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The Effect of a Supervised Exercise Trial on Exercise Adherence Among African American Men: A Pilot Study

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Abstract

Objective—The objective of this pilot study was to determine the effect of a supervised short-term exercise trial on exercise adherence in a sample of African American males.

Methods—We observed exercise adherence rates among a group of African American men in response to an exercise intervention. Exercise adherence was determined by dividing the total number of actual sessions attended by the total number of possible sessions (12 sessions). A participant was classified as an adherer if they completed 9 out of 12 exercise sessions (75%).

Results—Seventy-one percent of the study participants (12/17) completed at least 75% of the study sessions and therefore adhered to the study protocol. Among the adherers, 7 out of 12 (58%) had adherence rates of 100%. Five participants withdrew from the exercise group due to lack of time and lack of interest.

Conclusion—Exercise adherence rates among African-American men in this study were favorable during this supervised exercise intervention and were comparable to adherence rates observed in other supervised exercise interventions. Recommendations based on this pilot study are provided to reduce participant withdrawal and to inform future largescale studies.

Keywords

exercise; adherence; African Americans; men's health

African American men are disproportionately affected by many chronic conditions, including prostate cancer, diabetes, cardiovascular disease, and stroke.¹ Physical activity has been shown to serve as a strong modifiable risk factor for these diseases in people of all ethnic backgrounds.² The current physical activity recommendation for healthy US adults is to accumulate at least 30 minutes of moderate intensity physical activity on at least 5 days per week for general health benefits³ and at least 20 minutes of vigorous intensity physical activity on 3 days per week for cardiorespiratory fitness benefits.⁴ Despite the known benefits of regular physical activity participation, a large portion of African American men when compared to white men engage in less exercise. According to the 2005 Behavioral Risk Factor Surveillance System (BFFS) African American men are less likely to engage in

vigorous/ moderate activity compared to White men (45.3% African American men vs 52.3% white men).⁵

Considerable attention has been devoted to creating supervised physical activity interventions in an effort to increase exercise levels in African Americans.⁶ Supervised physical activity interventions are helpful in assisting nonactive individuals adopt more active lifestyles. Supervised exercise interventions offer well-structured exercise protocols monitored by trained exercise specialists.^{7,8}

An important factor in promoting physical activity is exercise adherence. Exercise adherence can be defined as the degree to which a person completes a given exercise prescription.⁹ Greater adherence to behavioral interventions (ie, exercise trials) has been associated with improved clinical outcomes. While adherence rates for exercise interventions are characteristically high,^{10,11} little is known about exercise adherence to supervised physical activity interventions in African American males. Exercise adherence is influenced by a variety of environmental, personal, and societal factors. African Americans, in particular, face several barriers to exercise such as lack of facilities and family obligations.¹² Because of these barriers, African Americans may be less likely to adhere to an exercise program.

Whether or not these factors affect adherence to a supervised exercise program in African American men is unknown. While studies have focused on exercise adherence in primarily Caucasian populations,¹³ no study has examined this issue specifically among African American men. Therefore, in this pilot study, our goal was to generate preliminary data regarding exercise adherence among African American men in response to a supervised short-term exercise intervention.

Methods

Eligibility Criteria

The eligibility criteria for participants consisted of the following: male gender, 40 to 70 years of age, African American or of African descent, body mass index (BMI) of at least 25 kg/m² and less than or equal to 35 kg/m²; sedentary lifestyle (not regularly participating in any aerobic exercises (<20 min/session, <2 times/ week) for the past 2 years), no previous history of heart or other cardiovascular disease, metabolic disease, acute infections or chronic infectious disease, resting blood pressure of less than or equal to 140/90 mm Hg, no uncontrolled diabetes or hypertension, no medications that affect heart rate response, no orthopedic conditions that preclude participation.

Recruitment

Participants were recruited from the Washington, DC, metropolitan area through a prostate cancer screening program, family physicians, urologists, as well as media advertisements. This resulted in 217 men who called the study center to be screened, of which 34 were deemed eligible, enrolled, and were randomized into either a control (n = 17) or exercise (n = 17) group. Since this paper describes adherence to the exercise intervention, from this point forward, we will present information pertaining only to the exercise group.

Procedures

Respondents were given a 10-minute screening questionnaire over the telephone to provide eligibility data. Men who met the eligibility criteria from the telephone screening were requested to come into the study center for a first-level baseline visit, at which time an informed consent process was conducted by a member of the study personnel and a signed

consent form was obtained. After completing the consenting process, men completed a medical screening by a physician. Participants who were eligible for the study based on the medical screening then had their blood pressure assessed. Participants with a resting systolic blood pressure greater than 140 mm Hg and a diastolic blood pressure greater than 90 mm Hg were not allowed to continue the study. Anthropometric measures of height, weight, and waist-to-hip ratios were taken.

Eligible participants were then invited to attend a second baseline visit to perform the graded exercise treadmill test to screen for heart disease and to determine their level of fitness ($\text{VO}_2^{\text{sub 2max}}$). The graded exercise treadmill test was carried out at the medical center's exercise laboratory. During this second baseline visit, participants were also asked to complete questionnaires assessing demographics, medical history, and lifestyle behaviors. Participants who had adequate baseline screening results then continued with the intervention.

Intervention

Exercise group. Participants in the exercise group were requested to exercise 3 days per week for 4 weeks in the medical center's exercise laboratory (a total of 12 days). Training sessions consisted of 30 minutes of moderate- intensity aerobic exercise at 50% to 60% VO_2^{max} . Each participant's exercise heart rate range was determined from their graded exercise test. Subjects wore heart rate monitors to maintain their calculated exercise intensity. All participants were taught how to use the heart rate monitors and were supervised during exercise by study personnel to insure proper exercise intensity. This intervention was designed to meet the current recommendations of the American College of Sports Medicine¹⁴ for sedentary individuals. Participants typically exercised alone; however, no restrictions were placed on the participants to do so. If other participants were in the exercise center at the time, they were allowed to exercise together.

All exercise sessions were supervised by study personnel. Exercise modes included treadmills, elliptical trainers, and recumbent bikes. Strategies to minimize attrition were employed such as calling subjects who missed exercise sessions, and discussing exercise cues (such as setting out exercise clothes) and ways to modify barriers to exercise (such as lack of time and transportation problems). Subjects' parking costs were also provided, thus removing a major barrier to participation, and subjects were offered additional compensation for their time and effort at study completion.

Exercise adherence. In order to maintain an accurate record of exercise involvement, exercise logs were recorded by study personnel and included information on exercise intensity, duration, modality, and frequency. Exercise adherence was determined by dividing the total number of actual sessions attended by the total number of possible sessions (12 sessions). Participants were defined as adherers if 75% (9/12) visits were completed.

Results

Seventeen men composed the exercise group. The mean age of the sample at baseline was 58.7 (6.35) years. Baseline BMI and VO_2^{max} were 31.1 (7.1) kg/m^2 and 22.61 (8.43) mL/kg/min , respectively. The exercise adherence rates for each participant are shown in the Table. Based on our a priori definition, 71% participants (12/17) completed at least 75% of the study sessions and adhered to the study protocol. Among the adherers, 7 of 12 (58%) had adherence rates of 100%. Five participants completed fewer than 9 sessions and withdrew from the study. Reasons for withdrawal included lack of time and lack of interest.

Discussion

This is the first study that assessed exercise adherence to a supervised exercise intervention in African American men. The study demonstrated that the rate of exercise adherence was good (71%) among this population. Adherence to exercise in this study was comparable to other supervised exercise programs.^{10,11} We used several methods as recommended by other exercise interventionists^{12,15} to promote adequate adherence. For example, Walcott-McQuigg et al¹² recommended that the following strategies should be employed to retain African Americans into exercise trials: (1) provide a safe place to exercise, (2) offer a variety of exercise modalities, (3) facilitate transportation/parking. Our study addressed these factors by offering our exercise program in a safe exercise facility located within a medical center. Also, a variety of exercise modalities were provided (treadmill, elliptical machine, and bicycle). Offering a wide array of exercise choices may have enhanced participants' motivation to exercise and ultimately influenced adherence to exercise.¹² Parking passes were provided to offset transportation costs. In addition, the study staff also made regular calls to participants to discuss ways to facilitate attendance as well as how to overcome barriers. This type of motivational strategy has proven to be beneficial in promoting adequate adherence in exercise trials.⁹ Another aspect possibly contributing to adherence was that professional exercise specialists were present during every session to ensure that exercises were performed correctly and at an appropriate intensity.

Although this pilot study offered preliminary information regarding exercise adherence in African American men, several modifications can be made to enhance future study efforts. First, it would be of interest to explore long-term adherence to exercise in this sample. A follow-up period beyond the 4-week period used in the current study would be necessary to explore this question. As previously mentioned, this study offered monetary compensation in addition to parking costs for participation, which could have influenced adherence to the exercise protocol. In a future study, it would be informative to observe adherence to a similar exercise protocol in the absence of this additional monetary compensation.

As previously mentioned, some of our exercise participants withdrew from the study due to lack of time and interest. Future studies should be designed to minimize participant withdrawal. One suggestion would be to tailor the intervention to address the motivational level of participant. Data suggest that exercise adherence is most difficult for participants who have low motivation to exercise.¹⁰ The cognitive behavioral theory is a wellknown theoretical construct that has been used as a behavioral strategy to enhance motivation to exercise.¹⁶ The principle tenant of this theory is to place positive beliefs/cognitions on exercise while highlighting the negative aspects about sedentary behavior. Additionally, the cognitive behavioral theory offers alternative behavioral strategies to improve exercise adherence. For example, in participants with low motivation to exercise, the cognitive behavioral theory suggests starting the exercise intervention with low levels of exercise while increasing exercise goals over the course of the intervention period. The rationale behind this approach is to help participants gradually integrate exercise into their daily routine. Research employing this intervention strategy has yielded much success;¹⁶ however, this approach has not been examined thoroughly in African American men.

Another limitation of this pilot study concerns the relatively small sample size. Future studies should extend this sample size to further explore adherence in this population. To enhance the sample size, it is recommended that researchers employ a variety of recruitment techniques that have been known to be effective in recruiting ethnically diverse populations. For example, employing more broad-based recruitment efforts such as partnering with additional health care providers and health screening programs targeting African American males may widen recruitment. Also, training African American males who have participated

in the study to serve as recruiters should also attract potential participants. Research suggests that identifying persons who have participated in the research intervention that the targeted group is being recruited for has been a successful strategy for recruitment.¹²

In summary, this study revealed that African American men participating in a supervised exercise intervention pilot study demonstrated adequate adherence to the study protocol. Several characteristics of the study design were effective in facilitating adherence to exercise. Based on the outcomes of this pilot study, a number of modifications are recommended for the successful implementation of a future large-scale study.

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