

Physical Activity Interventions With African American or Latino Men: A Systematic Review

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Abstract

Relatively little is known about what helps increase physical activity in African American men, and even less is known about promoting physical activity among Latino men. This systematic review aimed to address the key questions: (a) what is the state of the evidence on health-related behavior change interventions targeting physical activity among African American or Latino men? and (b) What factors facilitate physical activity for these men? For this review, nine electronic databases were searched to identify peer-reviewed articles published between 2011–2017 that reported interventions to promote physical activity among African American or Latino men. Following PRISMA guidelines, nine articles representing seven studies that met our criteria were identified: six published studies that provided data for African American men, and one published study provided data for Latino men. Consistent with previous reviews, more research is needed to better understand how gender can be incorporated in physical activity interventions for African American and Latino men. Future interventions should explore how being an adult male and a man of color shapes motivations, attitudes, and preferences to be physically active. Studies should consider how race and ethnicity intersect with notions of masculinity, manhood and Machismo to enhance the effectiveness of physical activity interventions for these populations. Despite the health benefits of physical activity, rates of these behaviors remain low among African American and Latino men. It is essential to determine how best to increase the motivation and salience for these men to overcome the obesogenic environments and contexts in which they often live.

Keywords

African American men, Latino men, physical activity, systematic review

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Although men tend to engage in more physical activity than women (Kruger, 2007; Porch et al., 2016), most African American and Latino men do not meet current recommendations for physical activity (Affuso, Cox, Durant, & Allison, 2011; Arredondo et al., 2016; Carlson, Fulton, Schoenborn, & Loustalot, 2010; Troiano et al., 2008). Half of African American men report no vigorous leisure-time physical activity (Ball, Jeffery, Abbott, McNaughton, & Crawford, 2010), and African American men over age 45 are less likely than their white counterparts to participate in leisure time physical activity or walking for exercise (Whitt-Glover, Nwaokelemeh, Price, & Hopkins, 2017).

As of the last search done of this review completed in May 2017, no systematic reviews have described the effectiveness of physical activity interventions for Latino men,

though there has been a review that included physical activity interventions for African American men (Newton, Griffith, Kearney, & Bennett, 2014). In 2014, Newton and colleagues published a systematic review of lifestyle behavioral interventions designed to promote weight loss or increase physical activity in African American. This

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review of articles published before January 2013 found that only 16 publications, from 13 studies, reported data separately for African American men in their original peer-reviewed publication (Newton et al., 2014). Among these studies, Newton and colleagues found only five studies providing information on changes in physical activity among African American men (Newton et al., 2014). The current systematic review expands on the previous review to identify published findings specifically on interventions to increase physical activity among African American men. It also represents one of the first published efforts to document what is known about factors that facilitate physical activity among Latino men.

Background

Traditionally, physical activity has been defined as bodily movement produced by contraction of skeletal muscles that substantially increases energy expenditure (Hill, 2006; Hooker & Buchner, 2009; Hooker, Fulton, & Mudd, 2012; James et al., 1998; King, Stokols, Talen, Brassington, & Killingsworth, 2002; Kumanyika et al., 2008; Marcus et al., 2006). The National Heart Lung and Blood Institute currently recommends that adults participate in at least 150 min of moderate-intensity aerobic activity or 75 min of vigorous aerobic activity each week (NHLBI, 2016). Participating in muscle strengthening activities (e.g., weight lifting, yoga) two or more days a week is also recommended. Engaging in some amount of physical activity provides health benefits, and any physical activity is better than none (NHLBI, 2016). The health benefits of physical activity are well documented and show that habitual physical activity and exercise are remarkably protective against a variety of physiological changes that tend to occur with aging: including normal changes in vascular stiffness, endothelial dysfunction, autonomic function, nitric oxide bioavailability, and oxidative stress in age-related deterioration of vascular function (Joyner & Nose, 2009). There is a large body of literature that also illustrates that increased physical activity extends life expectancy and improves quality of life, endurance, strength, body composition, aerobic and anaerobic capacity, flexibility, heart rate, blood pressure, insulin sensitivity, and lipid levels (Ahmed, 2005; Hackshaw-McGeagh et al., 2015; Heath, Howze, Kahn, & Ramsey, 2001; Kahn et al., 2002; Lin, O'Connor, Whitlock, & Beil, 2010).

Research has examined the role of race/ethnicity in health behaviors, including physical activity (Kumanyika et al., 2005; Kumanyika et al., 2007; Kumanyika et al., 2008; Kumanyika et al., 2009; Resnicow et al., 2008; Whitt-Glover & Kumanyika, 2009); however, little work has been conducted to explain why these behaviors vary by sex or the mechanisms through which gender affects

physical activity (Millen et al., 2005). Optimally, improvement of the health of African American and Latino men should emerge from interventions that incorporate unique psychological, behavioral and biological factors that contribute to chronic disease risk and outcomes in addition to the unique social, cultural, or environmental factors that shape the health behaviors of these men (Airhihenbuwa, Kumanyika, TenHave, & Morssink, 2000; Brawley, Rejeski, & King, 2003; Sallis & Owen, 1999).

Physical activity interventions that treat racial and ethnic groups as homogeneous have been unsuccessful in achieving a balanced gender distribution, and tend to include samples with less than 30% men (Bopp et al., 2006; Griffith, Metzl, & Gunter, 2011; Newton et al., 2014; Warren et al., 2010; Whitt-Glover & Kumanyika, 2009). Reviews that have focused on physical activity or physical fitness intervention studies with African American adults (Whitt-Glover et al., 2014; Whitt-Glover & Kumanyika, 2009) and faith-based physical activity interventions (Bopp, Peterson, & Webb, 2012) found few studies that included substantial numbers of African American or Latino men and only one study focused exclusively on men (Marquez, McAuley, & Overman, 2004; Whitt-Glover et al., 2014; Whitt-Glover & Kumanyika, 2009). Given the lack of data for African American and Latino men, how best to promote physical activity among these men remains unclear.

This review focused on adult men because throughout the phases of adulthood, African American men's rates of physical activity tend to decline from adolescence and young adulthood to be lowest during middle age. Though physical activity rates among older African American men tend to be higher than in middle age, they do not return to the rates of activity reported in young adulthood (Griffith, King, & Allen, 2013). This also may be true of Latino men but more literature is needed to confirm this (Garcia, Valdez, & Hooker, 2017; Larsen, Noble, Murray, & Marcus, 2015). Efforts to explain the modifiable factors that could reduce these differences and improve activity rates overall have been limited. A qualitative study of 49 middle-aged and older African American men (Friedman, Hooker, Wilcox, Burroughs, & Rheaume, 2012; Hooker, Wilcox, Rheaume, Burroughs, & Friedman, 2011) identified a number of factors that seemed to facilitate or hinder physical activity. Barriers that African American men discussed included: lack of time, limited access to places to engage in physical activity, inadequate social support, lack of motivation, physical ailments, and chronic health conditions. Facilitators of physical activity noted by African American men included: receiving positive messages about physical activity from a trustworthy and reliable source; making physical activity enjoyable; peer social interaction, social support, and competition; and having spousal support but

Table 1. Search Terms Used to Identify Studies Reporting Physical Activity Outcomes for African American or Latino Men.

Primary behavior of interest	exercise, physical activity, physical education, physical fitness, sports, lifestyle, exercis*, physical inactivity, physically inactive, physically fit, sedentary lifestyle, physical education, phys ed, sport*, leisure activities, motor activity, walk*, run*, jog*, swim*, danc*, yoga, karate, martial arts, tae kwon do, fencing, baseball, basketball, volleyball, soccer, hik*, climb*, cycl*, bicycl*, wrestl*, boxing, kickbox*, weight lift*, track and field, strength train*, or moving*
Study type	intervention, program, evidence-based practice, clinical trial, controlled clinical trial, controlled study, randomized controlled trial, double blind procedure, triple blind procedure, crossover procedure, clinical study, multicenter study, community trial, prevention study, community study
Populations of interest	Blacks, Racial and Ethnic groups, African cultural groups, minority groups, Latinos/Latinas, Mexican Americans, Black, Black American, African American, AfroAmerican, Negro, biracial, ethnic, cultural group, Latin, Hispanic, Mexican, Puerto Rican, Cuban, Dominican, Central American, South American, Salvadoran, Guatemalan, or Columbian AND Human males, men, man, adult male

only limited spousal involvement. Similar facilitators of physical activity are noted in the literature for Latinos, however, the specific factors that influence physical activity among Latino men specifically still need to be further explored (Larsen et al., 2015).

Despite the importance of physical activity to health and well-being, relatively little is known about what helps to increase physical activity in African American men, and even less is known about promoting physical activity among Latino men. This systematic review was designed to fill these gaps. The key questions addressed in this systematic review are: (a) What is the current state of the evidence on health-related behavior change interventions targeting physical activity among African American or Latino men? (b) What factors facilitate physical activity among African American men or Latino men?

Methods

Eligibility Criteria

Studies were eligible for review if they met the following criteria: (a) published in English; (b) published in peer-reviewed journals between January 2011 and May 2017; (c) included a pretest and a posttest measure of physical activity as part of an experimental or a quasi-experimental study design; (d) included at least 30 African American men or 30 Latino men ages 18 years and older; (e) included an intervention designed to promote physical activity; (f) reported quantitative or qualitative measures of physical activity, either as an outcome or major predictor; and (g) conducted in the United States or included a sample of the U.S. population. In an analysis run by a team biostatistician, $n \geq 30$ was the minimum number of participants estimated to have the statistical power to detect statistically significant changes in physical activity, this informed the eligibility criteria. Unpublished studies, abstracts, dissertations,

thesis, and studies published in non-peer-reviewed journals were excluded from this review.

Identification of the Literature

Nine electronic databases were searched: OVID Medline, Web of Science, EMBASE (Emtree), CINAHL (Ebsco), BIOSIS Previews, PSYCHINFO (Ebsco), ERIC (FirstSearch), and Cochrane Library. The main search terms included the primary behavior of interest (physical activity), study type (intervention), and populations of interest (African American or Latino men). Search terms were determined with the assistance of a reference librarian and the same terms were used for each search to ensure accurate identification of relevant articles. Sample terms included: *exercise; physical activity; physical fitness; program evaluation; intervention study; cardiovascular disease; men's health; evidence-based practice; health education; African American, Black, Black American, Hispanic, and Latino*. See Table 1 for a full list of search terms. Studies that included African American or Latino adults were searched for based on how the authors and participants of the published studies defined and operationalized these terms. Studies were also identified based on the authors' knowledge of applicable interventions.

Study Selection Process

There were three phases of this systematic review: identifying abstracts, screening full articles and extracting data from full-articles. See Figure 1 for the PRISMA flow-chart (Moher et al., 2015). In Phase 1, the title and abstracts of all articles identified through search databases were reviewed. This search yielded 7,605 journal articles. All articles were exported to EndNote x7 to remove duplicates and then transferred to Microsoft

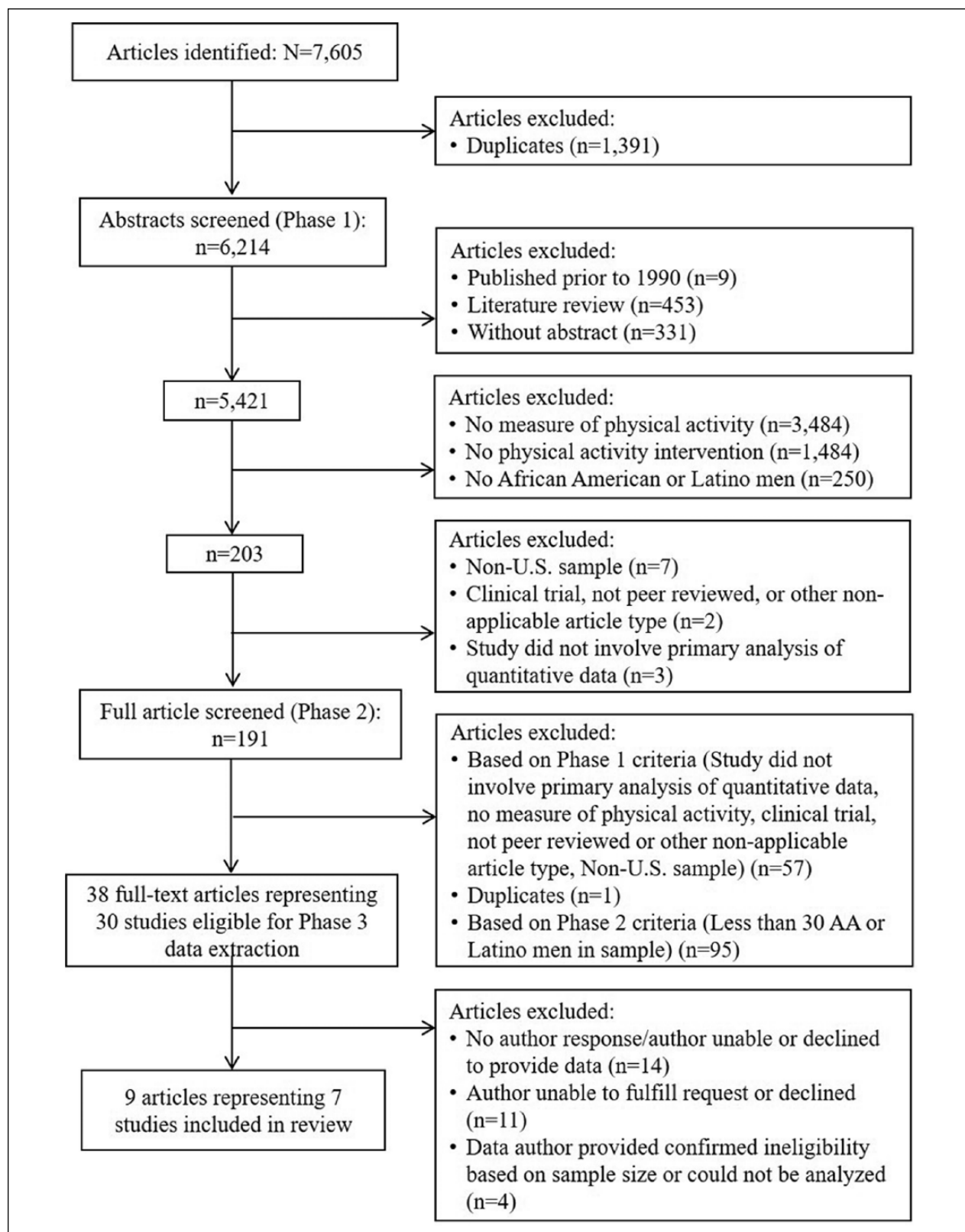


Figure 1. Study process for identifying articles reporting physical activity outcomes for African American and Latino men.

Access data collection forms. This data collection form was developed with “include,” “exclude,” and “unsure” checkboxes for data collection and capturing reviewer responses to eligibility questions. In addition to eligibility information, Title of the Article, Author, Journal, DOI, ISSN, Volume Number, Issue Number, Year of Publication, and Page Numbers, information on randomization, methods, participants, follow-up data collection, nature of interventions, and outcomes were also captured. Articles were excluded if they received a “yes” response to any of the following questions on this form: is the abstract missing; is this a case study; is this a literature review; is this a qualitative study; is this a meta-analysis; and is this a conference presentation? This form was also used to exclude articles that received a “no” response to any of the following questions: was the study published in or after 2011; does the study population include a U.S. sample; does the study measure physical activity; does the study include African American or Latino men (18+ years); does the study include physical activity intervention research; does the study satisfy a quasi-experimental or experimental design? Using Endnote, the preliminary screening identified 1,391 duplicates to be removed, leaving 6,214 articles to be screened in Phase 1.

Two reviewers reviewed all abstracts in Phase 1. Responses from both reviewers were compared and discrepancies between reviewers were discussed. In cases where the reviewers disagreed or were unsure about the correct inclusion decision, the principal investigator clarified the correct decision and the team modified and updated the data collection form accordingly. Of the 6,214 abstracts that were reviewed during this phase, 6,023 were excluded and did not proceed to Phase 2 screening.

In Phase 2 of study selection review, we obtained the full-text article for 191 citations identified as “include” or “unsure” in the first phase of the review and citations that did not have an abstract available electronically for the first phase of review. The objectives of the second phase of review were to: (a) assess that the manuscripts classified as “include” or “unsure” for Phase 2 remained eligible for Phase 3 data extraction; (b) determine eligibility for Phase 3 data extraction for citations that were classified as unsure in Phase 1; and (c) review full articles for which an abstract was missing in Phase 1 to determine if the article was eligible for Phase 3 data extraction. Of the 191 full text articles that we reviewed, we identified 38 articles for Phase 3 data extraction. We then reviewed the 38 full-text articles to confirm eligibility for data extraction and to identify articles that were based on the same intervention study. Based on this process, we confirmed that 38 journal articles representing 30 studies were eligible for data extraction.

For Phase 3, data were extracted and entered into Excel spreadsheets, which included general study

information (e.g., theoretical model, primary outcome, eligibility criteria, sample size); intervention specific information (e.g., duration, mode of delivery, culturally adapted elements); and measures and outcomes (e.g., methods and units of physical activity measurement, assessment of other health behaviors, and results for African American or Latino men). For studies with articles that did not provide data critical for the systematic review, we contacted the corresponding author via email, and asked the author to provide the missing information to allow us to determine if the article would be eligible for inclusion in this review. We sent an initial email, and three subsequent follow-up emails one to two weeks apart. We excluded studies from the review if the study investigators did not provide data in response to these data requests or if the data provided were unable to be analyzed. Only three studies had complete information to determine eligibility available for extraction in their respective publications. Thus, we contacted corresponding authors from 27 studies to provide study information required for this review. Four authors provided the requested information and remained eligible for inclusion. Twenty-three studies were excluded from the final analysis.

Risk of Bias Assessment

The risk of bias assessment of the included studies was assessed in a similar manner to the review conducted by Newton et al., using an adaptive version of the Cochrane risk of bias tool (Cochrane Collaboration, 2008). Components assessed were: sequence generation, allocation concealment, blinding, level of completion of outcome data, and other sources of bias (e.g., similarity of groups at baseline). Three authors independently conducted the assessment. Any discrepancies were discussed and resolved by consensus.

Results

Study Selection

We found seven studies across nine publications that met the inclusion criteria. General characteristics of the studies reviewed are listed in Table 2. Two of the studies published two articles each that were included for review (Adams et al., 2015; Cornish, McKissic, Dean, & Griffith, 2017; Dean, Griffith, McKissic, Cornish, & Johnson-Lawrence, 2016; Hébert et al., 2013).

General Study Characteristics

The included studies were: *Camine Con Gusto (CCG)* (Callahan et al., 2016), *Faith-based Approaches in the*

Table 2. Characteristics of Studies that Reported Physical Activity Outcomes for African American or Latino Men.

Main study	Source	Main study objective	Main study primary outcome	Setting	Theoretical model or conceptual approach	Study design	Sampling type	Eligibility criteria	Gender	Main study sample size	African American men	Latino men
Camino Con Gusto Program	Callahan et al., 2016	Evaluate the Hispanic version of an evidence-based walking program for people with arthritis	Arthritis symptoms (pain and fatigue) and physical function (perceived level of difficulty in performing activities of daily living)	Academic medical clinics and community locations (health fair, Mexican Consulate, local churches)	Social Cognitive Theory	Quasi-experimental pre-post design	Purposive	Hispanic individuals ≥ 21 years, reporting joint pain, or diagnosis of arthritis by a health-care professional, able to walk unassisted but currently walking on average < 150 min/week.	Men and women	N = 288 (enrolled); N = 233 (follow-up)	NA	n = 49
FAITH Trial	(1) Schoenthaler et al., 2015	Evaluate the effectiveness of a faith-based group-counseling therapeutic lifestyle changes (TLC) plus motivational interviewing (MINT-TLC) intervention delivered by lay health advisors versus an expert-led health education (HE) control on blood pressure reduction at 6 months among hypertensive Blacks.	Blood Pressure (BP) readings using a validated, automated BP monitor following American Heart Association guidelines.	Black churches in New York City	Utilized components of Self-Determination Theory (Self-efficacy, intrinsic motivation); psychosocial factors	Randomized controlled trial	Purposive	Black/AA, ≥ 18 years, diagnosis of HTN and uncontrolled blood pressure at time of enrollment (SBP ≥ 140 mm Hg, or DBP ≥ 90 mm Hg, or SBP ≥ 130 mm Hg or DBP ≥ 80 mm Hg) for participants with diabetes or chronic kidney disease.	Men and women	N = 373	n = 101	NA
HEALS Program	(1) Hebert et al., 2013; (2) Adams et al., 2015	Test the effect of a community-based diet, physical activity, and stress reduction intervention on CRP levels in African Americans at high risk of chronic inflammation	C-reactive protein (CRP) levels	AA churches in South Carolina	CBPR principles; Social-ecologic model; PEN-3; cultural influence & health education cultural identity models to guide culturally tailoring study protocols. Social-cognitive theory, trans-theoretical model & PEN-3 guided intervention messages	Randomized controlled trial	Convenience	Eligible individuals within each church were aged ≥ 30 years and had no reported cancer diagnosis or unstable comorbidities that might limit participation in the intervention	Men and women	N = 159	n = 32	NA

(continued)

Table 2. (continued)

Main study	Source	Main study objective	Main study primary outcome	Setting	Theoretical model or conceptual approach	Study design	Sampling type	Eligibility criteria	Gender	Main study sample size	African American men	Latino men
Men on the Move-Flint	Griffith et al., 2014	To increase African American (AA) men's levels of physical activity (PA) by improving access to age and ability-appropriate, male-focused PA opportunities and facilitating access to social support from male peers	Increase physical activity and intrinsic motivation to engage in physical activity.	Community outreach events in Michigan	Social cognitive theory and self-determination theory	Quasi-experimental; One group pretest posttest	Convenience	AA or Black; ≥ 35 years old; physician's clearance to increase physical activity, and resided in the Ann Arbor/Ypsilanti, MI area	Men only	N = 41	n = 41	NA
Men on the Move-Nashville	(1) Dean et al., 2016; (2) Cornish et al., 2017	Assess the feasibility and acceptability of didactic, small group workout sessions, SMS text messages, and a wearable physical activity tracker; and increase physical activity and improve health outcomes	Recruitment, enrollment, and completion rates; pilot a multicomponent intervention to increase physical activity in middle-aged and older African American men who were overweight or obese	Gym located in community in Nashville, Tennessee	Social ecological framework of health behavior; Social cognitive theory; self-determination theory; social support; Motivational interviewing principles	Quasi-experimental; One group pretest posttest	Convenience, "Snowball"	AA or Black; 30-70 years old; BMI ≥ 25 ; weighed < 400 lbs; no regular gym membership (< 8 days of gym membership use in past 30 days); cell phone with texting capabilities; physician's clearance to increase physical activity.	Men only	N = 40	n = 40	NA
Unnamed Pilot Study	Hooker, Harmon et al., 2011	To test the initial efficacy of implementing a physical activity (PA) behavior change intervention for midlife African American (AA) men.	Increase in moderate-vigorous physical activity and overall physical activity	Community wellness center located in traditional AA neighborhood	Social Cognitive Theory	Quasi-experimental pre-post design	Purposive	AA men 45-66 years of age without any contraindications to moderate to moderate intensity PA.	Men only	N = 31	n = 31	NA
Unnamed Study	Kendzor et al., 2016	To examine the short-term impact of a mobile phone intervention that targeted sedentary time in a diverse community sample.	Reducing sedentary Behavior	Dallas, Texas metropolitan area	Behavior change techniques, Motivational Interviewing principles	Quasi-experimental; nonrandomized and observational	Nonprobability sampling	≥ 18 years, possessed a valid home address and a functioning telephone number, and demonstrated English literacy level on REALM assessment.	Men and women	N = 215	n = 35	n = 6

Treatment of Hypertension (FAITH) trial (Schoenthaler et al., 2015), the Healthy Eating and Active Living in the Spirit (HEALS) program (Adams et al., 2015; Hébert et al., 2013), Men on the Move (MOTM)—Flint (Griffith, Allen, Johnson-Lawrence, & Langford, 2014), Men on the Move (MOTM)—Nashville (Cornish et al., 2017; Dean et al., 2016), and two unnamed programs (Hooker, Harmon, Burroughs, Rheame, & Wilcox, 2011; Kendzor et al., 2016). The primary study outcome for four of the studies was physical activity (Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014; Hooker, Harmon et al., 2011; Kendzor et al., 2016), and the primary outcomes for the other three studies were arthritis symptoms and physical function (CCG) (Callahan et al., 2016), blood pressure (FAITH) (Schoenthaler et al., 2015), and C-reactive protein levels (HEALS) (Adams et al., 2015; Hébert et al., 2013) (See Table 3). Of the seven included studies, two studies used a randomized control design, one of which was a cluster-randomized trial. Five of the studies used a quasi-experimental design. Four of the five utilized a pretest/posttest quasi-experimental design and only one utilized a quasi-experimental nonrandomized observational design.

Studies were based on a variety of theories, including Social Cognitive Theory (Adams et al., 2015; Callahan et al., 2016; Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014; Hébert et al., 2013; Hooker, Harmon et al., 2011), Self-Determination Theory (Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014; Schoenthaler et al., 2015) Social Support theory (Cornish et al., 2017; Dean et al., 2016) and social-ecological frameworks (Cornish et al., 2017; Dean et al., 2016). Two studies (Cornish et al., 2017; Dean et al., 2016; Kendzor et al., 2016) described principles of motivational interviewing. One study also highlighted being informed by principles of community based participatory research (Adams et al., 2015; Hébert et al., 2013).

All studies were implemented in community-based research settings, but these settings were diverse. Some community based settings were churches (Adams et al., 2015; Callahan et al., 2016; Hébert et al., 2013; Schoenthaler et al., 2015), a gym facility (Cornish et al., 2017; Dean et al., 2016), a community wellness center (Hooker, Harmon et al., 2011), and community outreach events (Griffith et al., 2014). One study (Callahan et al., 2016) included academic medical clinics as well as health fairs and other community locations. Both the FAITH Trial and the HEALS Program were faith-based, and took place in African American churches (Adams et al., 2015; Hébert et al., 2013; Schoenthaler et al., 2015).

There were no studies for which Latino men were exclusively the population of interest, and three studies where African American men were the population of interest (Cornish et al., 2017; Dean et al., 2016; Griffith

et al., 2014; Hooker, Harmon et al., 2011). For the remaining four studies, data for African American or Latino men either were available for extraction from the publications or provided by a study author upon request. In total, there was one study that provided data on Latino men and six studies that provided data on African American men.

Intervention Elements

Four studies reported that their intervention strategy included some consideration of racial, ethnic, or gender in the intervention design or delivery. The FAITH Trial, MOTM-Nashville, and MOTM-Flint included intervention elements culturally tailored to African Americans (Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014; Schoenthaler et al., 2015). The methodology, structure, and content of group classes in the FAITH Trial was based on the PREMIER and the Healthy Eating and Lifestyle Programs, two programs culturally-tailored to African Americans, and included prayer and scripture as well as faith-based discussions pertaining to health (Schoenthaler et al., 2015). Lastly, Callahan et al. (2016) also reported cultural adaptations, though largely non-descript, but did report that the program workbook was health literacy appropriate and designed at a sixth grade reading level. The MOTM studies, both the Nashville and Flint sites, attended to unique gendered and cultural factors of African American men to help promote health and increase their physical activity (Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014).

Intervention durations ranged from 7 days (Kendzor et al., 2016) to 12 months (Adams et al., 2015; Hébert et al., 2013). Only two interventions lasted at least 6 months (Adams et al., 2015; Hébert et al., 2013; Schoenthaler et al., 2015). None of the studies that lasted at least 6 months were targeted or tailored to African American or Latino men; they were all targeting the racial or ethnic group without explicitly considering the role of gender.

Four of the seven studies included group components such as small group sessions and group physical activities (Cornish et al., 2017; Dean et al., 2016; Griffith et al., 2014; Hooker, Harmon et al., 2011; Schoenthaler et al., 2015). Two studies utilized mhealth, or mobile phone-based technologies as part of intervention delivery: MOTM-Nashville (Cornish et al., 2017; Dean et al., 2016) used short messaging service (SMS) text messages and Kendzor et al., 2016 used a smartphone application (i.e., “app”) that included message prompting.

Measurement and Outcomes

Three of the studies reported statistically significant improvements in the targeted outcomes for African American or Latino men. In the HEALS program (Adams

Table 3. Outcomes of Studies that Reported Physical Activity Outcomes for African American or Latino Men .

Main study	Source	Intervention duration	Assessment points	Frequency of intervention	Delivered by	Intervention delivery mode	Data collection mode	Cultural adaptation	How physical activity measured	Physical activity units measured	Other health behaviors assessed	Study results for African American or Latino men
Camine Con Gusto Program	Callahan et al., 2016	6 weeks	Baseline and 6 week follow-up	Baseline and 6 week follow-up data collection points; for self-directed workbook completion	CCG team members delivered baseline assessment and presented workbook material, workbook completion was self-directed	In-person baseline assessment and self-directed workbook completion	Baseline self-report questionnaire, mailed follow-up survey (completed by phone if initial mailed survey not returned)	Workbook designed at 6th grade reading level, with some "cultural adaptations"	Self-report	Days/week walked; minutes/day and whether at one time or broken up; alone or with others; classified as meeting recommended walking levels if they walked ≥ 5 days/week	Self-efficacy and helplessness	No significant association between walking and increased efficacy and scores. Exploratory analysis observed a slight decrease in perceived level of difficulty in performing ADL among men who walked ≥ 5 days/week.
FAITH Trial	Schoenthaler et al., 2015	6 months	Baseline, 3 months, 6 months, and 9 months	Weekly for 3 months; 11 weekly 90-min TLC sessions; 3 monthly individual MINT sessions	Lay health advisor delivered weekly TLC sessions and monthly individual MINT sessions vs. expert-led health education control on BP reduction	Group TLC sessions; individual MINT sessions	Device (automated BP monitor), self-report questionnaire	Methodology, structure, and content of group classes incorporate elements from PREMIER and the Health Eating and Lifestyle Program trial which was culturally tailored for blacks.	Self-report	Intrinsic motivation for physical activity via the validated TSQR scale; self-reported PA frequency	Fruit and vegetable intake, medication adherence	No significant association between treatment and prevalence of high PA. The interaction between treatment and time was all in the positive direction (indicating that individuals in the treatment group increased their PA by 432.39 METs/month > those in the control group. No associations between treatment and METs of PA were statistically significant.
HEALS Program	(1) Hebert et al., 2013; (2) Adams et al., 2015	12 months	Baseline, 12 weeks (at end of intervention) and end of 1 year	Intensive 12 week program followed by monthly boosters for 9 months	Church education team (lay leaders) vs. expert-led health education control on BP reduction	Armband monitors, scheduled clinic appointments at churches	Questionnaire, objective physical activity and energy expenditure monitoring	Questionnaire, objective physical activity and energy expenditure monitoring	Device (armband monitors); self-report (Rapid Assessment of PA)	Total energy expenditure, intensity of physical activity, and bouts of physical activity	Dietary intake	At 12 weeks and 1 year, men in the intervention group had significant reductions in waist-to-hip (WHR); At 1 year, men in intervention group had significant 36% decrease in CRP levels
Men on the Move-Flint	Griffith et al., 2014	10 weeks	Baseline, 10 weeks	Weekly 90-min sessions	Certified personal trainer	Small group; printed resources	Questionnaire	Intervention attended to unique gendered and cultural factors that influence PA levels among AA men ages 35-70	Self-report (logs); attendance	Amount and type; attendance (dosage)	Improvements ($p < .05$) detected for perceived self-efficacy to sustain PA, endurance, overall health status, and stress level; Physiological and fitness outcome measures improved, although not to significant levels; 40% of men met recommendations of moderate or vigorous activity at baseline, increased to 68% by final assessment	

(continued)

Table 3. (continued)

Main study	Source	Intervention duration	Assessment points	Frequency of intervention	Delivered by	Intervention delivery mode	Data collection mode	Cultural adaptation	How physical activity measured	Physical activity units measured	Other health behaviors assessed	Study results for African American or Latino men
Men on the Move- Nashville	(1) Dean et al., 2016; (2) Cornish et al., 2017	10 weeks	Baseline, midpoint assessment in 5th week, 10 week final assessment	Weekly 90-min sessions; text messages three times a week for 8 weeks	Certified personal trainer	Small group in-person sessions; SMS text messages	Pencil/paper worksheets, in-person survey; wearable device (Fitbit)	Intervention content designed for AA men by identifying values, goals, and beliefs; connecting ethnic and gendered goals with health and PA goals	Device (Fitbit); self-report (IPAQ); Modified CHAMPS PA questionnaire for AA)	Amount and type of PA per week	Consumption of healthy food	Intervention resulted in significant increases in self-reported levels of light, moderate, vigorous, and sports-related PA, total minutes of PA and caloric expenditure, and high-density lipoprotein cholesterol levels, and significant decreases in weight and body fat percentage, with small, moderate and large effects shown
Unnamed Study	Hooker, Harmon et al, 2011	8 weeks	Baseline, 8 weeks	Twice weekly for 8 weeks	Two interventionists: 1) I with a PhD in Exercise Science and one with an MS and RD	group sessions	Paper/pencil			Hours per week of Moderate or Vigorous PA		Significant positive changes were observed for MVPA and overall PA (hour week ⁻¹), self-efficacy for PA, social support from family and friends, self-regulation for planning and goal setting, both functional fitness components and aerobic fitness
Unnamed Study	Kendzor et al., 2016	7 days	Baseline, accelerometer data every day for 7 days.	7 days	N/A	PATHS used a smartphone app that included message prompting	device	N/A	device	Accelerometer to Smoking measure daily sedentary and active minutes, minutes of light and moderate intensity activity, and sedentary breaks		While there were no significant differences found between AA men in the control and intervention groups for PA level, the means are in the direction of the intervention group being more active and less sedentary than the control group. A larger sample size may clarify if a significant difference does exist between these groups.

et al., 2015; Hébert et al., 2013), men in the intervention group had significant reductions in waist-to-hip ratio at 12 weeks and 1 year. At 1 year, men in the intervention group had a significant (36%) decrease in C-reactive protein levels. Men on the Move-Nashville (Cornish et al., 2017; Dean et al., 2016), identified significant increases in self-reported levels of light, moderate, vigorous, and sports-related physical activity, total minutes of physical activity and caloric expenditure, and high-density lipoprotein cholesterol levels, and significant decreases in weight and body fat percentage. In the study by Hooker et al., significant positive changes were observed for moderate to vigorous physical activity and overall physical activity, self-efficacy for physical activity, social support from family and friends, self-regulation for planning and goal setting, both functional fitness components and aerobic fitness (Hooker, Harmon et al., 2011).

The four studies that did not find any significant association for the targeted outcomes of physical activity still reported improvements related to an increase in physical activity, decrease in sedentary behavior, or decrease in perceived level of difficulty in being active. In Camine Con Gusto (Callahan et al., 2016), no significant association was reported between walking and increased efficacy and decreased health assessment scores. Exploratory analysis did observe a slight decrease in perceived level of difficulty in performing activities of daily living among men who walked more than 5 days per week. In the FAITH trial (Schoenthaler et al., 2015), no significant association was identified between treatment and prevalence of high physical activity. The interaction between treatment and time was all in the positive direction (indicating that individuals in the treatment group increased their physical activity by 432.39 METs/month greater the individuals in the control group. In Men on the Move-Flint (Griffith et al., 2014), physiological and fitness outcome measures improved, although not to significant levels. Improvements ($p < .05$) were detected, however, for perceived self-efficacy to sustain physical activity, endurance, overall health status, and stress level. 40% of men met recommendations of moderate or vigorous activity at baseline and this increased to 68% by the final assessment. In the study by Kendzor et al., while there were no significant differences reported between African American men in the control and intervention groups for physical activity level, the means are in the direction of the intervention group being more active and less sedentary than the control group.

Four of the seven studies used self-reported measures of physical activity, and three studies used an objective wearable device to measure physical activity, such as an armband monitor, pedometer, or accelerometer (Adams et al., 2015; Cornish et al., 2017; Dean et al., 2016; Hébert et al., 2013; Kendzor et al., 2016). The Heals Program

and MOTM-Nashville (Adams et al., 2015; Cornish et al., 2017; Dean et al., 2016; Hébert et al., 2013) used both self-report and wearable devices to measure physical activity. Physical activity was measured in a wide variety of units across the studies, including minutes per day (Callahan et al., 2016; Kendzor et al., 2016), hours per week (Hooker, Harmon et al., 2011), intensity (Adams et al., 2015; Hébert et al., 2013), and energy expenditure (Adams et al., 2015; Hébert et al., 2013). Three of the studies (Adams et al., 2015; Cornish et al., 2017; Dean et al., 2016; Hébert et al., 2013; Schoenthaler et al., 2015) measured diet (e.g., fruit and vegetable consumption). One study measured changes in medication adherence (Schoenthaler et al., 2015) and one study measured changes in smoking (Kendzor et al., 2016). All studies except one involved an in-person intervention delivery mode including: small group sessions (Dean et al., 2016; Griffith et al., 2014; Hooker, Harmon et al., 2011; Schoenthaler et al., 2015), and in-person assessments or clinic appointments (Adams et al., 2015; Callahan et al., 2016; Hébert et al., 2013).

Risk of Bias

Risk of study bias was determined by the number of "yes" responses to the items listed in Table 4. Studies with four or more "yes" responses were rated as having low risk of bias; studies with two or three "yes" responses were rated as having medium risk of bias; and studies with only one "yes" response were rated as having high risk of bias. Based on these criteria, one study was classified as low risk, and six studies were classified as medium risk.

Discussion

This systematic review sheds light on the state of the evidence on health-behavior change interventions to contribute to the understanding of the importance of increasing and promoting physical activity among African American and Latino men. The majority of studies described were informed by health behavior theories, most commonly Social Cognitive Theory. It is a positive and promising sign that the interventions were guided by relevant and applicable theories, but only MOTM (Dean et al., 2016; Griffith et al., 2014) and the intervention by Hooker and colleagues (Hooker, Harmon et al., 2011) explicitly indicated that they considered gender. The majority (four) of the studies reported tailoring to racial or ethnic factors. Previous reviews have highlighted that more research is needed to better understand how gender can be incorporated in physical activity interventions for African American men (Bopp et al., 2012; Newton et al., 2014; Whitt-Glover et al., 2014) and there is very little that we know about how to incorporate gender in

Table 4. Assessment of Risk of Bias.

Main study	Source	Adequate method of random sequence	Concealed allocation sequence	Blinded outcome assessors	Loss of data (%)	Groups similar at baseline for main outcome measure	Evidence of representative reporting	Overall assessment of risk of bias	Comments
Camrine Con Gusto Program	Callahan et al., 2016	NA	NA	NA	18%	X	X	Medium	Not a randomized design
FAITH Trial	Schoenthaler et al., 2015	X	X	?	NA	X	X	Low	
HEALS Program	(1) Hebert et al., 2013; (2) Adams et al., 2015	X	?	?	37%	X	X	Medium	
Men on the Move- Flint	Griffith et al., 2014	NA	NA	NA	24%	X	X	Medium	Not a randomized design
Men on the Move- Nashville	(1) Dean et al., 2016; (2) Cornish et al., 2017	NA	NA	NA	15%	X	X	Medium	Not a randomized design
Unnamed Study	(1) Hooker, Harmon et al, 2011	NA	NA	NA	13%	X	X	Medium	
Unnamed Study	Kenzor et al., 2016	NA	NA	NA	10%	X	X	Medium	

interventions for Latino men (Garcia et al., 2017; Marquez & McAuley, 2006). Given that formative research has identified that there are significant differences in the patterns and social and psychological determinants of physical activity by gender (Bopp et al., 2006; Friedman et al., 2012; Griffith, Gunter, & Allen, 2011; Hooker, Wilcox et al., 2011), Future interventions should explore how being an adult male shapes men's motivations, attitudes, and preferences to be physically active by considering notions of masculinity, manhood and Machismo (Arciniega, Anderson, Tovar-Blank, & Tracey, 2008; Fragoso & Kashubeck, 2000; Griffith, Brinkley-Rubinstein, Thorpe Jr, Bruce, & Metzl, 2015; D. M. Griffith & Cornish, 2016; Griffith, Gunter, & Watkins, 2012; Vandelto & Bosson, 2013). While given the limitations of the data, we cannot conclude that incorporating gender in targeted interventions makes them more effective than those that do not, future studies should rigorously test if and how considering gender in physical activity among African American and Latino men increases the impact of the intervention.

All of the studies included in the review were implemented in community-based settings. While these spaces provide important opportunities to reach the populations of interest, future research should explore how other settings may also be used to promote physical activity among African American and Latino men. Four of the seven interventions included small group activities to facilitate vicarious learning and social support. Because having to meet in-person could be one of factors that hinders the ability to disseminate, distribute and scale-up an intervention, future studies for these populations should examine ways to use technology to reduce reliance on small groups and other forms of in-person meeting. Only two studies included some type of mHealth technology, but neither study used technology to foster communication, accountability and social support among the men. The SMS text messages and smartphone applications that were used primarily provided information and message reminders (Cornish et al., 2017; Dean et al., 2016; Kendzor et al., 2016). Three of the studies used some form of wearable device to objectively measure physical activity. As these devices become more available, common and easy to wear, it will be important to increase the use of objective measures of physical activity and reduce reliance on self-report measures of physical activity (Lewis, Lyons, Jarvis, & Baillargeon, 2015).

While there were 30 studies that likely had information on the populations and outcomes of interest, this systematic review only included the nine articles from seven studies that provided physical activity outcome data specifically for African American or Latino men. Unfortunately, 23 studies were not included in the review because we could

not obtain or analyze the data from the authors. As there is a lack of race and ethnicity reported by sex data reported in general, and that information could not be obtained or analyzed for many studies upon further inquiry to the study authors, this must be acknowledged as an important limitation for this review. Thus, this review included six published studies that provided data for African American men, and only one published study that provided data for Latino men. There were no studies exclusively comprised of Latino men and only three that were exclusively comprised of African American men.

Risk of Bias and other Limitations of This Review

Many of the studies identified within the process of this review had small samples of African American or Latino men that deemed them ineligible. Similar to the review of African American men's response to interventions to promote weight loss or increase healthy eating or physical activity by (Newton et al., 2014), we identified that few studies examining the efficacy of physical activity interventions with African American men included a rigorous experimental design. All but one of the studies had a medium risk of bias, primarily because of the use of a quasi-experimental design. Only two of the seven studies lasted at least 6 months, which is the amount of time that it often takes for health habits to become part of one's lifestyle.

Conclusions

Despite the high rates of obesity and chronic disease among these groups of men, we know surprisingly little about how to increase and maintain recommended levels of physical activity. How notions of gender and manhood can be incorporated in physical activity interventions for African American and Latino men seems to be underdeveloped in the published literature. However, the results from the studies presented in this systematic review display encouraging evidence and a positive trend of targeted and tailored health interventions successfully increasing physical activity among African American and Latino men. The use of technology to engage and support these men also has been understudied, but may prove beneficial as a key intervention component for future studies to utilize. Future research should add to the knowledge base of the articles presented in this review to consider how these myriad factors can be optimized to help these men meet and maintain recommended levels of physical activity.

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