**Pregnancy Pain- Be Gone**

**A Walking Program for Low-Income African American Pregnant Females**

*The Needs Statement*

Most often, fulfilling recommended exercise guidelines are of low priority in the population of pregnant women. Studies from several different countries suggest that only approximately 40% of pregnant women exercise, even though 92% are encouraged by their physicians to do so.1 The American College of Obstetricians and Gynecologists recommends 30 minutes or more of moderate exercise on most days of the week during pregnancy,2 yet only 16% of pregnant women in the U.S. follow these guidelines.1 Furthermore, the odds of meeting these recommendations are significantly lower among racial and ethnic.3 Specifically, noncompliance of exercise guidelines in African American pregnant women is concerning.

In 2009, approximately 53% of women in the United States were overweight prior to pregnancy; 48% had a greater than ideal weight gain during pregnancy.3 Among women of childbearing age, the rate of obesity is disproportionately represented among African American women. In 2004, 31.5% of African American women were obese, indicated by a Body Mass Index ≥ 30, immediately prior to pregnancy compared to 20.5% of Caucasian women.3 African American women also have higher rates of physical inactivity in comparison to Caucasian and Hispanic women. In an analysis of pregnant, low-income African American women, over 35% reported no exercise during pregnancy; 56.1% reported only non-strenuous physical activity during pregnancy.3 Sedentary behavior is associated with abnormal glucose tolerance in pregnant women.1 In addition, maternal obesity is one of the leading causes of maternal and neonatal morbidity during pregnancy.2 Obese women have greater rates of gestational diabetes, gestational hypertension, preeclampsia, antepartum stillbirth, cesarean section and fetal macrosomia compared to women who have a body mass index less than 30 kg/m2.2 In addition, various studies indicate that this culture believes that raising the upper extremities above the head will result in fetal strangulation.2 This population also considers walking to work and job-related or household-related activities as exercise.5

Exercise during pregnancy has been associated with health benefits, including: reduced risk of gestational diabetes, preeclampsia, improved maternal glucose tolerance, increased well-being, improved self-esteem plus fewer depressive symptoms, shorter duration of labor, and higher prevalence of vaginal delivery.3 Exercising 1-2 times a week mid-pregnancy is also associated with lower prevalence of low-back pain and depression. Additionally, exercising greater than or equal to 3 times a week is associated with lower prevalence of pelvic girdle pain during late pregnancy.3 Given that low-back pain affects nearly 50% of all pregnant women, pelvic girdle pain affects 20-45% of all pregnant women, and depression affects 12% of pregnant women in their second trimester, exercise may present an additional benefit for pregnant women. Exercisers reported a reduced prematurity rate when compared to non-exercisers; this may be due to the fact that regular exercise appears to increase antioxidative enzymes in pregnant women which reduces oxidative stress and, in turn, preeclampsia.1

The city of Durham, NC is home to a great number of people with different socio-economic statuses, education levels, and ethnicities. Of the 27,488 Black or African American females age 15 to 50 living in Durham County, 1,649 had a birth in the past 12 months. Also, 16.1% of all people were below the poverty level in the past 12 months in 2006-2010.4 The prevalence of low-income, African American pregnant women in Durham, NC; the beliefs this culture has toward exercise during pregnancy; and the potential serious risks associated with a lack of exercise during pregnancy indicate the need for a community-based intervention. Possible evidence-based solutions that can also be easily organized in a group setting to fulfill recommended exercise guidelines include: walking, aerobics, yoga, swimming, water aerobics, and resistance training.

“Pregnancy Pain-Be Gone!”(PPBG) is a once-a-week walking, yoga, and educational program at the Durham YMCA. Because this low-income population has limited time, transportation, and financial ability to afford gyms and other traditional forums for exercise, providing a safe, affordable, and convenient location for exercise intervention is crucial.5 PPBG considered these facilitators when designing the program in order to attract a large number of participants and maintain a good compliance rate. Education will focus on recommended exercise guidelines and heart rate and intensity required to produce health benefits.2

*Background*

Research exists delineating the facilitators, barriers, and cultural beliefs that low-income, African American pregnant females have regarding exercise – great info!. Krans et al conducted a study in 2011 and found that group exercise classes and safe, low-cost exercise facilities within their communities were two facilitators to increasing exercise in this population based on survey feedback.5 Sanderson et al studied 61 African American women ages 20-50 from a rural community and identified barriers to and enablers of physical activity and grouped these factors into personal, environmental (social and physical), policy, and cultural themes for qualitative analyses.6 Personal factors included motivation, perceived health, feeling tired, and lack of time. Participants provided suggestions for community-based physical activity interventions using an environmental approach. Some of these suggestions included: “provide educational classes on healthy lifestyle, diet, and physical activity; promote physical activity through motivational speakers, articles, and flyers; organize a marathon or walk/run races; organize group physical activity opportunities such as walking clubs, exercise classes or programs, and community ball teams; and provide childcare at no cost for low income mothers.” This study found that individual motivation was frequently perceived as more important than cultural influences. However, when cultural differences were expressed, African-Americans were perceived as having less time and money for physical activity, fewer physically active role models, more physically demanding jobs, less obsession with “thinness,” and different choices when spending discretionary time. Enablers for physical activity included support from family, friends, and neighbors; childcare; and safe and convenient places to exercise. Barriers included competing activities (home, work, and social); being around other people who are not active or motivated; verbal insults when attempting to be active outside; hot weather; poorly maintained parks; traffic; unleashed dogs; threat to personal safety; inflexible work environments; and lack of sidewalks, streetlights, and facilities (too far away or too costly).6

Information published by Grieser et al indicates that the decline of physical activity during adolescence is greater in African American girls compared with Caucasian girls.7 This trend of decreased physical activity may become a habit that persists into adulthood and during pregnancy. Henderson and Ainsworth cite evidence that the difference among physical activity in various races is due to the sociocultural context rather than a biological basis.8 These researchers interviewed 30 African American women over the age of 40. Subjects agreed that gender influenced their activity and that being female results in social expectations that influence time available for physical activity, one of the main barriers being childcare.8 This theme likely holds true for the majority of African American pregnant females as well, especially for those who already have at least one child to care for.

Henderson and Ainsworth’s study also reported how the historical oppression and discrimination toward African American people in the United States was perceived by black women living in the South.8 Many interviewees stated that they never learned to swim because there was no place for blacks to swim except in the river; they did not have swimming lessons. Several women also discussed how they did not feel comfortable doing an activity alone. Subjects stated that, as children, they never saw an adult spend their free time in physical activity.8 Because they were working, they never had time or the inclination to do any extra activity. In this study, African American women did not mention cultural pride as having any influence on their involvement in physical activity. This culture values physical labor within a work context, but not within a leisure domain. Although African American men are associated with particular sports in the United States (i.e. basketball), this was not mentioned as a source of cultural pride to the women or as a motivation or role model for exercise.8 Another cultural barrier to exercise for this population is the identification of hairstyle as an important characteristic.8 Several interviewees stated that they did not enjoy physical activity because it ruined their hairstyles.8 They emphasized that most women do not participate in swimming because they want to keep their ‘do.’ A review by Eyler et al confirmed the theories that barriers for black women include: sweating and ruining one’s hairstyle as well as the importance of rest after hard labor. African American women believe they are already active during their daily activities, diminishing the need for moderate-intensity exercise. These cultural factors influenced the mode of exercise chosen for PPBG.

 Wilbur et al interviewed 48 African American women age 20-50 living in urban areas; of these, 85% were unmarried, 40% had less than a high school education, and 33% were neither employed nor attending school.9 The findings from their study reflected the influence of a culture of poverty and the importance of environmental safety and community support. These women identified safety as a huge concern. They stated that Caucasian women have more protection in their neighborhoods as compared to their own. And, indeed, the environment of these women can be characterized by its extreme poverty and saturation with drugs and crime. Many women are reluctant to venture far from their own front porch.9 The women generally believed that facilities providing indoor activities were not easily accessible within their communities. Public transportation was seen as both an enabler and a barrier to physical activity as it encourages fast-walking or running for a block to catch the bus, but it also discourages walking for transportation. Home exercise is difficult for this population because large numbers of people typically reside in a small space with decreased privacy. A study by King et al produced similar findings in a sample of 2,912 African American women age 40 and older. They found that older age, less education, lack of energy, caregiving duties, lack of hills in one’s neighborhood, absence of enjoyable scenery, and infrequent observation of others exercising in one’s neighborhood were significant factors associated with inactivity.11 The work of Eyler et al also determined time, safety, and caregiving responsibilities as barriers to achieving the recommended guidelines for physical activity during pregnancy.12

These urban, low-income, African American women offered physical activity intervention suggestions, including: role models to lead by example; someone to reach out to physically inactive women with mentoring and support programs; creative opportunities for activity; a facility for women only; surroundings to be physically appealing; a facility/trail within their neighborhood; a facility with amenities included such as juice bar, sauna, etc; a family facility with daycare and activities for all family members; improved safety; offer incentives; include community input; and an intervention that addresses the cost barrier.9 Durham is an area where safety is a concern, and a community-based intervention program can help to alleviate this barrier for low-income African American pregnant females.

This community program will also provide social support, which research shows to be important to African American culture. Sharma et al concluded that health education programs and physical activity interventions for African American women must build on the constructs of self-efficacy and friends’ social support.10 Self-efficacy can be initially built through using credible African American women role models, and then by focusing on specific tasks, breaking down complex tasks into small steps, and instilling participatory practice that leads to mastery. Improving social support can be done by pairing an inactive woman with an active one to enhance her daily physical activity, recruiting close friends, having health educators that empathize with clients, and having long-term interventions.10 African American women pay more importance to emotional aspects of social support; therefore, focusing on this will be a beneficial entry point.10 Eyler et al also found that social support was an overwhelmingly positive determinant of physical activity for all ethnic groups of women.12 These results indicate the need for a community intervention.

 PPBG is a safe, free community intervention that offers education and social support. Walking is a popular activity among this population and is the primary activity of this program. Yoga will also be included at the end of the session due to the vast health benefits stimulated by this form of exercise.1 Heart rate and blood pressure have been shown to be lower following yoga, contributing to lower incidences of pregnancy-induced hypertension, intrauterine growth retardation, and prematurity. Potential underlying mechanisms may also involve the stimulation of pressure receptors during yoga.1 Stimulating pressure receptors increases vagal activity which decreases cortisol, increases serotonin and decreases substance P, which leads to decreased pain. Decreased cortisol is important since cortisol negatively affects immune function and is predictor of prematurity.1 Although water aerobics would also be a good option for this population, participants would be unable to perform this outside of the community program. A dislike of emersion in water, or lack of experience with swimming8, might also have decreased participation. These considerations determined the activities included in PPBG.

*Objectives*

* Attendance rate of approximately 30% of low-income African American pregnant females living in Durham, NC to at least one session during the 12-week program; this would involve around 480 participants (1600 potential AA pregnant woman x 30% = 480).
* 30% of participants will report compliance with the recommended guideline, i.e. 30 minutes of daily moderate intensity exercise, by the end of the 12 week program as measured using Short Questionnaire to Assess Self-Enhancing Physical Activity.13
* Improve participants’ cardiovascular fitness indicated by a decrease in 11 mmHg systolic pressure and 4 mmHg diastolic pressure14, by the end of the program.
* Improve participants’ flexibility indicated by an increase in 3o on the active knee extension test, by the end of the program.15,16

*Methods*

 PPBG will be on Saturday afternoons from 2:00 to 3:25 located at the Durham YMCA gym. Research indicates that 12 weeks of a walking program can cause a positive change in blood pressure14; therefore, PPBG will be 12 weeks so that a change may be captured indicative of health benefits. The program will be free and open to all pregnant females of any age. Participants can bring friends, family members, and children who will be allowed to participate in the walking program if age-appropriate, but will not have outcomes measures taken. This welcoming atmosphere aims to increase compliance. The YMCA currently offers childcare; PPBG will provide additional childcare staff during this time. The walking pace will be designated by each individual using the “talk test,” which will be explained to participants. This means an exerciser should be able to “just barely respond in conversation.” At this pace, cardiorespiratory endurance is safely improved; the talk test closely reflects actual heart rate and VO2 levels.17 Yoga will be led by a certified instructor with at least 3 years of experience.

Time segments for each component of the program will be divided as follows:

* Twenty minutes for an introduction, including brief education on the benefits of exercise and recommended guidelines for pregnant females. At this time participants will be encouraged to share any exercise stories of that week, including barriers, successes, new activities, etc.
* Fifteen minutes for taking assessment measures,
* Thirty minutes of moderate intensity walking around the track,
* Fifteen minutes of yoga, and
* Five minutes for questions and to provide a handout of at-home yoga positions

*Assessments:* Measured weekly.

* Blood pressure measured using a sphymomanometer.18 A normal blood pressure is <120/80; prehypertension is 120-139/80-89; high blood pressure stage 1 is 140-159/90-99; and high blood pressure stage 2 is ≤160/100.
* Active-knee-extension test, an objective and reliable tool for measuring hamstring tightness (r=.99). With the subject in a supine position, the hip is stabilized at 90o flexion in alignment with a vertical rod extending from the mat table. The hips and the leg of the non-tested side are secured to the table. The subject actively extends the knee, and this angle of knee flexion represents hamstring tightness.19
* Self-reported self-efficacy to continue.
* Short Questionnaire to Assess Self-Enhancing Physical Activity. The measure is a short, simple, self-report questionnaire with four subscales: commuting activities, leisure time activities, household activities, and activity at work and school. It is a fairly reliable and reasonably valid questionnaire, and has been shown to be a useful tool for the evaluation of health-enhancing physical activity in large populations.20

*Limitations*

The self-report aspect is a potential source for social desirability bias as subjects tend to portray themselves in a good light. Potential contamination could affect outcome measures of cardiovascular fitness if patients begin new medication or supplements. Inconsistency of participation in the program or lack of carryover after the program would negate the benefits of the program.

*Relevance*

The findings from this community program will benefit the target population by promoting cardiovascular fitness, a healthy BMI, and decreased risks during pregnancy and delivery for both the mother and child. Maintenance of exercise guidelines after delivery will aid in promoting health and wellness for life. Specifically, it is hypothesized that the target population will show a decrease in blood pressure, as well as an increase in active-knee-extension hamstring flexibility. There is evidence that a walking and/or yoga program is beneficial to all pregnant females, regardless of race or socioeconomic status, and this type of intervention would be transferrable to all settings of physical therapy.

References

1. Gjestland K, Bo K, Owe KM, Eberhard-Gran M. Do pregnant women follow exercise guidelines? prevalence data among 3482 women, and prediction of low-back pain, pelvic girdle pain and depression. *Br J Sports Med*. 2012. doi: 10.1136/bjsports-2012-091344.

2. Herman J, Mock K, Blackwell D, Hulsey T. Use of a pregnancy support web site by low-income african american women. *J Obstet Gynecol Neonatal Nurs*. 2005;34(6):713-720. doi: 10.1177/0884217505282019.

3. Krans E, E., Chang J, C. A will without a way: Barriers and facilitators to exercise during pregnancy of low-income, african american women. *Women Health*. 2011;51(8):777-794. <https://auth-lib-unc-edu.libproxy.lib.unc.edu/ezproxy_auth.php?url=http://search.ebscohost.com.libproxy.lib.unc.edu/login.aspx?direct=true&db=c8h&AN=2011400318&site=ehost-live&scope=site>. doi: 10.1080/03630242.2011.633598.

4. U.S. Census Bureau. Durham County, North Carolina Community Facts. U.S. Census Bureau American Fact Finder. 2010. Accessed on: September 14, 2012. Available from: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.

5. Krans E, Chang J. Low-income african american women's beliefs regarding exercise during pregnancy. *Matern Child Health J*. 2012;16(6):1180-1187. <https://auth-lib-unc-edu.libproxy.lib.unc.edu/ezproxy_auth.php?url=http://search.ebscohost.com.libproxy.lib.unc.edu/login.aspx?direct=true&db=c8h&AN=2011609122&site=ehost-live&scope=site>. doi: 10.1007/s10995-011-0883-9.

6. Sanderson B, Littleton M, Pully LV. Environmental, Policy, and Cultural Factors Related to Physical Activity Among Rural, African American Women. *Women & Health*. 2002; 36(2): 73-88.

7. Grieser M, Vu MB, Bedimo-Rung AL, Neumark-Sztainer D, Moody J, Young DR, Moe SG. Physical Activity Attitudes, Preferences, and Practices in African American, Hispanic, and Caucasian Girls. *Health Educ Behav*. 2006; 33: 40-51. DOI: 10.1177/1090198105282416.

8. Henderson K and Ainsworth BE. Sociocultural Perspectives on Physical Activity in the Lives of Older African American and American Indian Women: A Cross Cultural Activity Participation Study. *Women & Health*. 2000; 31(1): 1-20.

9. Wilbur J, Chandler P, Dancy B, Choi J, Ploncyzynski D. Environmental, Policy, and Cultural Factors Related to Physical Activity in Urban, African American Women. *Women & Health*. 2002; 36(2): 17-28.

10. Sharma M, Sargent L, Stacy R. Predictors of Leisure-time Physical Activity Among African American Women. *Am J Health Behav*. 2005; 29(4): 352-359.

11. King AC, Castro C, Wilcox S, Eyler A, Sallis JF, Brownson RC. Personal and Environmental Factors Associated With Physical Inactivity Among Different Racial-Ethnic Groups of U.S. Middle-Aged and Older-Aged Women. *Health Psychology*. 2000; 19(4):354-364.

12. Eyler AE, Wilcox S, Matson-Koffman D, Evenson KR, Sanderson B, Thompson J, Wilbur J, Rohm-Young D. Correlates of Physical Activity among Women from Diverse Racial/Ethnic Groups. *Journal of Women’s Health & Gender-Based Medicine*. 2002; 11(3): 239-253.

13. Wendel-Vos GC, Schuit AJ, Saris WH, Kromhout D. Reproducibility and relative validity of the short questionnaire to assess health-enhancing physical activity. *J Clin Epidemiol*. 2003;56(12):1163-1169.

14. Tully MA, Cupples ME, Chan WS, McGlade K, Young IS. Brisk walking, fitness, and cardiovascular risk: A randomized controlled trial in primary care. *Prev Med*. 2005;41(2):622-628. doi: 10.1016/j.ypmed.2004.11.030.

15. Bohannon RW. Effect of repeated eight-minute muscle loading on the

angle of straight-leg raising. Phys Ther. 1984;64:491-497.

16. DePinoGM, Webright WG, Arnold BL. Duration of Maintained Hamstring Flexibility After Cessation of an Acute Static Stretching Protocol. *J Athl Tr*, 2000;35(1):56-59.

17. Persinger, R., Foster, C., Gibson, M., Fater, D.C.W., & Porcari, J.P. (2004). Consistency of the talk test for exercise prescription. Medicine & Science Sports & Exercise. 36 (9), 1632-1636.

18. Burr JF, Bredin SS, Faktor MD, Warburton DE. The 6-minute walk test as a predictor of objectively measured aerobic fitness in healthy working-aged adults. *Phys Sportsmed*. 2011;39(2):133-139. doi: 10.3810/psm.2011.05.1904.

19. Gajdosik R, Lusin G. Hamstring muscle tightness. reliability of an active-knee-extension test. *Phys Ther*. 1983;63(7):1085-1088.

20. Wendel-Vos GC, Schuit AJ, Saris WH, Kromhout D. Reproducibility and relative validity of the short questionnaire to assess health-enhancing physical activity. *J Clin Epidemiol*. 2003;56(12):1163-1169.