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Technical Note

Physical and Mental Benefits of Chair Yoga for Older Adults: A Case Series

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Abstract

International Journal of Exercise Science 18(5): 1166-1174, 2025. https://doi.org/10.70252/COQS7170 Fitness and rehabilitation professionals commonly use yoga training for improving balance, flexibility, and mental health in populations of all ages. However, little is known about how chair yoga, a specific form of yoga, would impact physical and mental health in older adults. The purpose of this case series was to explore the feasibility and benefits of an 8-week chair yoga class for older adults in an independent living facility. Four participants (ages 77-92 years) performed chair yoga interventions once a week for 8 weeks. Interventions included, but were not limited to, 10 minutes of warm-up including breathwork and range of motion, 10-15 minutes of peak movements including forward folds, bicycles, bird dog, squats, and boat pose, and 5-10 minutes of cool down including backbends, camel, seated cross, gentle spinal flexion and extension, and breathwork. Participants were tested prior to the start and re-tested at the end of 8 weeks. Outcome measures included the Tinetti Balance and Gait Assessment and the short form health survey (SF-36). Improvements were made for all participants in the Tinetti and all except one participant improved on one or more of the SF-36 subscales. Chair yoga training was feasible for four older adults with comorbidities and may have additional benefits for functional mobility and strength. Further research studies with larger sample sizes are needed to continue exploring the benefits of this understudied intervention for older adults.

Keywords: Tinetti Balance and Gait Assessment, SF-36, balance, gait, chair yoga, seniors

Introduction

Traditional yoga has long been practiced for therapeutic interventions with older populations because of the low-to-medium intensity and ranging levels of difficulty.[1] Traditional yoga consists of the practice of maintaining different standing postures and positions, breathing, and meditation.[1] Chair yoga is a specific type of yoga that can be completed from a chair or seated position. Chair yoga may provide a safer and more stable environment for older adults with greater physical impairment than traditional yoga.[2] Chair yoga remains a relatively new intervention or workout routine within a population of adults 65 and older when compared to traditional yoga which has been practiced for thousands of years.[3]

There is a growing body of research on the use of yoga across diverse populations among patients with various medical conditions.[1] Fewer studies involve the use of chair yoga as one or the only intervention in people over 65+ years. Even fewer investigators study the effects of chair yoga in the elderly regarding gait and balance using the Tinetti Balance and Gait Assessment and health status using the SF-36 Health Survey in residents of independent living facilities. Only two studies have examined the effects of yoga performed standing or seated in those participants (65+ years) assessed using the Tinetti Balance and Gait Assessment and the SF-36, a health status survey.[4,5]

The study by Krejci et al evaluated the effects of chair yoga involving participants over 65+ years using the Tinetti and the SF-36.[4] Residents of a retirement center or those living alone were randomly assigned to a yoga exercise group or regular routine. Yoga exercises could be done in a chair or standing near a chair. Intervention was conducted once per week for 90 minutes at a local care center for 4 weeks. All participants were considered low fall risks according to the Tinetti Balance and Gait Assessment (mean score ≥ 24/28). For the yoga group, both men and women demonstrated statistically significant improvement in their balance and gait scores as measured by the Tinetti balance assessment tool. The results of SF-36 showed positive changes in the psychosocial aspects of health, such as promoting of calmness and happiness in male seniors and reducing fatigue, nervousness, and depression in female seniors. yoga group.[4]

A second study by Krejci et al studied further examined the effects of traditional yoga, practiced either standing or seated, on balance, body composition, and mental health of elderly (65+) men. Assessments included the Tinetti Balance and Gait Assessment (Tinetti), bioimpedance body composition analyzer, and mental health components of the SF-36. Yoga exercise sessions, done once a week for 90 minutes a session consisted of maintaining body postures, balance, stretching, strengthening, and breathing exercises.[5] Statistically significant improvements in total balance and gait scores were discovered in the yoga group, but these changes did not meet the minimal clinical difference (MCD) for the Tinetti (4.1 points).[3] Total body mass also improved. Changes in mental health scores were not seen in either group.[5]

The existing body of research that incorporates chair yoga, while measuring forms of physical or mental health improvement in participants over 65 years, shows inconsistent outcomes. A 2019 study by Yao and Tseng demonstrated that improved functional fitness was correlated with participation in a twice-weekly chair yoga program in 31 elderly women over the age of 65 with low physical activity levels. Participants in the experimental group in that same study performed chair yoga exercises for 110 minutes per session for 12 weeks and those in the control group maintained their daily activities and did not perform chair yoga. No significant interaction occurred between group and time. Significant improvements in upper limb strength, handgrip strength, lower limb strength, static balance, agility and dynamic balance, and well-being post-interventions occurred in the experimental group only. The control group did not show any changes.[6]

Galantino et al published a pilot study that assessed an 8-week chair yoga program in the elderly population who are at a high-fall risk. Sixteen participants (median age, 88 years) with a history of falls were assessed using several validated functional tests, including the Timed Up and Go

(TUG), Short Physical Performance Battery (SPPB), Berg Balance Scale (BBS), Functional Reach Test, and the Modified Sit and Reach. Additionally, the Tinetti Falls Efficacy Scale was used to evaluate fear of falling. Statistically significant improvements in the sit to stand domain of the Short Physical Performance Battery scores occurred in these participants. An improvement in anxiety, timed up and go times and confidence based on the Tinetti Falls Efficacy Scale were noted but were not statistically significant.[7]

Typical styles of traditional yoga may be too challenging for some older adults due to decreased flexibility and balance, so chair yoga provides a safe yet challenging exercise option. Further investigation is needed to understand the utilization of chair yoga in senior fitness programs around the world. The Tinetti Balance and Gait Assessment and SF-36, together or separately, have been used since the 1990s in studies measuring the effectiveness of many interventions with diverse populations. However, the use of these surveys in the elderly using chair yoga is limited.

A study consisting of a chair-yoga program measuring functional mobility can provide evidence that this therapeutic intervention could be incorporated into the activities offered by assisted living or health centers. These providers are usually individuals with titles such as yoga instructor and yoga teacher. Chair yoga is a fun, age-and ability-related challenge that can keep older adults active while having the benefits of increasing functional mobility, decreasing falls, and lowering the fear of falling. The research questions we intended to investigate in this case series of older adults living in a residential elder care community were as follows: Is chair yoga an effective intervention for improving balance and gait? Is chair yoga an effective method of improving scores on the domains listed in the SF-36 (e.g., physical functioning, energy/fatigue, etc.)?

When the opportunity for this study was initially presented to the first author, it was reported that up to 12 people individuals participated in chair yoga sessions at the elder care center. However, at the beginning of the study only four participants were available for possible inclusion. Thus, the study's focus was on a case series. No hypotheses were developed for statistical analysis. The primary goals of this case series were to assess the use of chair yoga in potentially improving gait and balance scores as measured by the Tinetti and improving scores, such as physical functioning using the SF-36.

Methods

Participants

Five participants who were currently enrolled in the chair yoga class at the independent living center of an elder care community and who expressed interest in participating in the study were approached regarding participation. The only exclusion criterion was declining to sign the consent form approved by the Institutional Review Board at the university where the principal investigator (PI) was employed. Since this study is a case series study, a power analysis was not conducted. This research study was conducted fully in accordance with the ethical standards of the *International Journal of Exercise Science*.[8]

Protocol

Two measurement tools, the Tinetti Balance and Gait Assessment and the SF-36, were chosen to evaluate the effects of chair yoga on balance, gait, and quality of life. The Tinetti Balance and Gait Assessment (Tinetti) was chosen to measure balance and gait. This assessment, also known as the Performance Oriented Mobility Assessment, is an instrument used to assess older adults' balance, specifically fall risk and their current gait function. No previous training for the tester is needed and the only equipment required is an armless chair, a stopwatch, and a 15-foot smooth walkway. The balance portion has nine items, and the best score is 16. The tester scores the participant based on their stability for each item, using a 3-point ordinal scale (0-2) in which the highest score indicates independence in each item. The portion assessing gait involves eight items and is scored out of 12. The participants' times were recorded at normal gait pace, and then again at a rapid gait pace. A score of 24 or above indicates low fall risk, a score of 19-23, moderate fall risk, and a score of 18, high fall risk.[9] The criterion validity for the Tinetti was evaluated in individuals over 65 against the Timed Up and Go (r = -0.55), Functional Reach (r = .48), walking speed (r = -0.54), Older Adults Resources and Services ADL Scale (r = 0.60), and the Tinetti Gait test (r = 0.81). The test-retest reliability is acceptable to good (ICC = 0.72-0.86) meaning the results obtained in this test were consistent over time. The interrater reliability for the test is excellent (ICC = 0.84).[1] The MCD is 4.1.[10]

The RAND 36-Item Health Survey version 1 (SF-36) was chosen to improve understanding of how each participant felt about their health status and is considered a good source of subjective data easily gathered from each participant. This survey assesses eight different health categories: limitations in physical activities because of health problems, limitations in social activities because of physical or emotional problems, limitations in usual role activities because of physical health problems, bodily pain, general mental health (psychological distress and well-being), limitations in usual role activities because of emotional problems, vitality (energy and fatigue), and general health perceptions. The SF-36 was designed to be used in settings for clinical practice and research, health policy evaluations, and general population surveys.[11] This assessment tool consists of 36 questions that scale each category from 0 to 100, with 0 being the worst possible health state, and 100 being the best.[12]

The validity of the SF-36, when used in older adults with visual and cognitive impairments, had a high construct validity as a health status tool in older community-living populations. The mean age of participants was 66.7. In the study participants who had medical conditions (n=1778, 43.8%), disabilities (n=1016, 32.1%) or hospital admissions within the last 12 months (n=743, 30.7%) consistently reported less favorable outcomes ($P<0.01$) than participants without these conditions. The authors concluded that the SF-36 is an effective and valid tool for health care measures.[13]

In a population of community-dwelling adults over the age of 65 years old Cronbach's Alpha measured the internal consistency of the SF-36. Seven of the eight categories of the SF-36 exceeded Cronbach's Alpha value of 0.8. The only category that did not exceed a value of 0.8 was social functioning (0.79). The values greater than 0.8 are considered reliable.[14]

Procedures.

Baseline data, consisting of self-reported demographics and scores on tests conducted, were collected after one of the weekly chair yoga classes. Participants who agreed to enter the study were asked to complete the SF-36, undergo testing using the Tinetti Balance and Gait Assessment, and complete a demographic survey. The PI returned 8 weeks later to repeat the testing. After the intervention, participants continued attending this class.

Participants completed one session of chair yoga weekly over the course of 8 weeks. The content of the once per week chair yoga class consisted of 10 minutes of warm-up with breathwork, Robin's breath vinyasa, and range of motion of joint segments. Next, the class completed 10-15 minutes of peak movements of seated forward folds with arm variations, bicycle legs or seated bird dog focusing on stability, seated straddle squat with arm variations, seated extended side angle, and boat pose with arm and leg variations. The class finished with a 5-10-minute cool down of backbends, genie, camel, seated cross-body side stretch, gentle spinal flexion, and extension, and breathwork. Other areas during each class consisted of balloon breathing, alternate nostril breathing, ujjayi breath, counterbalance, grounding-practice, joint alignment, and self-observation. The goals of this chair yoga class are to develop a deeper sense of body awareness and retain or increase stability and flexibility. Yoga instruction was provided by a certified yoga instructor and her assistant who were employed by the elder care center. All participants attended the same class.

The chair yoga program was not designed specifically to target gait or balance but incorporated what the developer, a certified yoga instructor, designed for all living center residents who wished to participate. The instructor modified poses only if the participant was having difficulty and requested assistance. The program did not change over the 8 weeks of the study.

Statistical Analysis

Descriptive statistics were used to demonstrate the mean differences in pre and posttest outcome measurement scores to determine changes in individual performance. Changes in an individual participant's performance were then compared to known Minimal Clinically Important Differences (MCD).

Results

Four members of the existing yoga class agreed to participate. These women continued their weekly yoga instruction, with no absences over the 8-week intervention, and underwent testing on the Tinetti and completed the SF-36 twice. All participants were female, and all had participated in chair yoga for 3 years. No falls or other adverse events were reported doing the 8-weeks. Three of the participants had arthritis and two had hypertension. All were residents of an independent living facility housed in an elderly community. Table 1 shows other demographic information. Researchers did not have access to participants' health records.

Table 1. Demographic information

Participant #	Age in years	Exercise frequency Days/week	Health conditions
1	88	6-7	high blood pressure, arthritis, bilateral knee replacements
2	92	6-7	none
3	77	3-5	high blood pressure, arthritis
4	91	3-5	arthritis

All participants demonstrated improvements in their Tinetti Balance and Gait Assessment scores (Table 2) with participants 1 and 3 improving their score by 5 points and participants 2 and 4 improving their score by 6 points. All these improvements are above the MCD (4.1), thus mitigating their fall risk.

Table 2. Scores on the Tinetti Balance and Gait Assessment

Participant Number	Pre-Test Balance Score [a]	Post-Test Balance Score	Pre-Test Gait Score [b]	Post-Test Gait Score	Pre-Test Total Score [c]	Post-Test Total Score
1	13	16	10	12	23	28
2	11	14	9	12	20	26
3	9	12	7	9	16	21
4	13	15	8	12	21	27

[a] best score is 16; [b] best score is 12; [c] fall risk categories: ≤18 high fall risk; 19-23 moderate fall risk; ≥24 low fall risk; Minimal clinical difference is difference is 4.1 points.

Most participants did not show appreciable change in sections on the SF-36 (Table 3). Participants 1 and 2 had high pre-sessions scores, thus, the ceiling effect was in play. Participant #3 had the most positive changes. The floor effect may have played a role in this participants' changes. Participant #4 stayed fairly consistent with two reductions in scores.

Table 3. Scores on the SF-36 for each participant

Section name (number of items in category)	Participant 1		Participant 2		Participant 3		Participant 4	
	pre	post	pre	post	pre	post	pre	post
Physical functioning (1)	100	95	100	100	0	5	75	55
Role limitations due to physical health (4)	100	100	100	100	0	0	25	25
Role limitations due to emotional problems (3)	100	100	100	100	100	100	67	67
Energy/fatigue (4)	100	95	85	85	35	50	70	50
Emotional wellbeing (5)	100	96	88	92	80	80	90	92
Social functioning (2)	100	100	100	100	75	100	100	100
Pain (2)	100	88	100	100	30	35	100	90
General health (5)	100	100	95	100	55	55	75	70
Health change (1)	100	50	50	50	50	50	25	25

Discussion

The primary aims of this case series were to assess the use of chair yoga in potentially improving gait and balance scores as measured by the Tinetti and improving scores, such as physical functioning using the SF-36.

Changes in scores on the Tinetti showed that all participants decreased their fall risk by one category. The scores improved more than the minimal clinical difference (4.1).[10] This was unexpected because the women had been taking this class for 3 years and the intervention did not increase in intensity or frequency. We suspect that these women took improving their scores as a challenge-and they met that challenge.

No studies were found in which participants had such an increase (over 4.1, the MCD) in the Tinetti scores with any type of chair yoga intervention using elderly participants.[10] Comparing this case series' results with other studies is difficult due to differences in research study design. Of the two studies that also utilized chair yoga as the experimental intervention, statistical improvement in Tinetti scores was shown in Krejci et al.'s study but the actual change was less than 0.1 points.[4] This study enrolled 500 participants, so small changes could have produced significant results. Only mental health sections of the SF-36 were examined with no changes. The other study by Krejci et al that used the Tinetti and SF-36, investigated over 100 men. While the change in Tinetti scores was significant, the actual change was 0.8 points.[5] These researchers reported SF-36 scores of individual survey items only, so results are not applicable to this case series.

Two women reported exercising 3-5 times per week and two reported exercising 6-7 times per week so the increased scores in both parts of the Tinetti were unexpected due to their already active lifestyle. Of course, a study with more participants may lead to data analyses that show smaller changes, but it is heartening to know that these women became less of a fall risk. Any activity that reduces fall risk is worthwhile.

Change in the SF-36 can be challenging to quantify. Most subscales in the SF-36 have five or fewer items, making it more likely that a minor change in either direction will affect the score. Participant #3 was questioned later about the improvement in 3 subscale scores. She reported that she "has been having really good days." Participant #1 scored 100 in all subscales on the pretest, so the reduction in some of her subscale scores on the posttest could be anticipated.

This case series has several limitations. The most obvious was the inclusion of only four participants. Case series are subject to selection bias and a lack of comparison group. The results of this series are not generalizable to other populations/samples. Our intention was to help researchers develop hypotheses for more research using elderly subjects who are part of chair yoga interventions.

The study design also does not rule out the effect of other activities in which these women were participating as all considered themselves to be moderately or highly active. We did not ask about any specifics as to what other activities these women participated in. The elder community center has many weekly activities for residents at all levels of participation. Participants may also have had the opportunity to engage in activities outside of the care center.

The results demonstrate that a once per week, 8-week chair yoga program has beneficial outcomes on gait and balance. However, the small number of participants makes it harder to detect real differences or relationships reliably and accurately in the data. This small sample size also poses a limitation on the generalizability of the results. Additionally, no men were included

in this study. More residents of this facility are female than male. It is unknown why men, at the time of study enrollment, did not participate in the chair yoga program.

The possible impact of chair yoga for these participants may have been minimized by the frequency of their yoga practice. None of the participants reported practicing on their own. This series' results may be used to power larger future studies to investigate the benefits of chair yoga in larger elderly populations with greater practice frequency and increased intensity over time. The use of different measurement tools should also be explored.

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