

WalkSpace

The Needs Statement:

In the United States in 2010, more than 35% of adults (78 million) and 16.9% of children and adolescents (12.5 million) were considered obese,¹ with more than 65% of adults and 33% of youth considered overweight or obese.² It is expected that the American obesity rate could hit 42% by the year 2030.³

The number of obese children and adolescents has tripled since 1980.⁷ In 2010, 14.6% of adolescent youth (grades 9-12) in North Carolina were overweight and 13.4% were considered obese.⁸ Likewise, 16.2% of children (ages 2-5) were overweight with 15.5% considered obese. For adults, the South has historically had the highest prevalence of obesity (29.5%),⁴ with 29.1% of North Carolinians in the obese category and 64.9% considered overweight.

Greenville, NC has an adult obesity rate of 32.2%⁶ and Pitt County's adult obesity rate is 35.6%.⁹ Both rates are much higher than the state and national average.¹⁰ Similarly, Pitt County's obesity rate (15.9%) among low-income preschoolers is also higher than the state and national average.⁹ Studies show that obesity prevalence decreases with increasing socioeconomic status among Caucasians. Interestingly, obesity rates even increase among African American females of higher socioeconomic status.¹¹ From 2006-2010, 15.5% of North Carolinians lived below the poverty line, with 23.9% of Pitt County residents living below the poverty line.¹² Research suggests that adults whose family income is below the poverty line are less likely to meet the physical activity guidelines set by the CDC.¹³ Similarly, children from lower-income families are twice as likely to be as obese as their more affluent counterparts.¹⁴ Studies also indicate that less active teens are more likely to have parents who do not exercise.¹⁵

In its Physical Activity Guidelines for Americans, the Centers for Disease Control (CDC) recommend that adults engage in aerobic physical activity for a minimum of 150 minutes per week for moderate-intensity activity or 75 minutes per week for vigorous aerobic activity.⁴ The CDC also advises that muscle-strengthening activities be incorporated into physical activity at least two days per week. However, it is reported that more than 80% of American adults do not meet these aerobic and muscle-strengthening guidelines.⁵ Likewise, the CDC recommends that children and adolescents engage in physical activity a minimum of 60 minutes per day.⁶ For children and adolescents, aerobic activity should comprise the majority of the 60 minutes of physical activity with vigorous-intensity aerobics performed at least three days per week.

Muscle strengthening and bone strengthening exercises should also be incorporated into a child's physical activity at least three days per week. As with adults, 80% of adolescents do not meet these physical activity guidelines.⁵

Lack of physical activity is associated with obesity and possible subsequent development of hypertension, diabetes, coronary artery disease, osteoarthritis, respiratory problems, various cancers, stroke, liver and gallbladder diseases, and gynecological problems.¹⁶ Unfortunately, most adults, adolescents, and children are not currently meeting the recommendations for physical activity set forth by the CDC.⁵ One primary reason that reduced physical activity among children and adolescents occurs is often the result of unsafe neighborhoods, especially among families of lower socioeconomic status.¹⁷

Thus, in an effort to increase physical activity and decrease the prevalence of obesity in Pitt County, NC, a community-based health initiative, which provides free access to a safe activity space is needed to encourage family participation in a more active lifestyle.

Background

Free and easy access to space for physical activity is positively correlated with any activity and recommended activity, even after adjusting for environmental and socio-demographic factors.¹⁹ Individuals who report having access to space for physical activity are more than two times as likely to engage in a recommended activity. Also, individuals who report having access to indoor and outdoor spaces for physical activity are more likely to participate in the recommended activity guidelines.²⁰ It is suggested that environmental barriers to physical activity can and should be improved to facilitate behaviors like walking and biking. Similarly, availability of closer community facilities may be especially important in lower socioeconomic neighborhoods because residents are less likely to have private modes of transportation to reach facilities.²⁰

One particular study from the National Longitudinal Study of Adolescent Health found that high levels of serious crime positively correlated with a decreased likelihood of being in the highest category of physical activity.¹⁸ Molnar et al.¹⁷ concluded that mean hours of physical activity were positively correlated with family-level and neighborhood-level socioeconomic status. Similarly, neighborhood social chaos and community members' assessment of a neighborhood as unsafe were significantly associated with reduced youth physical activity participation. Thus, it is clear that neighborhood safety is an important aspect of improving

physical activity participation among youth. Likewise, Huston and his colleagues found that North Carolina adults were more likely to engage in physical activity in neighborhoods that had safety features such as trails and adequate lighting.¹⁹

It is reported that areas of the world where people live the longest and healthiest lives are places where people are forced to stay active because of their environment.²¹ Thomas Friedman, Director of the CDC, states “having more places for people to walk in our communities will help us continue to see increases in walking, the most popular form of physical activity among Americans.”²² Australia’s recent Healthy Spaces and Places initiative focuses on managing environments to promote physical activity. The initiative’s main focus centers around the physical characteristics where Australians live, work, and play, and how these major characteristics contribute to overall physical activity and well-being.²³ Two of the key goals of Healthy Spaces and Places are to 1) develop “built environments” that offer opportunities for physical activity and health-related activities, and 2) improve health-related outcomes through improved “built environments.”²⁴ A “built environment” is defined as “the structures and places in which we live, work and play, including land uses, transportation systems and design features.”²⁴ A recent study reveals that residents of communities with the highest levels of green space are three-times as likely to be physically active and 40% less likely to be obese than those in less aesthetically pleasing areas. The key design principles of Healthy Spaces and Places include: active transportation, aesthetics, connectivity, environments for all people that are safe and easily accessible, mixed density and a more diverse community, parks and open space, safety and surveillance, social inclusion, and supporting infrastructure.²⁴

Various tenants of the Health Belief Model (HBM) and the Socio-Ecological Model will be incorporated into the implementation of WalkSpace. The HBM will be used to assess an individuals perceived susceptibility, perceived benefits, perceived barriers, and health motives.²⁵ Together, the physical therapist and patient will strive to understand the motivating factors and the perceived barriers to physical activity in an attempt to promote increased self-efficacy and long-term healthy lifestyles. The Socio-Ecological Model examines the intertwined connection that exist between an individual and their environment.²⁶ Research indicates that physical activity interventions organized within an ecologic framework have the highest probability of improving health outcomes.²⁷ Using the four tiers of the Socio-Economic Model (individual, relationship, community and society), the WalkSpace Program will be able to better evaluate the

role that the environment has on a client's activity levels. This understanding will help WalkSpace provide programming that will promote healthy levels of physical activity in order to reduce obesity rates and subsequent chronic disease.²⁸

Project Description/ Approach

The principal goal of WalkSpace is to increase access to safe activity space for individuals of lower socioeconomic status by providing an intergenerational activity center that promotes family participation in more active lifestyles.

Process goals: I made some notes throughout for where additional goals were needed before getting to the anticipated outcomes – I would distinguish these “specific goals” here as your process goals, that is, the practical steps that are needed to make WalkSpace happen...and then the anticipated outcomes are the outcome goals

1. From January 1 to March 31, 2013 speak with city-elected officials and local foundations who will provide extra funding for the WalkSpace Initiative.
2. By May 1, 2013, purchase a 20,000 square ft. abandoned warehouse that adjoins the lower socioeconomic area of Pitt County, NC.
3. From June 1- August 15, recruit volunteers to assist with making Walkspace more clean, cosmetically appealing, and accessible.
4. East Carolina Service Learning Center (ECSLC) will provide staffing to be on site five days per week as measured by their staff schedules for the duration of this program beginning in June of 2014.
5. By February of 2014, create a contract with the Pitt Area Transit Service (PATS) to make hourly bus stops at Walkspace
6. Develop an activity log with the goal being to track 100 people who come to Walkspace for 2.5 or more hours per week.
7. In March of 2014, host a Community Health Fair in which individuals can come learn about the benefits of physical activity along with being encouraged to participate in a pre-survey, which assesses physical activity level.
 1. To increase community awareness of the benefits of consistent physical activity.
 2. To encourage physical activity among children and adults in Pitt County, NC.
 3. To improve health outcomes for individuals of lower socioeconomic status in Pitt County, NC

4. The MARCA appears to be a reliable tool for assessing physical activity levels in children and adolescents as it demonstrates high reliability, good content validity, and good construct validity. Children and adolescents will complete this questionnaire at baseline, 3 months, 6 months, and 12 months to assess change in physical activity levels after attending WalkSpace.
5. The SF-36 shows high reliability and validity and will be a useful tool in measuring quality of life in individuals in Pitt County. The SF-36 will be given at baseline, six months, and twelve months
For the first three, how will you determine if you have met these goals? How will you measure “success”? And what timeline will you use to determine if you have met that goal?

Site Parameters: The proposed site for WalkSpace is a 20,000 square foot abandoned warehouse adjoining the poorer neighborhoods of Greenville, NC. Access to recreational facilities near individuals homes is associated with increased physical activity among adolescents.²⁹ It may be necessary to enhance infrastructure from the warehouse to the neighboring communities to increase access and promote participation. This enhanced infrastructure may include bike lanes, sidewalks, footpaths, and pedestrian crossings. Enhanced infrastructure designed to support walking is a critical element to healthy space planning and has been shown to promote physical activity among adolescents and adults.³⁰

Intervention Stage I: Pre-Survey

The pre-survey will offer baseline physical activity participation rates for individuals within the community. The pre-survey will be done in the form of a community health fair, in which individuals can come to learn about the benefits of physical activity and various incentives will be offered to individuals who participate in the pre-survey (raffle, gift certificates, water bottles, etc.). Physical activity will be assessed using various Physical Activity Questionnaires (PAQ's), including the Seven Day Physical Activity Recall (Seven Day PAR), the Multimedia Activity Recall for Children and Adolescents (MARCA), and the Short Form (36) Health Survey (SF-36). These self-report questionnaires will be useful in determining the physical activity patterns of individuals within our community of interest.³¹ Pitt County has a large Hispanic population so interpreters will be available throughout the surveying process. Likewise, for anyone who is

illiterate, readers will be available to help deliver the surveys. This will also be a time in which individuals are being recruited to participate in WalkSpace.

Rationale:

The Seven Day PAR is a general self-report measure of physical activity that assesses an individual's previous seven days of activity.³² It includes various items of physical activity; however, only moderate to high levels of physical activity are recorded. The acronym F.I.T.T. (frequency, intensity, time and type) is used to assess physical activity on this questionnaire. This questionnaire demonstrates good validity and will be easy to administer in this sort of community health setting. This questionnaire will be administered at baseline, three months, six months, and twelve months to assess activity levels.

The MARCA is a self-report recall questionnaire designed to assess physical activity in children and adolescents by having them recall their previous day's physical activity in 5-minute segments.³³ Because improving physical activity among children and adolescents is one of the primary goals of WalkSpace, it will be incredibly important to adequately assess their physical activity baseline. The MARCA appears to be a reliable tool for assessing physical activity levels in children and adolescents as it demonstrates high reliability, good content validity, and good construct validity. Children and adolescents will complete this questionnaire at baseline, 3 months, 6 months, and 12 months to assess change in physical activity levels after attending WalkSpace. This should really be a goal as well given the repeated measures – it is also the primary goal of WalkSpace ☺

The SF-36 is a generic self-report questionnaire that assesses various aspects of health (physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health).³⁴ This generic measure will be useful in determining how an individual's perception of their own health affects their current physical activity levels. The SF-36 shows high reliability and validity and will be a useful tool in measuring quality of life in individuals in Pitt County. The SF-36 will be given at baseline, six months, and twelve months with the minimal clinically important difference (MCID) and the smallest detectable difference (SDD) ranging from 2.0-7.8 points.³⁵

Intervention Stage II: Initial Health Screening

In order to adequately assess the health related benefits associated with participant's increased physical activity, it will be imperative to do an initial health screen. During this health screen,

the following measurements will be taken at the WalkSpace activity center: height, heart rate weight, body mass index (BMI), blood pressure, waist girth ratio, and respiratory rate (RR). Similarly, measuring the waist girth ratio is of high importance as increased abdominal fat is associated with increased health risk in both children and adults.³⁶ Blood sugar testing will also be administered to individuals with known diabetes. These measurements will be assessed at baseline, three months, six months, and twelve months. This also needs to be a goal

Likewise, aerobic capacity/endurance testing and flexibility testing will be evaluated. Aerobic capacity and endurance testing will be assessed using the six-minute walk test (6MWT) or the incremental shuttle walking test (ISWT).³⁷ During the 6MWT, the total number of meters a participant walks during six minutes will be recorded, along with information regarding oxygen saturation (SpO₂) and respiratory rate. The change in distance walked will be evaluated at three months, six months, and twelve months to determine the effectiveness of increased physical activity – goal ☺. The minimal important difference (MID) is 54 meters.³⁷ For patients who are more advanced, the ISWT will be utilized. During this test, a participant walks around two cones (set 9 meters apart) in time set to a beep, with the beeps gradually increasing. The participant walks for as long as they can with the number of laps recorded.³⁷ Flexibility will be assessed based on range of motion measurements.

Intervention Stage III: Activity Center Programming

Activity center programming will be key for recruiting and keeping participants. Utilizing the socio-economic model, exercise programs will be designed by targeting the various relationships that exist between the participants and their environment. It is believed that maintenance of healthy lifestyles is largely determined by an individual's social environment.²⁶ Therefore, it will be key to develop activity groups and social support groups in environments where people get together to do something active. We will have organized active games like badminton, skating, Ping-Pong, and bowling in which people can get together socially, have fun, and be active. For children we will put an emphasis back on “old games” that are active and fun, such as “Red Rover,” “Red Light, Green Light,” and “Capture the Flag.” We will also sponsor walking groups, where individuals can get together socially to walk on our outdoor or indoor track. For adolescents, we will organize outdoor basketball and soccer games.

Initially, each participant will sit down with a physical therapist or other member of the ECSLC to identify perceived barriers and address the benefits to attending WalkSpace activity

center. We will try to cater our program to the individual needs of each participant in a way to best eliminate barriers to participation.

Intervention Stage IV: Implementation of an Activity Log

The CDC recommends that adults engage in at least 150 minutes of activity per week and that children and adolescents engage in physical activity a minimum of 60 minutes per day.^{4,6} One of the major goals of WalkSpace is for participants to reach the activity goals set forth by the CDC. Therefore, an activity log is critical to reaching this goal. Every participant will be given a complimentary activity log upon registration a WalkSpace and every two weeks a member of the ECSLC will review the participant's progress. The adult's activity log will simply track type and amount of exercise. The children and adolescents activity log will be modeled after the new Child/Adolescent Activity Log, which is a valid and reliable method for evaluating the pattern, duration, and intensity of physical activity.³⁹ Realizing that participants cannot be expected to perform all of their physical activity at WalkSpace, we will emphasize the importance of increasing the level of activity in their day-to-day life. This will include stressing the importance of walking, jogging, or biking to the WalkSpace activity center, taking the stairs at work, and walking to the grocery store or local market. We will allow the participant's to count these activities in their activity log. By teaching the participants these strategies, we will be promoting long-term healthy lifestyles.²¹ There will also be various incentives offered to participants who submit their activity log for review every two weeks.

Expected Outcomes:

Anticipated outcomes after twelve months of WalkSpace include:

1. 90% of the participants will complete bimonthly activity logs and will follow up with members of the ECSLC for review.
2. 80% of the participants will meet the standards for physical activity set forth by the CDC as measured by their bimonthly activity log.
3. 100 members will regularly perform 2.5 hours per week of physical activity at Walkspace as measured by their bimonthly activity log.
4. 80% of participants will show a decrease in weight, BMI, and abdominal girth after attending WalkSpace regularly for six months. Again, measured by? Who will do this?
5. 80% of participants will demonstrate a higher quality of life as evidenced by improved SF-36 scores (change of 2.0-7.8 points).

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6. 80% of participants will show improved cardiovascular fitness as evidenced by an increase of 54 meters on the 6MWT.
7. 95% of participants will demonstrate knowledge regarding the importance of consistent exercise across the lifespan. As measured by?

Hi Alex,

Nice detailed methods! This is an ambitious idea but it is doable! Some clarification is needed to distinguish between the process and outcome goals – and to make certain that all the components of WalkSpace are covered in the process or outcome goals. You might want to add a timeline to summarize the varying components as well – this might help to provide an orientation of the multiple components of the proposal.

Keep up the solid work!

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