Promoting Physical Activity in Parks: Kinesiology Students Serving the Community

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Abstract

Background and Purpose: Adding outdoor gym equipment to a park has the potential to influence the physical activity of park users. This study piloted the feasibility of utilizing kinesiology students as physical activity coaches to promote physical activity and to motivate park users to use the outdoor exercise equipment in public parks. **Methods:** Pairs of student coaches (*N*=24) were placed in 10 parks throughout four cities for a total of 12 coaching sessions per week for 11 weeks. Students were trained in motivational interviewing techniques and behavior change skills to incorporate during their interactions with park users. Data was collected using attendance at the coaching sessions as well as the Systems for Observing Play and Recreation in Communities to scan park use before and after the pilot. Descriptive statistics and dependent t-tests were used to compare the difference in park use. **Results:** Students coached 205 residents and tracked 475 residents using the exercise equipment. There was no significant difference in park use (*p*=.066) or exercise equipment use (*p*=0.58), although numbers were lower after the pilot. However, the percentage of vigorously active users on the exercise equipment remained constant (37.9% vs. 36.3%, *p*=. 91). **Conclusion:** Despite no differences in use over time, the student coaches engaged with many users, supporting the feasibility of this approach.

Keywords: outdoor, exercise, health coaching, students, parks

Introduction

Physical inactivity and obesity have become prominent issues across the country (Hallal et al., 2012). Beyond the recommendations for cardiovascular activity, there is an added recommendation for muscle strengthening activities to occur twice a week (Garber et al., 2011; World Health Organization, 2010). However, a vast majority of Americans are not physically active at a level to gain the associated health benefits (Troiano et al., 2008). This is a major concern considering that inactivity increases the risk of chronic disease and decreases life expectancy (Lee et al., 2012; McKenzie, Cohen, Sehgal, Williamson, & Golinelli, 2006).

While some literature has focused on the role of individual characteristics in predicting behavior, there is a growing body of literature examining the role in which the physical environment plays on individuals' physical activity levels (Giles-Corti & Donovan, 2002; Hunter et al., 2015; Joseph & Maddock, 2016; Spence & Lee, 2003). In addition to examining the individual characteristics of physical activity, the social ecological model provides a framework for examining the interaction between the person and their physical and social environment to influence health behaviors (Stokols, 1992). The physical environment can serve as an enabler of a health behavior such as physical activity through accessibility to resources (Stokols, 1992). The availability of recreational resources can be considered an environmental factor that may influence the physical activity behaviors of individuals (Diez Roux et al., 2007). It was observed that areas with higher density recreational sport and physical activities showed higher activity levels compared to areas with fewer recreational resources (Diez Roux et al., 2007). Recently, a systematic review examined 26 studies that observed the physical activity

levels of park users (Joseph & Maddock, 2016). Based on that review, most park users engaged in moderate to vigorous physical activity with a mean percent of 55.0% of users engaged in moderate to vigorous physical activity (Joseph & Maddock, 2016).

With the potential for parks to impact physical activity levels of nearby residents, a variety of interventions that promote park use are being designed and tested (Hunter et al., 2015). For example, one study reported a significant increase in moderate to vigorous physical activity of the users following the installation of the park exercise equipment (Cranney et al., 2016). In a systematic review, of the 12 interventions reviewed, 9 of them looked at changing the built environment through installing or improving park equipment (Hunter et al., 2015). Some (4 out of 9) of those interventions showed positive effects on the physical activity of their users; however, many showed no effect (Hunter et al., 2015).
While environmental characteristics such as accessible facilities and public open spaces are conducive to physical activity, on their own they may not be sufficient for increasing physical activity levels (Giles-Corti & Donovan, 2002; Hunter et al., 2015). Giles-Corti and Donovan (2002) suggested the need to utilize complementary stratiges that might also target the individual and social characteristics. In a review of interventions promoting physical activity in parks, interventions that combined the built environment changes with PA programs showed the most promise with three out of three studies showing a positive effect (Hunter et al., 2015). One example involved an intervention focused on training park directors and advisory boards on outreach and marketing, as well as providing limited funds; that intervention showed an increase in park use increased and reported frequency of exercise when compared to control parks (Cohen et al., 2013). Another method of increasing physical activity in parks through providing additional support was utilizing the precense of exercise leaders (Han et al., 2015). In that study, Kinesiology students led exercise classes in local parks on several days a week. Physical activity levels and number of park users were higher on the days when the classes were held, but no change was seen on days classes were not held (Han et al., 2015). One strategy that might help sustain such physical activity levels is health coaching, which involves faciliating an indivdiual to achieve their health-related goals (Olsen & Nesbitt, 2010). Common compenents of health coaching include motivational interviewing, and teaching behavior change skills such as goal setting, and self-monitoring (Olsen & Nesbitt, 2010). It has been suggested that there is a need for Kinesiology students to learn and practice these skills of motivational interviewing and behavior change as it is not currently common among Kinesiology programs (Brawley, Gierc, & Locke, 2013).

The Current Study

Despite having exercise equipment included in local parks, there is a need to examine ways to encourage residents to utilize that equipment. Thus, it was important to find a means to promote behavioral change principles, to educate and motivate city residents for a healthier lifestyle. With health coaching having the potential to influence the physical activity levels of individuals (Olsen & Nesbitt, 2010), this study piloted Kinesiology students serving as physical activity coaches within the local parks to promote physical activity among the park attendees. The term *physical activity coaching* is used in this study to describe health coaching with a sole focus on physcial activity goals as opposed to a diverse set of health goals (e.g., diet & stress management). This includes activities such as motivational interviewing and teaching behavior change skills that are commonly seen in health coaching. The purpose of this study was assess the feasibility of utilizing Kinesiology students as physical activity coaches at outdoor exercise equipment in public parks as part of an exercise psychology course.

Methods

Study Design

The design for this study is feasibility evaluation of non-experimental pilot project.

Setting

To increase physical activity levels among residents in the community, a collaborative between four cities and a medical center who installed exercise equipment in ten local parks.

The parks varied by size—with seven parks were multi-use parks having other facilities such as a handball court, a basketball court or a skate park. The other two parks were neighborhood parks that were smaller in comparison, with only the exercise equipment and a small playground. All parks were located in low-income areas and were provided as a means for a free, readily available facility for residents in the community. In an effort to enhance the use of the parks for physical activity, the collaborative invited the local university to partner to utilize students to promote physical activity within the parks.

Procedures

Approval by the Institutional Review Board was obtained prior to conducting this study. This pilot study was conducted over the course of one semester with students in the park from January through May. Using the System for Observing Play and Recreation in Communities (SOPARC) (McKenzie et al., 2006), the number of park users and their activity level was assessed in November prior to the pilot taking place and then again the following May. More detail on this measure is provided below. Students for this pilot project were enrolled in an upper division exercise psychology course. Prior to being placed at a local park, class time was utilized for training the students in behavior change strategies and motivational interviewing. As part of their course, students applied these skills by serving as physical activity coaches and promoting physical activity to park attendees at a local park. Student coaches were assigned a park in February and were present at the park for once a week through May. Students spent two hours each week at their local park interacting with park users. Attendance and interaction with park residents were tracked with checklists completed by students after each time the students were at the local park.

Student Training

Students were trained during the first four weeks of classes before they were placed in their designed parks. During class time, they were exposed to behavior change strategies such as goal setting, action and coping planning and self-monitoring. They also were trained on motivational interviewing techniques. The training for motivational interviewing included a discussion of the key principles, observing a sample motivational interview, and role-playing with each other. An additional assignment involved them recording a motivational interview with someone they knew and then providing a self-assessment as well as a peer assessment of another student's interview.

In addition to the training students received, they were provided with a manual that contained information and worksheets to guide the discussion with the residents. Information that students could share with residents included guidelines for physical activity (Office of Disease Prevention and Health Promotion, 2008) and the physical activity readiness questionnaire (Canadian Society for Exercise Physiology, 1994). The worksheets included discussions about benefits, future possible selves' imagery, action plans, coping plans, goal-setting and calendars for self-monitoring. All materials provided were available in both English and Spanish. Students also were provided with tracking cards that they could sign track residents who attended more than one time. Residents who attended at least three times were entered into a drawing for a $20 gift card.

Additional training involved familiarization with park equipment and learning about the proper equipment use. Students explored the equipment at their assigned park and watched videos outlining proper equipment use provided by the company supplying the equipment. A graduate student who had a background in strength training and was familiar with the exercise equipment clarified any remaining questions students had about the equipment.

Measures

Park use. The System for Observing Play and Recreation in Communities (SOPARC) (McKenzie et al., 2006) was used to assess park use. The SOPARC intends to assess direct information on community park use through counting the number of users and coding their activity level in a series of target zones. For this study, the SOPARC was used to collect park use data by age, gender, and physical activity level, e.g., female adult—sedentary, walking, or vigorous. A resident was considered sedentary if

they were sitting or standing. An individual was considered walking if they were walking or moving at a light intensity. An individual was classified as vigorous if they were doing anything that would increase their heart rate, or if they were using the park exercise equipment correctly. For age, if an individual looked like they were in their teens or older, they were considered an adult, and younger than their teens were coded as children.

Each park that was scanned had target zones outlined on a bird's eye map. A minimum of two researchers conducted the SOPARC scan at the same time. During which, one researcher would take the lead role—stating the target area being scanned, the start time of the scan, the demographic group being scanned, when to begin and when to end the scan. This was repeated by the lead researcher for every target area and every demographic group. The SOPARC has been deemed as both reliable and feasible for obtaining physical activity and other contextual data in community settings, like parks (Evenson, Jones, Holliday, Cohen, & McKenzie, 2016; McKenzie et al., 2006).

SOPARC scans were conducted at baseline (November 2016), and again following the semester of physical activity coaching (May 2017). Days for the SOPARC scans were selected at random. A SOPARC scan was conducted at parks with exercise equipment in each city on a randomly selected weekday—at 7:30 am, 11:30 am, and 3:30 pm, and a randomly selected weekend day—at 9:00 am and 3:00 pm. The order in which the parks of each city were scanned was also randomly selected. Once all target areas were scanned at one park, the researchers went to the next park, etc.

Checklists Tracking Equipment Use and Coaching. Tracking sheets were used to assess the number of residents the students encountered, their demographic information, and coaching details. Students were asked to complete a tracking sheet for every physical activity coaching session in their park. Students kept a tally of how many residents used the exercise equipment—coding them by age and gender, e.g., male adult, female adult, male child, female child. Tracking sheets also included information on what language the residents spoke, if they received coaching, and what module of coaching they received. Students recorded the frequency of specific types of coaching provided including: goal-setting, discussing PA guidelines, self-monitoring, barriers, and outcomes of PA or whether it was a general discussion. Students also tracked the returning residents.

Analysis

The present study conducted analysis of descriptive statistics including frequency of use, percentages as well as means and standard deviations for the checklist information. In terms of the park scans, dependent t-tests were conducted for November and May SOPARC scans for overall use, exercise equipment use and percent active at each intensity.

Results

From January through May, 111 separate coaching sessions were held by students. Across that same time frame, 17 sessions were cancelled for a variety of reasons including poor weather such as raining (n=3, 17.6%) and both students could not attend (n=4, 23.5%). One session was cut short as the students did not feel safe at the park (n=1, 5.9%).

Exercise Equipment Use. During the time the students were at the parks, the total amount of residents that used the exercise equipment was 475 residents (see Table 1). The gender representation of individuals using the equipment was 47.4% males and 52.6% females. There were 233 (49%) residents who were English speakers while 187 (39.4%) residents were Spanish speakers. The average exercise use (with/without coaching) for morning sessions was 4.4 (0-15, *SD*= 3.7) residents, for sessions in the afternoon the average exercise use was 1.4 (0-5, *SD*= 1.4) and the average exercise use for the early evening session was 11.3 (0-23, *SD*=5.1). There was seven sessions in which no residents were present at the park. In four large multi-use parks the average exercise use was 5.6 (0-23, *SD*=4.3), in four small multi-use parks the average exercise use was 3.5(0-15, *SD*=4.3) while the average exercise use for the two neighborhood parks was 1.3 (0-4, *SD*=1.3).

Table 1.

Frequency of Equipment use by Language, Age and Gender

	Overall *n*	English-Speaking *n* (%)	Spanish-Speaking *n* (%)
Male Adult	185	93 (50.3%)	88 (47.6%)
Female Adult	215	113 (52.6%)	97 (54.9%)
Male Child	40	16 (40%)	0 (0.0%)
Female Child	35	11 (31.4%)	2 (5.7%)
Overall	475	233	187

Note: some users were not English or Spanish speaking so the overall values may not add up 100%.

Coaching Sessions

Kinesiology students reported coaching 205 residents (40.5% males, 56.6% females; see Table 2). Each session had an average of 1.9 (0-9) residents coached. Among the 205 residents, 29 residents were recorded as being return visitors (2 to 6+ visits). Five residents reported visiting the parks for at least six repeat visits. The average number of residents coached in morning sessions was 1.8 (0-9, *SD*=2.20), the afternoon session average was 1.2 (0-5, *SD*=1.3) and the evening session average was 3.6 (0-7, *SD*=2.8). In four large multi-use parks the average number of residents coached was 1.7 (0-8, *SD*= 2.1), in four small multi-use parks the average number of residents coached was 1.6 (0-6, SD=1.6), while the average coaching sessions for two neighborhood parks was 3.1 (0-9, *SD*=3.3).

Regarding the specific content of the coaching sessions, 132 (66.3%) residents were coached on how to properly use the exercise equipment, 72 (35.2%) residents were helped in establishing their goals, and 70 (35.2%) residents discussed their barriers to physical activity.

Table 2.

Frequency of Park Users who Received PA Coaching and the Contact of the Interactions

	Adult Males	Adult Females	Overall
Number Coached	83	116	199
Number of users receiving specific content of coaching sessions			
	n (%)	*n* (%)	*n* (%)
How to use equipment	60 (72.3%)	72 (62.1%)	132 (66.3%)
Goal-setting	34 (41.0%)	38 (32.8%)	72 (36.2%)
Guidelines for PA discussed	26 (31.3%)	27 (23.3%)	53 (26.6%)
Self-monitoring	28 (33.7%)	38 (32.8%)	66 (33.2%)
Barriers discussed	36 (43.4%)	34 (29.3%)	70 (35.2%)
Outcomes of PA discussed	43 (51.8%)	48 (41.4%)	91 (45.7%)
General Discussion	73 (88.0%)	97 (83.6%)	170 (85.4%)

Park Use

SOPARC scans were conducted in November and May for nine of the parks. Overall park use showed a non-significant decrease between November (*M*=131.7, *SD*=142.8) and May (*M*=92.7, *SD*=110.9; *p*=0.066; see means in Table 3). There was no difference in the total number of users who were vigorously active (*p*=.897) or percentages of users who were vigorously active (*p*=.470). Exercise equipment also showed a non-significant decrease in use from November (*M*=7.3, *SD*= 4.5) to May (*M*=3.8, *SD*=3.0; *p*=0.058). Total number of users of the exercise equipment who were vigorously active did not differ between November and May (*p*=.303) and neither did the percent of users who were vigorously active (*p* = .913).

Table 3

Means (SD) for Number and Percentage of Users at the Parks during November and May

	Overall Park			Exercise Equipment		
	November	May		November	May	
	M (*SD*)	*M* (*SD*)	d_z (*p*)	*M* (*SD*)	*M* (*SD*)	d_z (*p*)
Number of Users	131.7 (142.8)	92.7 (110.9)	0.7 (.066)	7.3 (4.5)	3.8 (3.0)	0.7 (.058)
Number of Sedentary Users	87.3 (121.9)	51.8 (68.3)	0.5 (.143)	2.6 (2.5)	1.6 (2.4)	0.5 (.184)
Number of Walking Users	30.6 (22.6)	27.9 (28.1)	0.2(.588)	2.6 (2.7)	0.9 (1.1)	0.8 (.051)
Number of Vigorous Users	13.8 (10.5)	13.0 (19.7)	0.0 (.897)	2.2 (1.5)	1.3 (1.6)	0.4 (.303)
Percent of users who were sedentary	62.6 (14.4)	51.5 (27.5)	0.5 (.203)	27.9 (28.3)	27.5 (36.6)	0.0 (.963)
Percent of users who were walking	25.5 (12.1)	28.1 (19.5)	-0.2 (.641)	34.2 (25.4)	25.0 (34.0)	0.2 (.575)
Percent of users who were vigorously active	11.9 (4.7)	20.4 (31.6)	-0.3 (.470)	37.9 (26.5)	36.3 (34.0)	0.0 (.913)

Discussion

This pilot program involving Kinesiology students providing physical activity coaching at local parks was feasible with 111 sessions completed over the duration of 11 weeks. Student coaches reported 475 residents using the exercise equipment with 43% of the residents receiving coaching from the students. Students coached residents on the use of regulatory/behavior change skills such as goal setting and coping with barriers. Despite no statistical differences in park use or exercise equipment use before and after the pilot based on the park scans, the number of sessions held and the number of interactions the students had with residents suggests this approach is feasible.

By having students practice their skills in the community, both the communities and students may benefit. Previously, Han et al. (2015) reported that both the community and Kinesiology students received benefits when students led free exercise classes at a local park as it provided a means to have students use their knowledge and capabilities. Han and colleagues utilized internships for the Kinesiology studies to receive credit for serving as exercise leaders. This is in contrast to the current study where serving as a physical activity coach was incorporated within an exercise psychology class. Through incorporating it into a class, students were provided the opportunity to learn and apply course content when they engaged with park residents. Students were required to complete reflections on their experiences at the parks and how it related to the class content. Examples of this include the opportunities to practice their motivational interviewing skills, as well as guide residents in learning self-regulatory skills like action planning and self-monitoring, that would help the resident increase their own physical activity. These regulatory skills are commonly identified as key factors in physical activity adherence, and are a skill that many Kinesiology students are not exposed to during their training (Brawley et al., 2013). Anecdotally, through the reflections, students reported having to push themselves, as talking with strangers about physical activity is not something they had been exposed to yet in their schooling. Further, several students talked about connections they formed with park users during the experience. It appears that combining physical activity promotion within a Kinesiology class for undergraduate students has the capacity for benefiting both the community as well as the students themselves.

Overall, students reported coaching 205 park users over the 111 sessions. While this number illustrates the feasible nature of such an intervention, there were several factors that appeared to influence the number of interactions with the park users. It was observed that multi-use parks (parks with three or more facilities) had a higher mean of residents visiting the park and using the exercise equipment compared to neighborhood parks (parks with only a playground and exercise equipment). Although, it was observed the mean of residents coached in the neighborhood park appeared higher than to multi-use parks. A study done by Temple, Rhodes, and Higgins (2011) observed the usage of multi-use and neighborhood parks in dog and non-dog walkers. They reported a higher percentage of non-dog walkers present in multi-use parks and participating in all three physical activity levels, with more vigorous activity being done than neighborhood parks. The data from the student checklists further supports the appeal attending the larger multi-use parks among park users; however, the average of residents coached was higher in neighborhood parks compared to large and small multi-use parks. This may be due to being a smaller park only consisting of playground and exercise equipment, which allows the students to easily talk to any residents who are present at the park.

Another factor that may contribute to the uptake of the program was the time the sessions were held. The afternoon sessions (1-3pm) and morning sessions (before 12pm) seemed to have the fewest number of residents being coached or using the equipment than the evening sessions. There may be a variety of explanations for this, including the size of the parks and heat especially in the afternoon sessions. However, the morning and afternoon sessions were done primarily during work hours although some morning sessions started at 6:15am. This might have limited those who could attend the sessions while the evening sessions went from 4:15-6:15 pm and may have allowed those who work to attend.

One common challenge across all the PA coaching sessions was the promotion of the coaching, as some times the students were at the parks there were no visitors. While posters in the nearby communities and social media were used to try to draw attention to the physical activity coaching times, it might have not been sufficient to bring new residents to the park. Many of the users who the students talked to were regular users of the park. A local newspaper did publish an article about the coaching and several students reported more a slight increase in visitors following that article. Additional advertising might be needed to see an increase in overall park use.

A second challenge experienced at the parks was a language barrier for the physical activity coaches who were non-Spanish speaking. More than half of the students (N=18) did not speak Spanish and 39.5% of equipment users were Spanish speakers. This created a barrier for many students who were challenged to communicate with users across a language barrier. It is not surprising that park users were Spanish speaking given the demographic background of the location of the parks within the cities. Previous studies examining exercise equipment use also highlight the diversity of users of the exercise equipment (Cranney et al., 2016). Although not examining exercise equipment in parks, differences in use of various aspects of the parks such as foot paths versus flower gardens have been reported by ethnicity (Tinsley, Tinsley, & Croskeys, 2002). Although language was a barrier for many of the student coaches, most of the equipment users were English speakers. This is in line with previous research in which Caucasian park users were more likely to report exercise as a benefit from their park use than Hispanic users (Tinsley et al., 2002). As part of coaching at the parks, the students regardless of whether they spoke Spanish or not, interacted with diverse residents with a variety of views of physical activity.

Although a large number of park users received coaching, we did not see a significant change in park users and exercise equipment users. One possible reason for this may be the change in seasons, in which the first scan was done in November with cold weather compared to weather in May that was much hotter. A systematic review of 37 studies suggest that season may have an influence on physical activity levels (Tucker & Gilliland, 2007) . This is further

supported by research that reported one common reason for not being physically active in the summer is the heat (Wagner, Keusch, Yan, & Clarke, 2016). Many of the scans conduced in May also were days when the coaches were not present. Similarly, Han and colleague (2015) reported that changes in park use did not occur on the days and times when the students were not leading the class.

Limitations

Limitations that were encountered included the SOPARC scans done during different seasons of the year, one in the fall another in the spring, and variations in temperature may have been evident. As Cranney et al. (2016) observed during their SOPARC scan, some weather conditions such as heat or light showers could have affected the presence of resident as well as the intensity of physical activity. Everson, Jones, Holliday, Cohen, and McKenzie (2016) observed the use of the SOPARC scan being only a moment in time and not continuous. So, if a park user is active during their time at the park but at one moment is sitting or standing idle they would be scanned sedentary, although they were active most of the time. Another limitation was the interpretation of what constituted each type of activity on the checklists completed by students. For example, a student may have simply introduced themselves to a resident and considered that as coaching.

Future Directions

Considering this was the first study conducted to examine the feasibility of this students serving as physical activity coaches, there are several important avenues for future research. First, this study just tracked the uptake of the program and future research should examine the students' experience and explore the benefits the students gain from such an experience. Research examining changes in the students' skills or perceptions may be important to assess the effectiveness of such a program. As well, tracking the potential impact the students have on individuals would be beneficial. This could be done by conducting follow-up surveys with the individual park users that are coached by the students. Additionally, examining factors that pertain to who is coming to use the exercise equipment would be insightful for enhancing the uptake of physical activity coaching in the future.

Conclusions

Overall park use and exercise equipment use did not appear to change from before to after the pilot. However, despite the lack of change, the students talked with over 200 park users about physical activity and were at the parks for 111 sessions over the course of three months. It appeared that kinesiology students were able to provide physical activity coaching to park users as part of their course. The effectiveness of such physical activity coaching by students still needs examining. Students not only introduced residents to the exercise equipment but also talked about a wide variety of topics including outcomes of physical activity, setting goals and dealing with barriers. By having these conversations with residents, the potential is there for both the student and park users to benefit.

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