3 WINS FITNESS: A PILOT STUDY OF A PARK-BASED PROGRAM FOR LOW-INCOME COMMUNITIES

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Spear E. S., et. al. Background: Three-quarters of American adults do not meet recommended guidelines for physical activity. This article presents results from a pilot study of *3 WINS Fitness ("3 WINS")*, a free, park-based program for adults that started in 2011 at California State University, Northridge. The program is operated by kinesiology student interns. The pilot study took place in one large park in Los Angeles and included three sessions per week for 10 weeks. **Methods**: The main outcome was change in BMI after the 10-week program. We collected pre-post data on 66 participants. Change in BMI was examined for the sample as a whole and by normal weight, overweight, and obese classifications. **Results**: We found a small but significant decrease in BMI at program completion; however, there appeared to be less improvement for participants who were obese. Acceptability of the program was high. Most participants (78.5%) attended 50% of sessions or more. **Conclusions:** *3 WINS* is a promising health promotion program that has the potential to be sustainable and scalable. Implementation of *3 WINS* at the site of this pilot study has remained active since 2011. The sustainability of *3 WINS* is facilitated by integrating the program into university kinesiology programs, creating partnerships with local parks, and reducing reliance on external funding to implement the program. The program has been adopted by numerous parks throughout Southern California and several universities throughout California.

Key Words: parks, physical activity, health promotion, community program

INTRODUCTION

Disease prevention is directly related to a healthy active lifestyle, yet only 54.2% of adults in the United States are sufficiently physically active, as defined by engaging in at least 150 minutes of moderate intensity physical activity per week (Centers for Disease Control and Prevention [CDC], n.d.). Only 27.6% of adults meet the recommended two days of strength-related exercise per week (CDC, n.d.). Opportunities to engage in regular physical activity, however, are not equally distributed in the population. Lower income populations, for example, engage in less physical activity than higher income

groups (Sturm & Cohen, 2019). Hispanic, non-Hispanic Black and American Indian adults are less active compared with white adults (King et al., 2000). Physical inactivity also increases with age (Watson et al., 2016). In a study of adults 50 years and older, rates of physical inactivity were higher among women, Non-Hispanic Blacks, Hispanics, and people with only a high school education or less (Watson et al., 2016).

Community parks represent an important resource for promoting physical activity (Han et al., 2014; Harnik & Welle, 2011; Hunter et al., 2015; Müller-Riemenschneider et al., 2018; Zarr et al., 2017). First, local parks are accessible to most people

because they are free and located within close proximity to residential areas. A large study of 50 community parks across Los Angeles found that the average distance to a local park for local residents was 1.2 miles (Cohen et al., 2012). Second, people already use parks to engage in moderate-to-vigorous physical activity. A review of 23 observational studies of parks by Joseph and Maddock (2016) found that 31.0 to 85.4% of park users engaged in moderate-to-vigorous physical activity. Third, parks provide opportunities for social interaction and social support (Fan et al., 2011). Social support can enable physical activity among adults because social support promotes self-efficacy or confidence in one's ability to engage in regular physical activity, positive beliefs about the benefits of physical activity, and self-regulatory behaviors such as goal setting and problem solving (Ayotte et al., 2010).

Physical activity increases with park-based programming (Han et al., 2015). Research has shown that park-based exercise programs enable adults to be more physically active and improve their fitness, mobility, and strength (Han et al., 2015; Joseph & Maddock, 2016; Kling et al., 2018). Park-based programs involve a range of structured exercise activities such as moderate intensity aerobic activities, strength-building exercises, and balance exercises. Exercise physiologists or kinesiology professionals lead the sessions, which are commonly one-hour in length and take place one-to-three times a week. Exercise sessions take place either outside on park grounds or indoors in the recreation center buildings. In addition to supervised exercises in parks, interventions may also include educational workshops to build knowledge and skills and one-on-one brief counseling sessions to offer behavior modification assistance such as goal setting and problem solving (Barclay et al., 2018; Kling et al., 2018; Müller-Riemenschneider et al., 2018).

While the evidence suggests that structured programming in parks promotes physical activity among adults, it is not clear whether the benefits of park-based interventions extend to a range of populations defined by age, gender, income, and race/ethnicity. Joseph and Maddock (2016) found that park users were more likely to be male and younger adults. In Los Angeles, Derose et al. (2018) found that women and non-White men and women

were less likely to frequent parks in Los Angeles and engage in physical activity while at the parks. Information on the use of parks among racial/ethnic minorities is scant because many observational park studies do not report on the racial/ethnic backgrounds of park users (Joseph & Maddock, 2016). Reaching diverse populations with park-based physical activity interventions requires community partnerships to help with outreach and recruitment.

3 WINS Fitness ("*3 WINS*") is an innovative park-based health promotion program that is delivered by undergraduate and graduate kinesiology students and provided for free for the public (Han et al., 2015; Loy, 2017; Loy et al., 2012). *3 WINS* (formerly *100 Citizens*) was developed in 2011 as a partnership between a university kinesiology department and one neighborhood park in a predominately Latinx community (Loy et al., 2012). *3 WINS* was designed to increase opportunities for physical activity among adults in low-income communities through university-community partnerships. Current Physical Activity Guidelines (PAG) recommend that adults aged 18 and over engage in a minimum of 150 minutes of moderate-intensity physical activity (PA), 75 minutes of vigorous-intensity PA, or an equivalent combination of moderate-to-vigorous PA (MVPA) each week. These recommendations should be supplemented with two or more days of strength training activities per week. The objective of *3 WINS* is to provide a program offered three days per week to enable adults to meet both the aerobic and strength training minimum guidelines. As the name suggests, *3 WINS* has three central aims: to improve participant fitness, to improve community health, and to offer professional development opportunities for kinesiology students (http://3winsfitness.com).

3 WINS capitalizes on the skills of kinesiology students who are being trained in exercise physiology, biomechanics, and motor behavior to create appropriate exercise prescriptions to improve health and fitness. The program provides a practical academic internship or volunteer experience where students deliver free exercise classes in local parks under the supervision of faculty. Students apply classroom knowledge in a community setting, develop interpersonal communication skills, and acquire leadership and team building experience.

Prior research documented an increase in moderate-to-vigorous physical activity in a park where *3 WINS* personnel implemented the program (Han et al., 2015). The present study builds upon prior research on *3 WINS* by testing its impact on participants through a reduction in body mass index (BMI). For the present study, we pilot-tested *3 WINS* in one park located in a low income, predominately Latino community in the northeastern valley of Los Angeles County.

METHODS

Intervention Description

3 WINS offered one-hour exercise sessions three days per week for 10 weeks in fall 2019. Each day, students assign participants to one of three groups based on their movement capacity, ranging from beginner to advanced. In the lowest level of fitness, where participants have poor movement skills or balance, focus is on engaging in movement patterns that mimic activities of daily living, such as pushing, pulling, squatting, standing, single-leg movements, and rotation. As participants progress, they are encouraged to move to the next level fitness group where students introduce them to more complex movement patterns, such as combining a squat with an overhead press, increasing resistance, and shorter rest intervals.

Regardless of which group a participant is in, each 60-minute session follows the same structure. The exercise sessions begin with a 5 - 10-minute dynamic warm-up, transitioning into 25 minutes of resistance training exercises that targets each major muscle group using body weight and equipment such as resistance bands, battle ropes, kettlebells, and dumbbells. Students use a circuit training format. After the strength training component, participants engage in 25 minutes of aerobic exercise. Throughout the duration of the session, participants are constantly moving, allowing them to maintain an elevated heart rate (HR) and engage in moderate-to-vigorous physical activity (MVPA). Water consumption was encouraged as needed. See Table 1 for an overview of *3 WINS* sessions.

Table 1

Overview of a 3 WINS Session

Activity	Description	Time	Sample Exercises
Participant Sign-in	Participants sign in upon arrival	–	–
Warm Up	Dynamic movements that progress from low to moderate/vigorous intensity to prepare participants for the strength and aerobic training.	5 min.	• Hamstring scoop • Gate Openers • Gate Closer • High Knee Skip • A-Skip • B-Skip • Quick Feet • Progressive Strides
Strength/Resistance Training	3 circuits with 3 exercises/circuit that target large muscle groups. Each exercise is completed for 45 seconds before moving on to the next exercise, and each circuit is completed 3 times (~8 minutes/circuit). Participants are encouraged to keep moving during resting portions (i.e., walking in place) to maintain an elevated heart rate.	25 min.	• Squat • Romanian Deadlifts • Lunge Variations • Shoulder Press • Partner Rows • Push-Up Variations • Lateral/Frontal Raises • Dead Bug • Bird Dog • Plank

| Aerobic Training | 3 circuits with 3 exercises/circuit that maintain an elevated heart rate, target large muscle groups, and are rhythmical in nature. Each exercise lasts 45 seconds before moving on to the next exercise, and each circuit is completed 3 times (~8 minutes/circuit). Participants are encouraged to keep moving during resting portions (i.e., walking in place) to maintain an elevated heart rate. | 25 min. | • Ladder Variations
• Jumping Jacks
• Jump Rope
• T-Drills
• Steady-State Running |
| Cool Down | Participants walk to a central location where they engage in static stretching that targets the major muscles groups used during training. Stretches are held for 30 seconds each before ending with breathing exercises to assist in participant relaxation. | 5 min. | • Easy Walking
• Static Stretching
• Breathing Exercises |

Recruitment and Study Site

Requirements for participation included 1) age 18 years and older, 2) signing the informed consent form, and 3) no contraindications to physical activity. At enrollment, students screened participants for eligibility using the Physical Activity Readiness Questionnaire (Warburton et al., 2010).

The location for the program was a large urban park (11 acres) in a predominately Hispanic city in the northeastern valley of Los Angeles County. As part of an effort to build community relationships, kinesiology faculty met with park administrators. In exchange for use of facilities and program promotion, *3 WINS* offered the city an opportunity to host a free exercise program for the community. In order to promote *3 WINS* and recruit participants, students distributed informational flyers to businesses within a mile radius of the park and recruited participants from local farmers markets and health fairs. Students also made announcements at nearby elementary schools during "back to school nights" and at local churches.

To facilitate forming relationships between instructors and participants, the program required participants to wear nametags. Students organized meetings with participants to discuss their personal physical activity goals and hosted an end-of-semester potluck and one holiday celebration at the park. On average, ten students led the implementation of the *3 WINS* program each day. The total number of students involved in the *3 WINS* program during the semester-long implementation was between 15-20.

Evaluation Design, Measures and Data Collection

We used a single group pre-post design for the evaluation of the pilot study. The outcome for this study was participant BMI (kg/m^2). Students measured participants' height and weight during the initial week of the program at the park and weekly for 10 weeks. At enrollment, students collected self-reported demographic data including age, gender, race/ethnicity, marital status, and educational attainment. Students recorded attendance at every exercise session over the 10-week period.

Data analysis

We calculated descriptive statistics for demographic characteristics, BMI, and program attendance. Due to participants missing some of the weekly sessions, we calculated baseline (i.e., pre-test) BMI using participants average weight from weeks 1-3 and the follow up (i.e., post-test) BMI using the average of weeks 8-10. We used repeated measure analysis of variance (ANOVA) to test for a change in BMI over time for the entire sample and to examine if changes in BMI differed between normal weight, overweight, and obese participants, as defined by BMI scores at pre-test. For group comparisons, a Bonferroni test was used to adjust for the family-wise error rate. For all analyses, statistical significance was set at $\alpha = 0.05$. We used Stata 15.0 MP for the analyses.

RESULTS

A total of 169 people participated in the program; however, pre- and post-test BMI data were collected on 66 participants (39%). Table 2 displays the demographic characteristics and baseline weight status of the total sample and the pre- and post-test sample. Much like the total sample, participants in the pre- and post-test sample were primarily female (92.4%), Hispanic (93.1%), married (66.7%), had high school or lower education (68.5%), and an average age of 58.6 years. With regards to weight, we observed that slightly more than half of participant were overweight (53.0%), 33.3% were obese, and 13.6% fell into the normal weight range.

Of the participants in the pre- and post-test sample, most (78.8%) attended 50% of sessions or more. This contrasts with 51.5% of the total sample attending 50% or more sessions. Approximately one fifth (21.2%) of participants in the pre- and post-test sample attended fewer than 50% of classes. See Table 3 for a summary of participant attendance.

Results of repeated measure ANOVA showed that participants' BMI decreased significantly from baseline (M_{pre}= 29.34, SD = 5.36) to follow-up (M_{post}= 29.07, SD = 5.37) (F = 5.520, p = 0.001, η^2 = 0.17). The overweight group had the largest decrease in mean BMI (M_{pre}= 27.51, SD = 1.34 vs. M_{post} = 27.08, SD = 1.27), followed by the obesity group (M_{pre}= 34.87, SD = 5.54 vs. M_{post} = 34.74, SD = 5.44), and normal weight group (M_{pre}= 22.96, SD = 1.07 vs. M_{post} = 27.89, SD = 0.96). However, the overall F-test for group differences was not statistically significant (F = 2.250, p = 0.114).

Table 2

Demographics of 3 WINS Participants (N=169)

Demographic Characteristic	Entire sample (n=169)		Pre- and Post-Test Sample[†] (n=66)	
	n	%	n	%
Gender				
Male	9	5.8	5	7.6
Female	145	94.2	61	92.4
Race/ethnicity				
Hispanic	124	93.2	54	93.1
White	1	0.8	1	1.7
African American	5	3.8	1	1.7
Asian	3	2.3	2	3.4
Marital Status				
Married	86	64.2	40	66.7
Single, never been married	7	5.2	3	5.0
Other	41	30.6	17	28.3
Education				
Never attended HS	57	43.8	25	43.9
Some HS/HS grad	38	29.2	14	24.6
Some college/AA	24	18.5	13	22.8

College degree or higher	11	8.5	5	8.8
	M	SD	M	SD
Age	55.9	14.38	58.6	13.30
	n	%	n	%
Weight Status				
Normal weight	16	14.8	9	13.6
Overweight	46	42.6	35	53.0
Obesity	46	42.6	22	33.3

Note: [†] Pre- and post-test sample was the sample that had BMI data at both baseline and follow-up. Gender and age data were collected during program registration while the other demographic information were collected via survey.

Table 3

Attendance of 3 WINS Participants (N=169)

	Entire Sample (n=169)		Pre- and Post-Test Sample (n=66)	
	n	%	n	%
% Sessions Attended				
Less than 25%	35	20.7	0	0.0
25%-49%	47	27.8	14	21.2
50%-74%	58	34.3	32	48.5
75% or more	29	17.2	20	30.3
	M	SD	M	SD
# Weeks Attended	7.2	2.93	9.1	1.05

Note: [†] Pre- and post-test sample was the sample that had BMI data at both baseline and follow-up

DISCUSSION

Approximately 75% of American adults report engaging in no leisure time physical activity (CDC, n.d.) (. Expanding the use of urban green space including neighborhood parks to promote physical activity of children and adults is an important public health strategy (Harnik & Welle, 2011; Kondo et al., 2018). What *3 WINS* offered participants was an opportunity to meet recommendations for aerobic activity and strengthening, an important short-term outcome that, over time, may lead to improved fitness, weight loss and reduced risk of diabetes. After the 10-week program, we observed a significant decrease in BMI among participants; however, there appeared to be less improvement for participants who were obese. As such, the *3 WINS* program may consider extending the duration of the intervention and modifying certain program activities for obese participants to achieve more positive outcomes. Retention in the 10-week program was very good. A third of participants attended 75% or more of the

sessions and nearly half of participants attended 50-74%. These results provide preliminary evidence for the efficacy and feasibility of the *3* WINS program. Future studies should test the efficacy of *3 WINS* in multiple parks using an experimental research design that includes a follow-up assessment post-intervention. Additionally, a full trial of *3 WINS* should examine improvements in participants' fitness levels in addition to BMI and assess the impact of increased physical activity on mood and quality of life.

The findings of our study must be understood in the context of several limitations. First, because this was a non-experimental study, we cannot determine a causal relationship between the program and change in BMI. Second, given the recruitment strategies students used, our sample was based on convenience. As such, our sample was not representative of the broader population in the community where the park is located. While the surrounding community is 90% Latino, our sample consisted almost entirely of Latinas, many of whom were over 50 years old. One reason why women comprised the majority of participants may have to do with the timing of the classes, which were held from 8:15am-9:15am. Earlier pilot work identified this hour as the most popular for participation. Many women in the program either did not work outside the home, had a flexible work schedule, or were retired. The timing of the classes was also limited by the availability of student interns, with many having full course loads and jobs outside of school. Third, the sample size for participants who completed both the pre- and post-test was small, which precluded a more robust analysis of the change in BMI that includes important covariates such as age and level of physical activity. While the sample was not diverse in terms of gender and ethnicity, the ability of *3 WINS* to reach older Latinas is important because this population is generally less physically active (King et al., 2000) and Latino populations are less likely to exercise in parks (Han et al., 2014).

Implementation of *3 WINS* at the site of this pilot study has remained active since 2011. The sustainability of *3 WINS* is a result of a few core factors: integration of the program into university kinesiology programs, creating partnerships with local parks, and reduced reliance on external funding

to implement the program. First, the program is staffed by undergraduate and graduate kinesiology students who implement *3 WINS* as part of their internship, thus creating an ongoing pool of qualified trainers. By the time of the internship, kinesiology students in exercise science and applied fitness concentrations have acquired skills to design and facilitate a range of exercises for people at different fitness levels. What *3 WINS* adds to the internship experience is valuable "real-world" experience for students. Since the inception of the program, an average of 50 students have worked with *3 WINS* each semester at our university. Second, park officials who collaborate with *3 WINS* have offered space and equipment for free. While most activities take place outdoors at the parks, trainers also make use of indoor facilities during inclement weather. Finally, because of the use of existing resources at the universities and parks to implement the program, reliance on external funding is reduced and facilitates sustainability. To date, kinesiology professors at five additional California State University campuses have adopted the program, which speaks to the scalability of *3 WINS*.

CONCLUSIONS

This pilot study provides preliminary evidence in support of a park-based program that has successfully engaged low-income populations and, in particular, older Latinas. Women and non-Whites are less likely to engage in physical activity at local parks in Los Angeles (Han et al., 2014) and, as such, represent priority populations for physical activity interventions. *3 WINS* used a community partnership approach to gain support for the program from local officials, operate the program in local parks, gain permission to use existing equipment at the parks, and market the program in diverse community settings. As a promising model of university-community partnerships, *3 WINS* has the potential to be scalable and sustainable, two important features of effective population health programs.

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sustainability of 3 WINS Fitness over the last 10 years.

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