can. 1989; 41:304–311.
22. Bogle-Thorban L, Newton RA. Use of the Berg Balance Test to predict falls in elderly persons. Phys Ther. 1996; 76(6):576–585. [PubMed: 8650273]
23. Lusardi MM. Functional performance in community-living older adults. J Geriat Phys Therapy. 2003; 26(3):14–22.
24. Bellamy N. Western Ontario and McMasters Universities Osteoarthritis Index (WOMAC). American College of Rheumatology. 2013 [First accessed July 5, 2015] Available at https://www.rheumatology.org/Practice/Clinical/Clinicianresearchers/Outcomes_Instrumentation/Western_Ontario_and_McMaster_Universities_Osteoarthritis_Index_(WOMAC)/.
25. Baron G, Tubach F, Ravaud P, et al. Validation of a short form of the Western Ontario and McMaster Universities Osteoarthritis Index function subscale in hip and knee osteoarthritis. Arthritis Care Res. 2007; 57(4):633–638.
26. Baraldi AN, Enders CK. An introduction to modern missing data analysis. J Sch Psychol. 2010; 48:5–37. [PubMed: 20006986]
27. McCulloch, CE., Searle, SR. Generalized Linear and Mixed Models. New York, NY: Wiley Interscience; 2001.
28. Gothe NP, McAuley E. Yoga is as good as stretching—Strengthening exercise in improving functional fitness outcomes: Results from a randomized controlled trial. J Gerontol: Med Sci. 2016; 17(3):406–411.
29. National Institutes of Health [NIH]. [Accessed March 2, 2016] NIH clinical research trials and you. Available at https://www.nih.gov/health-information/nih-clinical-research-trials-you

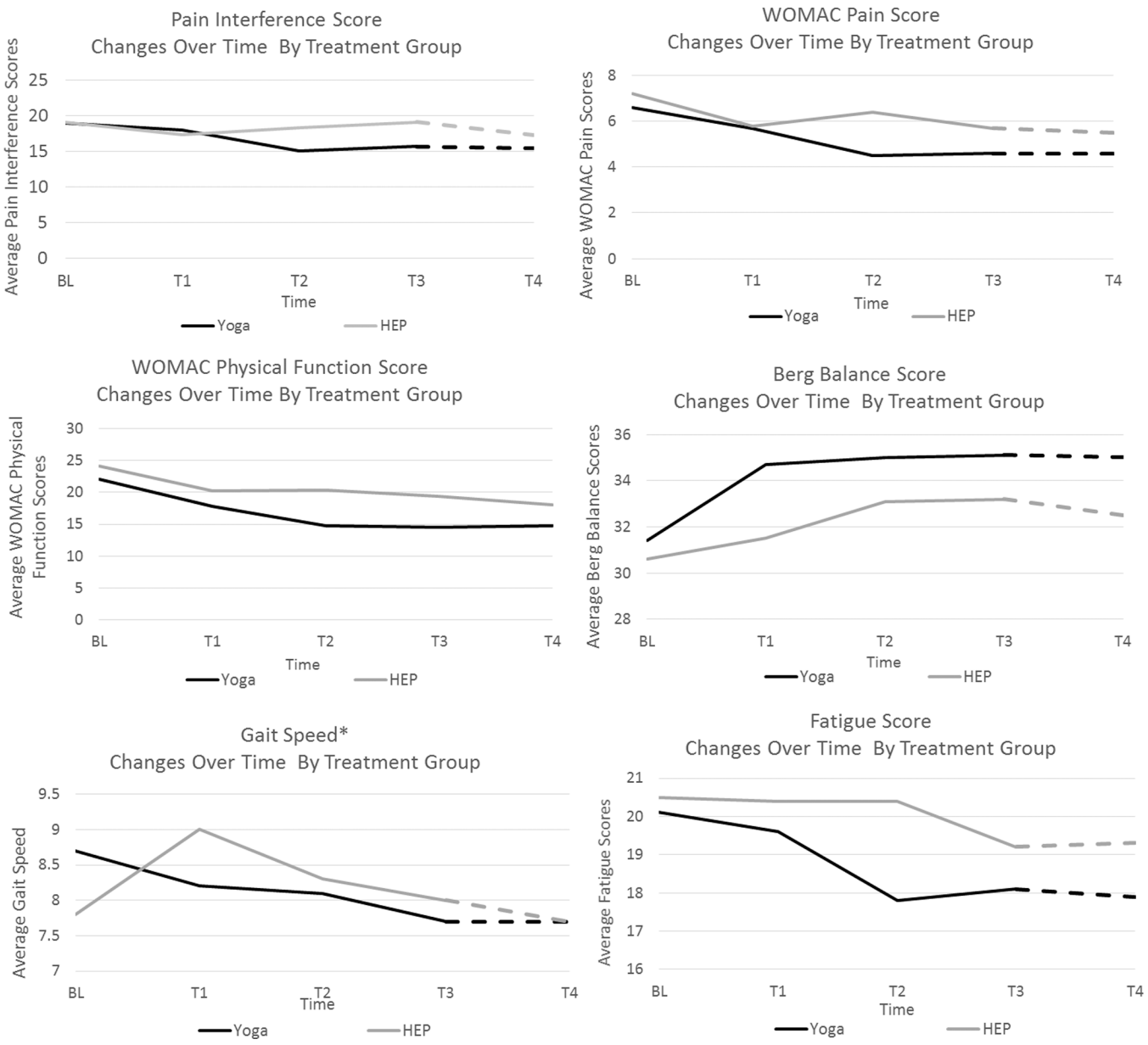

Figure 1. Changes in Outcomes Over Time by Treatment Group

Solid lines depict intent-to-treat periods and dashed lines depict sustainability periods

Gait speed is measured as the time (seconds) required to walk 20 feet

BL=baseline,

T1 = after 4 weeks of the intervention

T2 = after 8 weeks of the intervention

T3 = 1 month after the conclusion of the intervention

T4= 3 months after the conclusion of the intervention

*Gait Speed refers to the amount of time it takes to walk 20 feet in second.

Table 1

Demographics of the Participants ($N = 112$)

Characteristic and category	Overall		Yoga ($n = 63$)		HEP ($n = 49$)		p
Age: Mean (*SD*)	75.3	(7.5)	75.9	(8.2)	74.5	(6.5)	.325
Gender: Male	27	(24.1)	19	(30.2)	8	(16.5)	.900
Ethnicity	*n*	%	*n*	%	n	%	.064
Hispanic	52	46.4	26	41.3	26	53.1	
Non-Hispanic White	45	40.2	31	49.2	14	28.6	
African American	7	6.3	2	3.2	5	10.2	
Afro-Caribbean	3	2.7	3	4.8	0	0.0	
Asian	2	1.8	0	0.0	2	4.1	
Other	3	2.7	1	1.6	2	4.1	
Marital Status							.070
Single/never married	10	8.9	3	4.8	7	14.3	
Married	26	23.3	11	17.5	15	30.6	
Separated	6	5.4	3	4.8	3	6.1	
Divorced	26	23.3	15	23.8	11	22.4	
Widowed	44	39.3	31	49.2	13	26.5	
Living Arrangement[a]							.237
Live alone	72	64.3	42	66.7	30	61.2	
Live with spouse	21	18.8	8	12.7	13	26.5	
Live with children	12	10.7	9	14.3	3	6.1	
Live with other family	6	5.4	3	4.8	3	6.1	
Live with significant other	1	0.9	1	1.6	30	61.2	
Last physician visit							.469
< 1 week	28	25.0	17	27.0	11	22.4	
> 1 week, < 3 weeks	25	22.3	10	15.9	15	30.6	
> 3 weeks, < 1 month	13	11.6	8	12.7	5	10.2	
> 1 month	44	39.3	27	42.9	17	34.7	
Duration of pain medications							.278
None	32	28.6	20	31.7	12	24.5	

Characteristic and category	Overall		Yoga (n = 63)		HEP (n = 49)		p
< 30 days	6	5.4	2	3.2	4	82.0	
31 to 60 days	4	3.6	1	1.6	3	6.1	
61 to 90 days	6	5.4	5	7.9	1	2.0	
91 to 120 days	1	0.9	1	1.6	0	0.0	
> 120 days	54	48.2	28	44.4	26	53.1	

HEP = Health Education Program SD = Standard Deviation

[a]Some participants reported more than one living arrangement