BAILAMOS©: Development, Pilot Testing, and Future Directions of a Latin Dance Program for Older Latinos

Abstract

Older Latinos have low rates of physical activity (PA) and poor health outcomes. Focus groups and a single group, pre-post 3-month pilot of a culturally appropriate Latin dance program (BAILAMOS©) were conducted among older, inactive Latinos with a self-identified mobility limitation. Nine themes emerged from focus groups, including cultural influences of dance and barriers to dancing. In the pilot intervention, 9 of 13 older Latinos completed the program, and attended 85% of the sessions. Self-reported PA significantly increased ($p < .05$; $d = 1.39$), but daily accelerometer-assessed PA decreased for moderate ($p = .18$; $d = 0.29$) intensity PA. Participants reported significantly greater enjoyment of PA ($p < .05$; $d = 0.61$) and improved physical quality of life ($p = .23$; $d = 0.31$). Improvements in mobility ($p = .15$; $d = 0.56$) and aspects of cognition were demonstrated. The BAILAMOS© program appears to be feasible, culturally appropriate, and has the potential to improve psychosocial determinants of PA, self-reported PA, and aspects of health.

Keywords: Aging & Health; Physical Activity/Exercise; Latino; Health disparities; Arts

The health benefits associated with physical activity (PA) in the older adult population have been documented (Chodzko-Zajko et al., 2009). However, there is indication of racial/ethnic disparities in PA engagement as Latinos aged 55-74 are 46-50% less likely to engage in leisure time PA (LTPA) than older non-Latino whites (NLW) of comparable age (Marquez, Neighbors, & Bustamante, 2010). Dancing and walking have been cited as the only age-appropriate PA for older Latina women (Cromwell & Berg, 2006), and dance has long been an important form of socialization and leisure in Latin cultures (Delgado & Munoz, 1997; Lewis, 1994). However, unsafe neighborhoods and unfavorable weather conditions are significant barriers to walking for many older adults (Belza et al., 2004). As a result, we developed a culturally-appropriate Latin dance program for this under-served population, given that dance challenges individuals *physically and cognitively*. Preliminary research indicates that dance has been associated with cognitive improvements (Kattenstroth, Kalisch, Holt, Tegenthoff, & Dinse, 2013) and can improve older adults' lower extremity function (Keogh, Kilding, Pidgeon, Ashley, & Gillis, 2009). To our knowledge no dance intervention studies have been conducted with older Latinos. Latin dance offers a unique dimension not found in traditional aerobic exercise, namely, interpersonal communication and reciprocity. Thus, we conducted focus groups to assess the receptivity for dancing among older Latinos; and tested the feasibility and impact of the BAILAMOS© (Balance and Activity In Latinos, Addressing Mobility in Older Adults) dance program, developed in collaboration with a Latin dance instructor.

Methods

Phase 1: Focus Groups

Design and Sample

Two focus groups were conducted to examine older, urban Latinos' perceptions and attitudes towards dance and PA prior to development of a dance intervention. Inclusion criteria: (1) age ≥55 years, (2) English-speaking Latino/Hispanic, (3) mobility limitation (Weiss, Fried, & Bandeen-Roche, 2007), and (4) sedentarism (<2 day/week of aerobic exercise). Exclusion criteria included dependence on assistive device to ambulate and severe clinical conditions (e.g., recent bone fracture). Participants were recruited using established relationships in the area developed by the Principal Investigator, including presentations at the study site, senior housing facilities, a church, and coalition meetings; and through a health centers/clinic, word of mouth, flyers in mailboxes of senior housing facilities, and an ad in the neighborhood newspaper. Study approval was obtained through the (REMOVED) Institutional Review Board (IRB).

Data collection and analysis

Stratified by sex, two focus groups were conducted, with facilitation by the Principal Investigator who has previous research experience with older Latinos. Focus groups ranged from 65- to 75-minutes in length. After providing informed consent, a brief survey was administered to elicit demographic information. Participants were financially compensated. Focus groups were audio-taped and transcribed.

Computer software (i.e., Atlas/ti) was used across analyses procedures. Two bicultural research assistants coded the transcripts. No older adults were involved in data analysis. An iterative process was used for code development where initial codes were supplemented with emergent codes as they surfaced during data analysis. This was followed by discussions with the two research assistants and the principal investigator to resolve disagreements and reach consensus on appropriate use of codes. The percent agreement in coding was 70% across reviewers, with 100% agreement reached through face-to-face discussion of the final codes

assigned. Identification and organization of common themes was accomplished through close reading of the transcripts and after segmentation and coding of the textual documents.

Phase 2: Pilot Intervention

Design and sample

A single group, pre-post 3-month pilot test of BAILAMOS© was conducted. Inclusion criteria and recruitment strategies were the same as for focus groups, with addition of: (1) ability to speak Spanish or English, (2) adequate cognitive functioning (answered $\leq$ 3 wrong on the 20-item Mini Mental State Examination) (Folstein, Folstein, & McHugh, 1975), (3) danced < 2 times/month over previous 12 months, and (4) physician approval if deemed at risk for adverse events. A total of thirteen participants were enrolled in the study.

Measures

Measures were available in either English or Spanish, and participants had their choice.

Background measures. A brief survey elicited demographic information and participants' health history and status. Body mass index (BMI)($kg \cdot m^{-2}$) was calculated from height and weight.

Dance logs. Participants recorded the number of minutes danced, ratings of perceived exertion, how they were feeling, and enjoyment of the session.

Psychosocial measures. Psychosocial constructs were measured using the Physical Activity Self-Efficacy Scale (McAuley, 1993), available in English and in Spanish (Marquez & McAuley, 2006); and a modified version of The Physical Activity Enjoyment Scale (Kendzierski & DeCarlo, 1991), original available in English and in Spanish (de Gracia & Marco, 2000), where having participants use a Likert-scale ranging from 1 to 7 in response to questions such as "Do you enjoy (1) or hate (7) physical activity?" was changed to asking participants to answer

dichotomously if they enjoy or hate it. If they said they enjoy it, then they were asked to give a number from 1-3, with a lower number indicating more enjoyment. Similarly, if they said they hate it, then they were asked to give a number from 5-7 with a higher number indicating hating it more. Quality of life was measured with the 12-Item Short Form Survey (SF-12) (Ware, Kosinski, & Keller, 1996), available in English and in Spanish (Gandek et al., 1998).

Physical activity. The CHAMPS Physical Activity Questionnaire for Older Adults (Stewart et al., 2001), previously used in Spanish (Rosario, Vazquez, Cruz, & Ortiz, 2008), was used to assesses self-reported lifestyle PA; and the ActiGraph Model GT3X accelerometers (The Actigraph, Pensacola, FL), small and lightweight triaxial accelerometers, were employed. Time spent in light, moderate or vigorous intensity PA using cutpoints for older adults were assessed (Miller, Strath, Swartz, & Cashin, 2010). Data were included in analysis if the accelerometer displayed at least 10 hours of data in a 24-hour period on at least 3 days.

Physical function performance. The three tests of the Short Physical Performance Battery (SPPB) (tests of balance, gait, and lower body strength/endurance) were employed (Guralnik et al., 1994). Also, mobility was assessed with the 400M walk, and participants were instructed to walk the 400 meter course at a comfortable and maintainable pace. Total time to complete the walk was recorded.

Cognitive function. We employed tests that assess functions likely to be related to aging and PA (Kramer, Erickson, & Colcombe, 2006) and that have been shown to be valid across ethnic and socioeconomic backgrounds (Krueger, Wilson, Bennett, & Aggarwal, 2009). The cognitive function tests included the East Boston Memory Test (EBMT) (Albert et al., 1991); the Stroop Neuropsychological Screening Test (Trenerry, Crosson, DeBoe, & Leber, 1989); the

Numbers Comparison test (Ekstron, French, Harmen, & Kermen, 1976); and a measure of Verbal fluency (Welsh et al., 1994).

Function and Disability. Function and disability were measured using the 15-item function subscale and the 8-item disability subscale of the Abbreviated Late Life Function and Disability Instrument (LL-FDI) (McAuley, Konopack, Motl, Rosengren, & Morris, 2005), available in English and in Spanish (Abizanda et al., 2011).

Procedures

Following screening, participants were scheduled for a baseline testing session. After acquiring informed consent, questionnaires and measures were administered by trained bilingual staff.

Dance program. BAILAMOS© includes Merengue, Cha Cha Cha, Bachata, and Salsa and integrates principles of Social Cognitive Theory (Bandura, 1997) to boost program retention and maximize PA outside the program (McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; McAuley, Jerome, Marquez, Elavsky, & Blissmer, 2003). Self-efficacy was targeted by setting the sequencing of dance styles from the simplest style (i.e., Merengue) through the most difficult style (i.e., Salsa) to enhance mastery experiences. Additionally, participants were exposed to social modeling by being in a class with other individuals of similar age, function, and demographic characteristics (including the instructor). Finally, they received consistent verbal persuasion from the dance instructor and fellow participants, and were informed of the physiological experiences they should anticipate from engaging in PA (e.g., sweating, increased heart rate).

The PI and a professional dance instructor co-developed an extensive BAILAMOS© Dance Manual and class-by-class schedule. The 13-week program included one orientation week

followed by 12 weeks of dance sessions. Classes met in a senior center community room twice per week for one hour per session in the morning. Each session included warm-up, stretching, steps for singles and couples dancing, cool-down and dance logs. Fidelity checks were completed in Weeks 3, 6, 9, and 12 of the program to ensure that the proper procedures and protocol were being followed.

Data Analysis

We used paired-sample *t*-tests to examine pre-post changes in outcomes as a result of the intervention, with effect sizes (Cohen's *d*) computed given the small sample size.

Results

Phase 1: Focus Groups

Six men and six women participated. On average, both males and females were in their 70s (*M* = 75.08), overweight (*M* BMI = 28.83), and had low levels of education (75% less than high school graduate) and income (58% household income below $30,000). A total of 9 themes emerged from the focus groups.

Culture. Both groups discussed the influence of culture on their interest in dancing. "Culture" included subthemes of the current acceptability of girls/women engaging in exercise and how girls/women did not have the opportunity to exercise or play sports when they were younger. It was noted that dancing is a part of life in Latin culture and it was clear that dancing frequently begins when Latinos are young ("I was nine years old when my brothers teach me how to dance polkas and boleros and rancheros").

Favorite Aspects of Dancing. Participants liked that dancing is a total body movement ("Because you move a lot and your whole body is moving your legs, your arms, your head, everything on your body moves"); is a social activity ("…people you knew come all the time and

you didn't have to have a partner"); and includes music ("there's some kind of rhythm not only for the body but your brain in that you hear that music. It sends a message to the body").

Barriers to Dancing. General barriers were mentioned, as one man noted, "What person our age wants to go out there at 8:00 o'clock at night and dance? I'm getting ready to go to bed at that hour." Barrier subthemes included personal and safety barriers, and the lack of availability and access to dance programs. There were comments that dance programs and facilities are not available ("If we had someplace we could go dance at least once a week or a month that would be great but there isn't anything") or accessible because of cost ("those kinds of things would have to be offered to the seniors without having to pay because really when it comes to money a lot of them really can't afford it").

Dancing Versus Other Types of Physical Activity. Overall, participants perceived dancing to accrue more health benefits than other types of PA. For example, one woman noted, "when people swim they don't move as much as we do when we're dancing and they don't sweat the way we do. When you're dancing and you're sweating you're losing a lot of calories."

Remaining themes. Other important themes emerged, including that participants were generally aware of the benefits of being physically active. One man stated, "It's the best medicine in the first place, exercise." They also identified both cognitive and physical health benefits associated with dancing ("improves your ability to move around and it improves your thinking").

Phase 2: Pilot Intervention

Feasibility

Table 1 presents descriptive data. Nine of 13 older Latinos completed the program for a 69% retention rate, with attrition attributed to factors unrelated to the program (i.e., home injury,

change in work schedule, new grandchild caregiving duties, and left the country). There was no statistical difference in age, BMI, years in the US, time to complete 400M walk, and SPPB scores (all ps > .05) between those who completed the program and those who did not. Participants who completed the program attended 85% of the sessions. Reasons given for not attending classes included doctor appointments, vacation, and family responsibilities.

Pre-Post Intervention Outcomes

Table 2 shows pre-post intervention changes in PA and physical function. Minutes of self-reported moderate/vigorous LTPA increased considerably (p = .10; d = 1.51). Minutes of self-reported lifestyle PA significantly increased (p < .05; d = 1.39). Accelerometer-assessed PA decreased from pre- to post-intervention for moderate intensity PA (p = .18; d = 0.29).

Objectively there was a moderate effect of the dance program on mobility, as time to complete the 400-Meter Walk decreased (p = .15; d = 0.56). Scores on the disability component of the LL-FDI demonstrated small to moderate improvements (d = 0.16-0.41), whereas scores on the function component demonstrated small decreases (d = 0.06 - 0.18).

As can be seen in Table 2, participants reported significantly greater enjoyment of PA after the program (p < .05; d = 0.61), and improved physical quality of life (p = .23; d = 0.31) but not mental quality of life. PA-related self-efficacy decreased over time (p = .13; d = 0.89). Small positive effects were seen for the Stroop Neuropsychological Screening (p = .54 and .65; d = 0.09 and 0.11) and Numbers Comparison tests (p = .65; d = 0.12), whereas small negative effects were demonstrated for the Verbal Fluency test (p = .23; d = 0.24).

Discussion

Behavioral interventions targeting early stages of the disablement process have the potential to prevent or delay disability (Popa, Reynolds, & Small, 2009). Our qualitative

assessment and pre-post intervention study provides preliminary support for the BAILAMOS© dance program. Focus group discussions centered on culture, and various factors related to dancing. Many women were restricted from engaging in exercise or sports as children, but dancing was a form of PA to which they were introduced at a young age. Consequently, a dance program in later life allows them to participate in an activity performed in early life. Overall dancing is an activity that many had an interest in, however, many barriers were identified (e.g., lack of access). The BAILAMOS© dance program helps to overcome many of those barriers, by providing a structured group activity and enabling access and availability of a program indoors, so as to avoid lack of personal safety and inclement weather when walking outdoors.

With low attrition and high session attendance, the BAILAMOS© dance program proved feasible. In a post-intervention focus group participants reported enjoying learning how to dance, being motivated to be active, social aspects, and the instructor. Moreover, at the end of the program participants self-reported significantly more lifestyle PA and greater enjoyment of PA compared to baseline. Participation in BAILAMOS© resulted in greater mobility, as indicated by the change in 400M walk. Small improvements in two sets of cognitive tests, the Stroop Neuropsychological Screening and Numbers Comparison, were expected as they test aspects of executive function.

Contrary to hypotheses, objectively-assessed PA decreased after the program. It is not unusual for self-reported PA to differ substantially from accelerometer-based data (Prince et al., 2008). It is possible that since the CHAMPS (subjective assessment of PA) asked about PA over the past 4 weeks, whereas the accelerometer was only worn for one week, the discrepancy is partially explained. Also, it is possible that as a result of the program participants were more *aware* of any PA they were engaging in, and thus reported doing more.

Study limitations should be considered when interpreting the findings. Focus groups were conducted in English, yet the pilot intervention was conducted in both Spanish and English. Also, small sample sizes were included in both phases of the work. Future qualitative studies examining perceptions of dance as a form of PA in Latinos will benefit from larger samples that include diverse Latino subgroups. Also, future studies should examine the cost of conducting such a program. Despite the small sample size of this pilot intervention, several outcomes were positively impacted, and these findings combined with strong program retention, participation, and satisfaction underlie the promise of the BAILAMOS© program.

The number of older Latinos will increase by 224 percent by 2030 (Greenberg, 2009). Poor health and low LTPA levels affect older Latinos for many reasons, and culturally appropriate PA that will be adopted and adhered to are essential to promote health in this population. Initial results are promising for the BAILAMOS© program to help fill the gap of culturally-appropriate PA programs.

References

Abizanda, P., Lopez-Jimenez, M., Lopez-Torres, J., Atienzar-Nunez, P., Naranjo, J. M., & McAuley, E. (2011). Validation of the Spanish version of the Short-Form Late-Life Function and Disability Instrument. *J Am Geriatr Soc, 59*(5), 893-899. doi: 10.1111/j.1532-5415.2011.03392.x

Albert, M., Smith, L. A., Scherr, P. A., Taylor, J. O., Evans, D. A., & Funkenstein, H. H. (1991). Use of brief cognitive tests to identify individuals in the community with clinically diagnosed Alzheimer's disease. *International journal of Neuroscience, 57*(3-4), 167-178.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman and Company.

Belza, B., Walwick, J., Shiu-Thornton, S., Schwartz, S., Taylor, M., & LoGerfo, J. (2004). Older adult perspectives on physical activity and exercise: voices from multiple cultures. *Prev Chronic Dis, 1*(4), A09.

Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J., & Skinner, J. S. (2009). American College of Sports Medicine position stand. Exercise and physical activity for older adults. *Med Sci Sports Exerc, 41*(7), 1510-1530. doi: 10.1249/MSS.0b013e3181a0c95c

Cromwell, S. L., & Berg, J. A. (2006). Lifelong physical activity patterns of sedentary Mexican American women. *Geriatr Nurs, 27*(4), 209-213. doi: 10.1016/j.gerinurse.2006.06.008

de Gracia, M., & Marco, M. (2000). Efectos psicologicos de la actividad fisica en personas mayores. *Psicothema, 12*(2), 285-292.

Delgado, C. F., & Munoz, J. E. (1997). *Everynight Life: Culture and Dance in Latin/o America*. Durham, NC: Duke University Press.

Ekstron, R. B., French, J. W., Harmen, H. H., & Kermen, D. (1976). *Manual for kit of factor-referenced cognitive test*. Princeton, NJ: Educational Testing Service.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res, 12*(3), 189-198. doi: 10.1016/0022-3956(75)90026-6

Gandek, B., Ware, J. E., Aaronson, N. K., Apolone, G., Bjorner, J. B., Brazier, J. E., . . . Sullivan, M. (1998). Cross-validation of item selection and scoring for the SF-12 Health Survey in nine countries: results from the IQOLA Project. International Quality of Life Assessment. *Journal of clinical epidemiology., 51*(11), 1171-1178.

Greenberg, S. (2009). A Profile of Older Americans: 2009. Washington, DC: Administration on Aging. http://www.aoa.gov/AoAroot/Aging_Statistics/Profile/2009/docs/2009profile_508.pdf.

Guralnik, J. M., Simonsick, E. M., Ferrucci, L., Glynn, R. J., Berkman, L. F., Blazer, D. G., . . . Wallace, R. B. (1994). A short physical performance battery assessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. *J Gerontol, 49*(2), M85-94. doi: 10.1093/geronj/49.2.M85

Kattenstroth, J. C., Kalisch, T., Holt, S., Tegenthoff, M., & Dinse, H. R. (2013). Six months of dance intervention enhances postural, sensorimotor, and cognitive performance in elderly without affecting cardio-respiratory functions. *Front Aging Neurosci, 5*, 5. doi: 10.3389/fnagi.2013.00005

Kendzierski, D., & DeCarlo, K. J. (1991). Physical activity enjoyment scale: Two validation studies. *Journa of Sport & Exercise Psychology, 13*, 50-64.

Keogh, J. W. L., Kilding, A., Pidgeon, P., Ashley, L., & Gillis, D. (2009). Physical benefits of dancing for healthy older adults: A review. *Journal of Aging and Physical Activity, 17,* 479-500.

Kramer, A. F., Erickson, K. I., & Colcombe, S. J. (2006). Exercise, cognition, and the aging brain. *J Appl Physiol, 101*(4), 1237-1242. doi: 10.1152/japplphysiol.00500.2006

Krueger, K. R., Wilson, R. S., Bennett, D. A., & Aggarwal, N. T. (2009). A battery of tests for assessing cognitive function in older Latino persons. *Alzheimer Dis Assoc Disord, 23*(4), 384-388. doi: 10.1097/WAD.0b013e31819e0bfc

Lewis, D. (1994). Introduction: Dance in Hispanic Cultures. *Choreography and Dance, 3*(4), 1-5.

Marquez, D. X., & McAuley, E. (2006). Social cognitive correlates of leisure time physical activity among Latinos. *Journal of behavioral medicine., 29*(3), 281-289. doi: 10.1007/s10865-006-9055-6

Marquez, D. X., Neighbors, C. J., & Bustamante, E. B. (2010). Leisure time and occupational physical activity among racial/ethnic minorities. *Medicine & Science in Sports & Exercise, 42*(6), 1086-1093.

McAuley, E. (1993). Self-efficacy and the maintenance of exercise participation in older adults. *Journal of Behavioral Medicine, 16,* 103-113.

McAuley, E., Jerome, G. J., Elavsky, S., Marquez, D. X., & Ramsey, S. N. (2003). Predicting long-term maintenance of physical activity in older adults. *Prev Med, 37*(2), 110-118.

McAuley, E., Jerome, G. J., Marquez, D. X., Elavsky, S., & Blissmer, B. (2003). Exercise self-efficacy in older adults: social, affective, and behavioral influences. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine., 25*(1), 1-7.

McAuley, E., Konopack, J. F., Motl, R. W., Rosengren, K., & Morris, K. S. (2005). Measuring disability and function in older women: psychometric properties of the late-life function and disability instrument. *J Gerontol A Biol Sci Med Sci, 60*(7), 901-909. doi: 10.1093/gerona/60.7.901

Miller, N. E., Strath, S. J., Swartz, A. M., & Cashin, S. E. (2010). Estimating absolute and relative physical activity intensity across age via accelerometry in adults. *J Aging Phys Act, 18*(2), 158-170.

Popa, M. A., Reynolds, S. L., & Small, B. J. (2009). Is the effect of reported physical activity on disability mediated by cognitive performance in white and african american older adults? *J Gerontol B Psychol Sci Soc Sci, 64*(1), 4-13. doi: 10.1093/geronb/gbn030

Prince, S. A., Adamo, K. B., Hamel, M. E., Hardt, J., Connor Gorber, S., & Tremblay, M. (2008). A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. *Int J Behav Nutr Phys Act, 5*, 56. doi: 10.1186/1479-5868-5-56

Rosario, M. G., Vazquez, J. M., Cruz, W. I., & Ortiz, A. (2008). Internal consistency of the CHAMPS physical activity questionnaire for Spanish speaking older adults. *P R Health Sci J, 27*(3), 224-228. doi: 10.1249/01.mss.0000273699.00091.93

Stewart, A. L., Mills, K. M., King, A. C., Haskell, W. L., Gillis, D., & Ritter, P. L. (2001). CHAMPS physical activity questionnaire for older adults: outcomes for interventions. *Med Sci Sports Exerc, 33*(7), 1126-1141.

Trenerry, M., Crosson, B., DeBoe, J., & Leber, W. (1989). *Stroop Neuropsychological Screening Test manual.* Adessa, FL: Psychological Assessment Resources (PAR).

Ware, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-item short-form health survey:construction of scales and preliminary tests of reliability and validity. *Medical care, 34*(3), 220-223. doi: 10.1097/00005650-199603000-00003

Weiss, C. O., Fried, L. P., & Bandeen-Roche, K. (2007). Exploring the hierarchy of mobility performance in high-functioning older women. *J Gerontol A Biol Sci Med Sci, 62*(2), 167-173. doi: 10.1093/gerona/62.2.167

Welsh, K. A., Butters, N., Mohs, R. C., Beekly, D., Edland, S., Fillenbaum, G., & Heyman, A. (1994). The Consortium to Establish a Registry for Alzheimer's Disease (CERAD). Part V. A normative study of the neuropsychological battery. *Neurology, 44*(4), 609-614.

Acknowledgements

REMOVED

Table 1

Pilot intervention sample descriptives

	Mean (SD)/% (n = 9)	Range
Age	65.2 (5.3)	55-73
Female (%)	88.9%	-
Body mass index	33.8 (7.3)	24.1-45.8
Married (%)	55.6%	-
Number of children	3.2 (2.0)	1-6
Currently employed	0%	-
Mexican/Mexican-American	100%	-
Years lived in U.S.	57.3 (16.0)	35-73
English as preferred language	66.7%	-
Years of education	9.7 (3.0)	5-13.5
Annual household income (lower than $25,000)	100%	-
Self-rated health (“good” or better)	66.7%	-

Table 2

Pilot intervention physical activity, physical function, psychosocial and cognitive function measures

Measure	Pre-intervention M (SD)	Post-intervention M (SD)	Effect size	*p* value
CHAMPS (n = 9)				
Min MV Leisure PA	207.00 (170.50)	561.00 (298.99)	1.51	0.10
Min MVPA	280.00 (212.06)	565.00 (314.59)	1.08	0.15
Min PA*	628.33 (331.91)	1235.00 (543.58)	1.39	0.01
Accelerometer (n = 8)				
Daily Sedentary minutes	483.92 (67.23)	483.14 (55.43)	0.01	0.96
Daily Light minutes	308.699 (78.67)	263.65 (69.84)	0.61	0.06
Daily Moderate minutes	21.59 (13.53)	18.19 (9.57)	0.29	0.18
Daily Steps	5498.82 (2360.44)	5029.01 (2628.61)	0.19	0.17
Abbreviated LL-FDI (n = 9)				
Disability, Frequency Social	12.56 (2.74)	13.00 (2.78)	0.16	0.35
Disability, Frequency Personal	18.22 (1.99)	18.56 (2.01)	0.17	0.52
Disability, Limitation Social	18.67 (2.06)	19.11 (1.45)	0.25	0.57
Disability, Limitation Personal	18.89 (1.36)	19.44 (1.33)	0.41	0.21
Function, Basic Lower Extremity	23.78 (1.92)	23.67 (1.94)	0.06	0.86
Function, Adv. Lower Extremity	16.78 (3.27)	16.00 (5.29)	0.18	0.68
Function, Upper Extremity	21.44 (2.96)	21.11 (3.62)	0.10	0.76
400 Meter Walk (sec) (n = 8)	441.88 (49.10)	415.75 (43.90)	0.56	0.15

SPPB (n = 9)				
4 Meter Gait time	6.11 (1.69)	5.98 (0.89)	0.10	0.76
SPPB score	9.22 (1.39)	8.89 (1.54)	0.23	0.08
Physical Activity Enjoyment Scale* (n = 9)	111.11 (11.95)	117.00 (7.43)	0.61	0.05
Physical Activity Self-Efficacy (n = 9)	94.26 (9.89)	77.59 (27.59)	0.89	0.13
12-Item Short Form Survey (QoL) (n = 9)				
Physical Health score	49.38 (6.94)	51.46 (6.37)	0.31	0.23
Mental Health score	52.00 (8.17)	50.64 (11.05)	0.14	0.73
East Boston Memory Test (n = 9)				
Immediate recall	9.11 (1.69)	9.22 (2.54)	0.05	0.83
Delayed recall	9.00 (2.24)	8.78 (2.86)	0.09	0.80
Stroop Neuropsychological Test (n = 9)				
Word score	50.11 (15.97)	51.56 (17.15)	0.09	0.54
Colors score	18.67 (8.57)	19.67 (10.00)	0.11	0.65
Verbal Fluency (n = 9)	19.11 (5.55)	17.89 (4.59)	0.24	0.23
Numbers Comparison Test (n = 9)	24.78 (7.60)	25.78 (8.66)	0.12	0.65

*$p < .05$

Notes: CHAMPS = CHAMPS Physical Activity Questionnaire for Older Adults;
LL-FDI = Late Life Function and Disability Instrument; MV= moderate/vigorous;
PA = physical activity; SPPB = Short Physical Performance Battery; QoL = Quality of life