



Effect of an Eight-Week Walking Program on Health-Related Fitness and Body Image Perception among Premenopausal Teachers

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study was used to assess the effects of an Eight-Week Walking Program on Health-Related Fitness and Body Image Perception Among Premenopausal Teachers. The study aimed to assess the effects of an eight-week walk program on health-related fitness components, including cardiovascular endurance, muscular endurance, flexibility, upper body strength, and BMI, among 30 to 45-year-old premenopausal female teachers in Mvita, Mombasa. It also examined changes in perceived body image and their relationship with fitness. The quasi-experimental research targeted

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50 premenopausal female teachers aged 30–45 in Mvita Sub-county, Mombasa, using purposive sampling. Participants were divided into an experimental group (n=23) that underwent the walking programme and a control group (n=26) that did not. HRF tests included the 20-metre bleep test (cardiovascular endurance), one-minute sit-up test (abdominal muscle strength endurance), sit-and-reach test (low back flexibility), modified push-up test (upper body strength), and BMI calculation. Data were analyzed using SPSS Version 22, with One-Way ANOVA testing hypotheses at a 5% significance level. Findings indicated significant improvements in HRF components for the experimental group, including abdominal endurance ($F(1,48) = 56.72, P < 0.001$), upper body strength-endurance ($F(1,48) = 55.86, P < 0.001$), cardiovascular endurance ($F(1,48) = 39.96, P < 0.001$), low back flexibility ($F(1,48) = 37.75, P < 0.001$), and BMI ($F(1,48) = 29.05, P < 0.001$). Additionally, the programme positively influenced body image perception. Participants reported increased body weight awareness ($P = 0.044$), desire for a perfect body ($P = 0.003$), improved self-representation ($P = 0.002$), adherence to exercise routines ($P < 0.001$), enhanced physical attractiveness ($P = 0.009$), and concern for body weight maintenance ($P = 0.003$). The study recommends adopting walking programmes for premenopausal female teachers to improve HRF and body image. Future research should explore strategies for integrating walking into daily routines to sustain these benefits.

Keywords: *Body mass index; cardiovascular endurance; exercise adherence; health-related fitness; physical fitness; strength endurance.*

1. INTRODUCTION

Health-related fitness is a crucial aspect of overall well-being, particularly among premenopausal teachers in Mombasa County, who often face demanding professional responsibilities that can impact their physical health and body image perception. Maintaining an optimal level of fitness is essential for enhancing daily functionality, preventing injuries, and promoting a positive self-image. Despite the recognized benefits of physical activity, many individuals struggle with adopting and sustaining regular exercise routines. Walking programs have emerged as accessible and effective interventions for improving health-related fitness, yet their impact on body image perception remains underexplored in this demographic.

Previous research has extensively examined the components of physical fitness, emphasizing cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition as key determinants of overall health (Bukhala, 2017). Additionally, attributes such as coordination, balance, speed, agility, power, and reaction time contribute to athletic performance (Iyokus & Ramadhan, 2021). Cardiovascular endurance ensures the efficient functioning of the heart, lungs, and blood vessels, supporting energy production and oxygen supply. Muscular strength and endurance facilitate sustained physical activity, while flexibility enhances joint mobility (Wilmerding & Krasnow, 2017). Body composition,

encompassing bone, muscle, fat, and other tissues, is a critical health indicator, with excessive fat accumulation being a major risk factor for lifestyle-related diseases (Braun, 2022). While these components are well-documented, limited research specifically addresses their relationship with body image perception among premenopausal teachers, highlighting a gap in the existing literature. Although studies have explored the effectiveness of walking programs in enhancing cardiovascular health and muscular endurance, their influence on self-perception and body image remains insufficiently investigated. Existing research often focuses on general populations or specific patient groups, neglecting the unique experiences of premenopausal women in the teaching profession. Given the physical and psychological challenges associated with this stage of life, understanding the impact of structured walking programs on both fitness levels and body image is essential. This study aims to bridge this research gap by examining how participation in a walking program influences health-related fitness and body image perception among premenopausal teachers in Mombasa County. The primary objective of this study is to assess the effects of a structured walking program on the health-related fitness and body image perception of premenopausal teachers. Specifically, it seeks to evaluate improvements in cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition while analyzing changes in participants' self-perception. The study hypothesizes that engaging in a walking

program will lead to significant enhancements in fitness levels and a more positive body image among participants. By addressing this gap, the research aims to provide valuable insights for educators, health practitioners, and policymakers to promote sustainable fitness interventions tailored to this population.

This study specifically focuses on Health-Related Fitness (HRF) components, including cardiovascular endurance, abdominal muscular endurance, low back flexibility, upper-body strength-endurance, and body composition. Cardiovascular endurance determines the ability of the heart and lungs to supply energy efficiently and remove metabolic waste during daily activities (Limbu, 2014; Cheng, Chiu & Su, 2019). Abdominal muscular endurance is crucial for maintaining digestive health, pelvic stability, proper posture, and efficient respiration. Similarly, flexibility in the lower back is essential for functional movement, allowing for a greater range of motion and reducing the risk of discomfort or injury. Upper-body strength-endurance also plays a vital role in supporting posture and facilitating everyday activities such as lifting objects and cooking, helping to prevent excessive fatigue (Wilmerding & Krasnow, 2017). Additionally, Body Mass Index (BMI) serves as a widely used, cost-effective screening tool for evaluating body fat levels and monitoring weight trends over time (Sommer et al., 2023).

Body image refers to an individual's perception, beliefs, emotions, and attitudes toward their physical appearance (Brazier, 2017). This perception differs across cultures, with some societies favoring slender bodies while others associate fuller figures with beauty and prosperity (Waldman et al., 2013). In many African societies, including Kenya, a larger body size is often linked to health and wealth, which may contribute to the higher prevalence of overweight individuals, particularly among women. Research on African American women has also highlighted the influence of social interactions on body image satisfaction, as overweight individuals tend to experience shifts in self-perception based on societal feedback (Baturka et al., 2000).

Research on menopausal women in Croatia and Lithuania highlights the impact of socio-cultural pressures on body dissatisfaction (Esnaola, et al, 2010). Westernization, urbanization, and mass media have further influenced changing beauty standards, promoting an idealized body image

that can contribute to eating disorders and negative self-perception (Bessenoff & Snow, 2006). Body dissatisfaction is linked to age, gender, marital status, and BMI (Luo, et al, 2005). Studies in Kenya indicate that body image ideals are evolving, with dissatisfaction increasing across gender lines (Arasa, 2017).

Beyond the influence of HRF on physical health, menopause introduces additional concerns for women. Between the ages of 40 and 55, women experience symptoms such as hot flashes, night sweats, reduced bone density, and increased fat accumulation (Sternfeld & Dugan, 2011). Engaging in moderate physical activity during perimenopause can alleviate these symptoms (Kim, et al 2014). Research on physical activity levels among female professionals in Turkey found that healthcare workers maintained better fitness levels than primary school teachers, whose activity levels declined with age (Atan, et al 2012). Similar findings emerged from a Brazilian study, where female teachers aged 31 to 42 demonstrated lower physical activity levels compared to their male counterparts (Brito, et al 2012). The interplay between body image dissatisfaction, gender, declining physical activity, and socio-cultural influences underscores the complexity of maintaining HRF (Westfall, 2015).

The 2018 Physical Activity Guidelines Advisory Committee of the U.S. Department of Health and Human Services emphasized walking as a popular and effective aerobic exercise for maintaining BMI and enhancing HRF. Exercise intensity, measured in Metabolic Equivalent of Task (METs), determines whether physical activity is classified as light, moderate, or vigorous. Walking at low intensity expends less than 3.0 METs, moderate intensity ranges from 3.0 to 6.0 METs, and high intensity exceeds 6 METs. Regular walking is linked to improved HRF and positive body image perception (Rabbitt, 2020). Incorporating structured walking programs with appropriate intensity, frequency, and duration can enhance fitness and self-perception among working populations (Bai et al., 2022).

Kenya's coastal region, particularly Mombasa, has a diverse population with rich cultural traditions. The city's warm, humid climate, with annual temperatures ranging from 24 to 30 degrees Celsius (75 to 86 degrees Fahrenheit), differentiates it from other parts of Kenya (Kenya Meteorological Department, 2020). Cultural

factors, particularly Swahili traditions, influence women's physical activity levels and body image. This study focused on premenopausal female teachers in coastal Kenya, who constitute a significant portion of the professional workforce. Understanding the interplay between HRF, body image, and cultural influences is crucial for promoting overall well-being and encouraging healthier lifestyle choices among women in this region.

1.1 Research Problem

Several studies have examined the relationships between body image, health, and psychological well-being (Kim et al., 2014), as well as the impact of physical activity on health-related fitness among premenopausal and menopausal women (Ransdell et al., 2004). Additionally, research has explored physical activity levels among teachers and healthcare professionals (Westfall, 2015). These studies highlight the need for further research incorporating targeted interventions to address health and body image concerns.

Despite the established negative effects of poor health-related fitness and body image dissatisfaction on teachers' well-being and performance, no study has specifically applied a health-related fitness physical activity intervention for enhancing physical fitness and perceived body image among premenopausal teachers in Mvita, Kenya. Furthermore, the physical activity levels and body image perceptions of Kenyan premenopausal teachers remain unexplored. Given the significance of these issues, this study aims to examine the association between health-related fitness and body image in this population. Moreover, no research has assessed the impact of a structured walking program on the health-related fitness and body image of Kenyan women. If effective, such a program could support the promotion of an active lifestyle and improved body perception among women. Mombasa was selected for this study due to its 22 public primary schools, pedestrian-friendly infrastructure, and conducive environment for walking. Given the region's high humidity and temperatures, walking was deemed a more suitable activity than higher-intensity exercises like running or cycling. This study investigates the effects of an eight-week walking program with conditioning sessions on the health-related fitness and perceived body image of premenopausal primary school teachers in Mvita, Mombasa County.

1.2 Purpose of the Study

The study aimed to Effect of an Eight-Week Walking Program on Health-Related Fitness and Body Image Perception Among Premenopausal Teachers.

This study was guided by the following objective to: Establish the effects of an eight-week walk programme on the Health-Related Fitness components of cardiovascular endurance, abdominal muscular endurance, low back flexibility, upper body strength-endurance and Body Mass Index of 30 to 45 year old premenopausal female primary school teachers in the Mvita, Mombasa County, establish the effects of an eight-week walk programme on the Perceived Body Image of 30 to 45year old premenopausal female primary school teachers in the Mvita, Mombasa County and to determine the relationship between Health-Related Fitness and Perceived Body Image of 30 to 45year old premenopausal female primary school teachers subsequent to an eight-week walk programme.

1.3 Research Hypothesis

This study was guided by the following Research Hypothesis.

H₀: Premenopausal teachers who apply for the Program for Eight-Week Walking will improve their body image and health fitness than those who receive routine care.

H₁: There is no significant relationship between Health-Related Fitness and Perceived Body Image of 30 to 45-year-old premenopausal female primary school teachers after an eight-week walk program.

H₂: There is no significant effect of the eight-week walk program on the perceived Body Image of 30 to 45-year-old premenopausal female primary school teachers.

1.4 Justification of the Study

The study's findings may help premenopausal teachers recognize the benefits of walking for their health-related fitness, well-being, and body image perception. Additionally, it could contribute to developing a Kenya-specific fitness training program for premenopausal women and serve as a foundation for further research on its effectiveness. The study may also encourage the Ministries of Education, Sports, and Health to address female teachers' health and

performance concerns. Furthermore, the findings could support future research, interventions, and policy initiatives aimed at promoting health-related fitness and body image across diverse populations.

2. LITERATURE REVIEW

2.1 Impact of Structured Walking Programs on Health-Related Fitness and Body Image Perception Among Women: A Review of Empirical Evidence

2.1.1 Walking

Walking is a rhythmic, continuous activity involving major muscle groups, particularly the legs, and is classified as aerobic when sustained for at least 15 minutes (Millstein, 2013). It enhances cardiovascular health by increasing oxygen intake during physical exertion (Hadders-Algra, 2018). Brisk walking, a moderate-intensity exercise, strengthens muscles and promotes overall well-being (Johnson, 2020). Recognized as a safe and effective form of exercise for individuals of all ages and abilities, walking helps reduce the risk of non-communicable diseases (Alnasyan et al 2018; C3Collaborating for Health, 2012).

Variations in walking intensity enhance its benefits. Brisk walking increases heart rate and muscle engagement, while power walking incorporates longer strides and arm movements (Pavlović, et al 2021). Nordic walking, which uses poles, engages the upper body, while treadmill walking provides a controlled environment. Hiking, though more physically demanding, offers exposure to nature, and walking meditation fosters mindfulness. Meanwhile, race walking is a structured competitive sport requiring specific techniques (Cazzola, et al 2016). Research highlights walking's health benefits. Liang et al. (2017) found that a 16-week supervised walking program reduced depression and improved self-esteem in menopausal Chinese women, though BMI remained unchanged. Similarly, Yang and Kim (2022) observed improved health behaviors, reduced stress, and smaller waist circumferences in middle-aged Korean women following a walking-based health program. Although BMI outcomes were inconclusive, the study supported walking's effectiveness in promoting overall health.

Physical inactivity and sedentary lifestyles have become a significant public health issue, contributing to various health complications, including cardiovascular diseases, metabolic disorders, diabetes, cancer, and musculoskeletal conditions. The lack of physical fitness, particularly Health-Related Fitness (HRF), has profound implications on overall well-being. HRF focuses on maintaining optimal health and functionality by emphasizing cardiovascular endurance, muscular endurance, flexibility, muscular strength, and body composition. These components are essential for reducing health risks and ensuring an active, fatigue-free lifestyle.

Physical fitness is a multifaceted concept, encompassing both Health-Related and Skill/Performance-Related fitness. While the latter focuses on enhancing agility, coordination, speed, power, reaction time, and balance for superior physical performance, HRF prioritizes efficiency in daily activities and long-term health benefits. The effectiveness of HRF components is directly influenced by the regularity and intensity of physical activity. This study examined the impact of an eight-week walking program, including warm-up, conditioning, and cool-down phases, on various HRF components. The study focused on cardiovascular endurance through walking, abdominal muscular endurance, trunk flexibility, upper-body strength-endurance, and body composition assessed through Body Mass Index (BMI). Findings from this research contribute to understanding how structured physical activity can enhance health and overall fitness levels.

2.1.2 Cardiovascular endurance and walking

Cardiovascular endurance, also known as aerobic or cardiorespiratory endurance, refers to the body's ability to efficiently deliver oxygen to tissues for sustained activity while minimizing fatigue. Studies indicate that cardiovascular endurance declines with age (American College of Sports Medicine, 2018). Walking has been shown to enhance heart efficiency in oxygen transport, improve fat metabolism, and increase mitochondrial density, ultimately boosting endurance (Teychenne & Miller, 2017). Research suggests that brisk walking for 30 minutes, five days a week, significantly enhances aerobic fitness and may help prevent cardiovascular disease (Murtagh, et al 2010). The American Heart Association (2023) recommends at least 150 minutes of moderate activity weekly,

equating to a 20-minute daily walk for heart health. Analysis of data from 29,742 participants in the 2015 National Health Interview Survey revealed that reduced walking activity correlates with an increased risk of cardiovascular disease (Omuro et al., 2019). While laboratory-based Vo2Max tests are the gold standard for assessing cardiovascular fitness, they are often impractical due to cost and logistical challenges (Letnes et al., 2019). As a result, field tests such as distance-based walking or running tests and the 20-meter shuttle run have been developed as reliable alternatives (Tomkinson & Olds, 2008).

2.1.3 Abdominal muscular endurance and walking

Muscular endurance refers to the ability of muscles to sustain force against sub-maximal resistance over time without excessive fatigue. It is often measured by the number of repetitions performed at a percentage of an individual's maximum strength. In Health-Related Fitness, muscular endurance is linked to key functions such as maintaining good posture, enhancing aerobic capacity, supporting daily functional activities, and improving sports performance. The abdominal muscles, particularly the rectus abdominis, transverse abdominis, and obliques, are crucial for stabilizing the body and protecting internal organs. They play a significant role in posture, spinal alignment, and core stability. Strong abdominal muscles also contribute to regulating intra-abdominal pressure and supporting the lumbar spine, reducing compressive forces. Studies suggest that abdominal endurance is vital for overall health and movement efficiency. For example, walking has been shown to improve abdominal muscle tone and reduce abdominal fat, though its effect on muscular endurance specifically remains underexplored. To measure abdominal endurance, methods like Electromyography (EMG) are considered gold standards, though they are costly and cumbersome. More practical alternatives, such as the sit-up test, are commonly used due to their low cost, safety, and proven reliability. These methods offer valuable insights into abdominal endurance and overall fitness.

2.1.4 Low back flexibility and walking

Flexibility refers to the range of motion (ROM) achievable at a joint or group of joints through voluntary muscle action, as defined by the American College of Sports Medicine (ACSM, 2017). Flexibility is joint-specific, with concerns

over the low back region due to the unique structure of the lumbar spine, which supports the upper body and allows various trunk movements, such as flexion and rotation (Pate et al., 2012). The muscles of the core, including the abdominals and lower back, work together to stabilize the spine during bending and lifting (Polat et al., 2022). Tightness in the hamstrings, particularly the attachment to the ischial tuberosity, is speculated to cause pelvic tilt and potentially reduce lumbar lordosis, contributing to low back pain (Nourbakhsh & Arab, 2002). However, studies have shown mixed results on the relationship between hamstring flexibility and low back pain (LBP) (Johnson & Thomas, 2010; Jandre-Reis & Macedo, 2015). Physical activity, especially walking, has been linked to improved flexibility and reduced stiffness in the lumbar spine (Shao et al., 2022), helping to reduce pain and enhance circulation. Exercise programs incorporating strength, flexibility, and walking are beneficial for managing persistent LBP (Verburnt et al., 2010). The Sit-and-Reach test, a simple and reliable measure, is widely used to assess low back flexibility (Wells & Dhillon, 1952).

2.1.5 Upper-body strength-endurance and walking

The upper body, comprising the arms, shoulders, chest, back, and neck, requires both strength and endurance for optimal performance. Resistance training improves these muscular functions, with strength-endurance exercises benefiting from adjustments in resistance and repetitions. Research shows that resistance training combats age-related muscle decline, enhances strength, power, and neuromuscular coordination in older adults, leading to better daily function and improved well-being. Upper body strength is vital for everyday activities, with strength training also improving body image, particularly for women with lower upper body strength. Studies indicate that strength and endurance training enhance balance, walking speed, and strength in older adults. However, there is a lack of standardized tests for upper body strength endurance. The push-up, pull-up, and parallel dip tests are commonly used to assess this, but each targets different muscles. This study explores the impact of a structured eight-week walk program on upper body strength endurance.

2.1.6 Body mass index and walking

Body composition, which includes all tissues and materials such as muscle, fat, bone, and water,

gained significant attention in the early 20th century due to advancements in its understanding and evaluation. It is particularly relevant in health and fitness, where professionals often focus on the percentage of body fat. Research shows that classifying health based solely on total body weight without considering fat content can lead to inaccurate results. For instance, early standards mistakenly categorized muscular individuals as overweight or obese. Modern methods, like hydrostatic weighing, offer a more accurate assessment of fat content, thus improving obesity and fitness classifications. The World Health Organization (2022) reported alarming statistics, with over one billion obese individuals worldwide, including adults, adolescents, and children. Obesity is linked to numerous physical and mental health issues such as diabetes, hypertension, and depression. Various methods for measuring body fat have been proposed, including skinfold measurements, Dual Energy X-Ray Absorptiometry (DEXA), and Bioelectrical Impedance Analysis (BIA). While more advanced methods like DEXA and hydrostatic weighing provide accurate results, they are expensive and require specialized personnel. Less costly alternatives, like skinfold callipers, are more accessible but prone to human error. The Body Mass Index (BMI), despite its limitations in measuring fat content, remains a useful screening tool for identifying potential health risks. Studies have shown that physical activity, such as walking, can help reduce body fat and lower BMI, particularly in postmenopausal women. Despite its flaws, BMI continues to play a critical role in public health policy and individual health assessments.

2.1.7 Body image

Body image, which encompasses an individual's perception of their body shape and size, is influenced by cultural ideals and personal experiences. A positive body image is linked to self-esteem and exercise habits, while negative body image can lead to disorders like Body Dissatisfaction Disorder (BDD), where individuals obsess over perceived physical flaws. Women's body shape and size are affected by factors like aging, childbirth, and lifestyle, with those in middle age experiencing notable changes. Body image dissatisfaction is prevalent among women, influenced by factors such as media portrayals, societal pressures, and cultural views on body size. Studies show that physical activity, including walking, improves body image, self-

esteem, and overall well-being. For instance, a study on woodland walking revealed significant increases in body appreciation. Similarly, exercises like aerobics and strength training have shown positive effects on women's body image, reducing concerns over fat and improving fitness.

2.1.8 Physical activity levels among teachers

A 2018 World Health Organization survey revealed that 12% of males and 24% of females in Kenya aged 18 and above are physically inactive, leading to overweight conditions. A 2009 study in Brazil by Brito et al. found that 42.9% of female public school teachers were physically inactive compared to 53% of male teachers, with 19.5% of female teachers aged 31-42 showing inadequate physical activity. Atan et al. (2012) compared physical activity levels between female teachers and healthcare professionals, finding the latter more active, though teachers' activity increased with age. Shah (2012) highlighted that teachers' physical appearance impacts students' learning environment, emphasizing their role as role models.

2.1.9 Developing the exercise programme

The eight-week walking program was designed using the overload principle, incorporating the FITT (frequency, intensity, time, and type) framework to enhance endurance, strength, and muscle size. This principle gradually adjusts FITT variables above the individual's current level, fostering progress toward fitness goals. The program, with three weekly walking sessions, progressively increased in intensity and duration, aiming to improve health-related fitness components like cardiovascular endurance and general health. The study aimed to evaluate the effects of this walking program on premenopausal women teachers in Mvita, Mombasa, focusing on cardiovascular fitness, flexibility, strength, body image, and body mass index.

3. METHODOLOGY

The study utilized a quasi-experimental design involving both an experimental and a control group, as explained by Eliopoulos et al. (2004). In this design, the experimental group received a treatment, while the control group did not, allowing for comparison between the two groups to assess the impact of the intervention.

Participants engaged in an eight-week walking program that included warm-up, conditioning, and cool-down sessions to evaluate its effects on health-related fitness and perceived body image. The research was conducted in Mvita sub-county, Mombasa County, Kenya, chosen for its urban setting, pedestrian-friendly infrastructure, and scenic walking routes, making it ideal for the walking program. Mvita is home to 26 public primary schools, providing a sufficient sample pool for the study. The target population consisted of premenopausal female teachers aged 30 to 45 years working in public primary schools in Mvita, Mombasa. Teachers are a significant professional group in Kenya, with over 350,000 primary school teachers nationwide. The study focused on this group due to their potential to benefit from an intervention that could enhance both health-related fitness and body image perceptions, with approximately 146 female teachers in Mvita Sub-county identified as the study's target population.

The study utilized a purposive sampling technique to select Mvita Sub-county and premenopausal female teachers after initial screening during recruitment. This judgmental approach allowed the researcher to selectively choose participants based on specific criteria (Sharma, 2017). To assign participants to experimental or control groups, simple random sampling was used. The sample size was determined using G Power 3.1 software, with a t-test statistical reference for two dependent means. A significance power of 0.95, error probability of 0.05, and an effect size of 0.5 yielded a sample size of 50, accounting for a 10% non-response rate.

The study utilized various research instruments to assess participants' health-related fitness and body image. The Premenopausal Screening Questionnaire was used to confirm participants' premenopausal status by asking about menstruation, contraceptive use, and symptoms such as hot flushes and breast sensitivity. The Perceived Body Image Questionnaire measured body image awareness and the influence of social-cultural factors, using 54 items rated on a five-point Likert scale. Health-related fitness was evaluated through a series of physical tests, including the 20-Metre Shuttle Run Test, which assessed cardiovascular endurance, the One-Minute Sit-Up Test for abdominal endurance, the Sit-and-Reach Test for flexibility, and the Modified Push-Up Test to gauge upper body strength. Participants also completed an Eight-

Week Walk Programme, designed to enhance cardiovascular endurance, body composition, and muscular endurance. The program progressed from low to moderate intensity, including warm-ups, walks, and conditioning exercises targeting abdominal endurance, flexibility, and upper-body strength. Sessions were held three times a week, with durations increasing from 20 to 50 minutes by the eighth week. Each session concluded with a cool-down period. Detailed protocols for each test and program session were provided.

Data collection began by determining participants' status using a screening questionnaire. After obtaining consent, participants were randomly assigned to either the experimental or control group. Data collection took place at each participant's school, starting with a body image questionnaire. Pre-tests for Health-Related Fitness (HRF) were conducted before an eight-week walking program, and the same assessments were repeated at the end of the program. The experimental group followed a structured walking program that included a warm-up, walking session, conditioning exercises, and a cool-down phase. Throughout the program, participants monitored their heart rates at regular intervals using the carotid pulse, ensuring they remained within their target heart rate zone. To facilitate accuracy, they received training on proper heart rate monitoring techniques. In contrast, the control group continued with their usual activities without any intervention. After completing the program, post-tests were administered to both groups, and all relevant data was recorded. The results, detailing health-related fitness (HRF) and body image outcomes, were presented in tables for analysis.

The data collected in this study was analyzed using SPSS Version 22, with the results presented in tables and percentages. Descriptive statistics, such as mean and standard deviation, were used to assess differences between pre-tests and post-tests and to examine relationships among key variables. To test the research objectives, inferential statistics were analyzed using two-way ANOVA at a 5% significance level.

4. RESULTS AND DISCUSSION

This study aimed to evaluate the impact of an Eight-Week Walk Programme on the health-related fitness and perceived body image of premenopausal teachers aged 30 to 45 in public

primary schools in Mvita, Mombasa County. Out of 25 participants, 23 completed the program. The study is divided into five sections: demographic characteristics, results of health-related fitness components from pre- and post-tests, the effects of the walk program on fitness components, the effects on perceived body image, and the relationship between fitness and body image. Findings showed significant changes in health-related fitness and body image, rejecting initial hypotheses that no effects would occur.

4.1 Health-Related Fitness Components: Pre- and Post-Tests Ratings

The study assessed Health-Related Fitness components through pre- and post-tests in both experimental and control groups before and after an Eight-Week Walk programme. The aim was to evaluate changes in cardiovascular endurance among participants. Initially, 91.3% of the experimental group were rated as very poor, and 8.7% as poor in cardiovascular endurance. After the programme, 78.3% of the experimental group were rated very poor, 17.4% poor, and 4.3% average, showing an improvement in cardiovascular endurance. In contrast, the control group showed no change, with 100% of participants rated very poor in both pre- and post-tests. These results suggest that the Eight-Week Walk programme had a positive effect on

cardiovascular endurance in the experimental group, while the control group exhibited no improvement.

4.2 ANOVA

Table 2 shows that at the pre-test stage, 91.3% of the experimental group was rated very poor, and 8.7% was rated poor for cardiovascular endurance. After the Eight-Week Walk treatment, post-test results indicated improvement, with 78.3% rated very poor, 17.4% rated poor, and 4.3% rated average. In contrast, the control group remained at 100% very poor ratings for both tests, showing no improvement. An ANOVA (Table 3) confirmed significant differences between pre-test and post-test scores ($F(1,47) = 39.96, p < 0.001$), leading to the rejection of the null hypothesis regarding the programme's effectiveness.

4.3 Pre and Post-Test Ratings: Body Mass Index (BMI)

The pre-test results revealed that 39.1% (9) of the experimental group were classified as obese, while another 39.1% (9) were overweight, with 21.7% (5) falling within the normal BMI range. After completing the Eight-Week Walk program, the post-test results showed an improvement, with 34.8% (10) categorized as obese, 30.4% (10) as overweight, and 30.4% (7) within

Table 1. Pre-and post-test ratings: cardiovascular endurance

Rating	Pre-test scores				Post-test scores			
	Experimental		Control		Experimental		Control	
	n	%	n	%	N	%	N	%
Excellent	0	0%	0	0%	0	0%	0	0%
Very good	0	0%	0	0%	0	0%	0	0%
Good	0	0%	0	0%	0	0%	0	0%
Average	0	0%	0	0%	1	4.3%	0	0%
Poor	2	8.7%	0	0%	4	17.4%	0	0%
Very poor	21	91.3%	26	100%	18	78.3%	26	100%

Table 2. ANOVA: Pre-and post-test ratings: cardiovascular endurance

Rating	Pre-test scores				Post-test scores			
	Experimental		Control		Experimental		Control	
	n	%	n	%	N	%	N	%
Excellent	0	0%	0	0%	0	0%	0	0%
Very good	0	0%	0	0%	0	0%	0	0%
Good	0	0%	0	0%	0	0%	0	0%
Average	0	0%	0	0%	1	4.3%	0	0%
Poor	2	8.7%	0	0%	4	17.4%	0	0%
Very poor	21	91.3%	26	100%	18	78.3%	26	100%

the normal range. These changes indicated a positive shift in BMI for the experimental group. In contrast, the control group showed minimal changes in BMI between pre- and post-test measurements. ANOVA analysis further assessed the significance of these differences.

4.4 Perceived Body Image

The study aimed to assess the participants' Perceived Body Image using a 54-item questionnaire, with responses rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The responses were categorized to reflect varying levels of agreement. The 54 statements were grouped into four categories: Body Image Consciousness, Individual Factors, Social-Cultural Influences, and Handling of Body Image Perceptions, based on the Akusala and Arasa Models. Results showed significant changes in body image consciousness between the pre- and post-test for the experimental group compared to the control group. For instance, the experimental group demonstrated improvements in monitoring body weight, reducing waist size, adhering to an exercise regime, and addressing physical appearance concerns, with mean scores increasing from pre-test to post-test. In contrast, the control group showed little to no change. Key findings included increased concern for body weight and physical attractiveness in the experimental group, while the control group maintained consistent levels of body image consciousness throughout the eight-week period.

4.5 Individual Factors Affecting Body Image

The study examined individual factors affecting body image, with participants responding to statements on various body image-related issues. The experimental group showed a slight increase in self-esteem, with pre-test means of 1.83 and 1.87 at post-test, while the control group remained stable at 1.73. Anxiety related to body image remained unchanged for the control group at 1.88, but the experimental group had a slight increase in mean scores from 2.57 to 2.61. Feelings of shame and insecurity also saw minimal change in the experimental group, with pre-test means of 2.26 and post-test means of 2.30. The experimental group reported a slight increase in perceptions of aging reducing attractiveness, with pre-test means of 3.0 and

post-test means of 3.17. Participants in the experimental group also reported higher satisfaction with their bodies post-test, with a mean increase from 3.22 to 3.57, compared to the control group's slight rise from 2.69 to 3.08.

4.6 Effects of the Eight-Week Walk Program on Perceived Body Image

The study examined the effects of an eight-week walking program on participants' perceived body image. Paired t-tests were conducted to compare pre-test and post-test results, revealing significant changes in various aspects of body image. The findings indicated that the program positively influenced participants' body image consciousness. Notably, there was a significant improvement in participants' awareness of their body weight ($t(48) = 2.066, p = .044$) and their desire for a perfect body ($t(48) = 3.150, p = .003$). Additionally, participants felt their bodies more accurately represented themselves after the program ($t(48) = 3.263, p = .002$) and were more committed to following exercise routines to maintain a good figure ($t(48) = 4.280, p < .001$). The program also increased participants' feelings of physical attractiveness ($t(48) = 2.720, p = .009$) and heightened their concern about body weight ($t(48) = 3.150, p = .003$). These results suggest that the eight-week walking program effectively enhanced body image perceptions and self-monitoring behaviors among participants.

4.7 Relationship Between Health-Related Fitness and Perceived Body Image of Premenopausal Female Primary School Teachers

The study investigated the impact of participation in Health-Related Fitness Components on individuals' perceived body image. A paired t-test was conducted on pre-test and post-test data, with the results shown in Table 8. While differences in post-test and pre-test means were observed between the control and experimental groups, only cardiovascular endurance and lower back flexibility were significantly related to body image. The experimental group showed a significant positive correlation between cardiovascular endurance and body image ($r=.78, p<.001$), as well as a positive relationship between lower back flexibility and body image ($r=.453, p=.001$).

Table 3. ANOVA: Means and standard deviations: cardiovascular endurance

Component	Group	N	Mean Diff (Post-Pre)	Std. Deviation	ANOVA				
					Sum of squares	df	Mean square	F	Sig.
Cardiovascular endurance	Experimental	23	.6870	.63124	12.545	1, 47	12.545	39.955	< 0.001
	Control	26	-.3269	.48954					

Source: (Author, 2023)

Table 4. Pre and Post-Test Ratings: Body Mass Index

	BMI PRE-TEST				BMI POST-TEST			
	Exp.	%	Cont.	%	Exp.	%	Cont.	%
>18.5 Underweight	0	0%	0	0%	0	0%	0	0%
18.5-24.9 normal	5	21.7%	3	11.5%	7	30.4%	3	11.5%
25.0-29.9 overweight	9	39.1%	14	53.8%	8	34.8%	13	50.0%
>30 obese	9	39.1%	9	34.6%	8	34.8%	10	38.5%
Total	23	100.0%	26	100.0%	23	100%	26	100%

Table 5. Body image consciousness

Body Image Consciousness among Study Respondents		PRE-TEST			POST-TEST	
		N	Mean	SD	Mean	SD
I consciously monitor my body weight.	Exp	23	3.22	1.126	3.48	1.039
	Cont	26	2.46	1.140	2.54	1.174
I accept and appreciate my natural body shape	Exp	23	4.09	.949	4.09	.949
	Cont	26	4.31	.679	4.12	.909
I want a perfect body.	Exp	23	3.39	1.196	3.39	1.196
	Cont	26	3.81	1.327	3.81	1.327
I feel like my body does not represent me.	Exp	23	2.22	1.313	2.22	1.313
	Cont	26	2.15	1.461	2.15	1.461
I want to reduce the size of my waist.	Exp	23	4.04	1.065	4.13	.968
	Cont	26	3.54	1.555	3.54	1.555
I follow exercise regimes to the letter to maintain my figure	Exp	23	1.91	.515	3.17	1.072
	Cont	26	2.42	2.120	2.50	2.140

Body Image Consciousness among Study Respondents		PRE-TEST			POST-TEST	
		N	Mean	SD	Mean	SD
I am determined not to allow age to mess my physical appearances	Exp	23	4.09	.596	4.22	.518
	Cont	26	4.27	.874	4.27	.874
I am very concerned about what others think of my body weight.	Exp	23	2.87	1.140	2.96	1.147
	Cont	26	2.58	1.301	2.50	1.273
I am physically attractive.	Exp	23	3.26	1.176	3.65	1.027
	Cont	26	3.96	1.113	4.08	1.093
I experience emotional distress on account of my body	Exp	23	2.52	1.344	2.57	1.376
	Cont	26	1.85	.613	1.85	.613
I am concerned about my body weight all the time	Exp	23	2.83	1.072	3.65	.935
	Cont	26	2.77	1.306	2.77	1.306
I feel uncomfortable and awkward in my body	Exp	23	2.09	1.240	2.00	1.044
	Cont	26	2.12	1.177	2.12	1.177
I often feel proud because of my looks	Exp	23	3.39	1.196	3.52	1.123
	Cont	26	3.81	1.297	3.81	1.297
I often feel that people ignore me because of my looks	Exp	23	2.04	.928	1.87	.815
	Cont	26	1.96	.916	1.96	.916
I feel that my body does not measure up to image of an ideal body depicted by the social media	Exp	23	3.09	1.203	3.00	1.243
	Cont	26	2.85	1.317	2.85	1.317
I accept and appreciate body differences	Exp	23	4.04	.475	4.26	.449
	Cont	26	4.12	.816	4.12	.816
I feel comfortable around persons with different looks	Exp	23	3.70	.926	3.83	.984
	Cont	26	3.77	.992	3.77	.992

Table 6. Individual factors affecting body image

Individual factors affecting Body Image among respondents	Group	N	Pre-test		Post-test	
			Mean	SD	Mean	SD
I make friends easily across individuals with varied body images.	Exp	23	3.48	.994	3.48	.994
	Cont	25	3.48	1.388	3.48	1.388
My looks cause me to have low self-esteem	Exp	23	1.83	1.337	1.87	1.325
	Cont	26	1.73	.919	1.73	.919
Overall I am satisfied with life.	Exp	23	3.30	1.259	3.30	1.259
	Cont	26	3.58	1.172	3.58	1.172

Individual factors affecting Body Image among respondents	Group	N	Pre-test		Post-test	
			Mean	SD	Mean	SD
I feel comfortable and confident in my body.	Exp	23	3.48	1.163	3.48	1.163
	Cont	26	3.92	1.197	3.92	1.197
My body image causes me a lot of anxiety	Exp	23	2.57	1.376	2.61	1.340
	Cont	26	1.88	.909	1.88	.909
I believe that there is something wrong with my body.	Exp	23	2.00	.953	2.00	.953
	Cont	26	1.69	1.050	1.69	1.050
I am a keen follower of beauty pageants on television	Exp	23	2.35	1.112	2.35	1.112
	Cont	26	2.04	1.371	2.04	1.371
My body has made me feel ashamed, insecure and anxious	Exp	23	2.26	1.214	2.30	1.259
	Cont	26	2.04	1.371	2.04	1.371
I have constant negative thoughts about my body	Exp	23	2.30	1.222	2.35	1.191
	Cont	26	1.77	.815	1.77	.815
Body shape, size and image are everything to me	Exp	23	3.26	1.176	3.39	1.196
	Cont	26	3.31	1.644	3.31	1.644
I believe that growing older makes one less physically attractive	Exp	23	3.00	1.243	3.17	1.403
	Cont	26	3.12	1.505	3.08	1.521
I care very much what my friends and peers think about my body weight	Exp	23	3.09	1.203	2.96	1.261
	Cont	26	2.54	1.421	2.54	1.421
A nice body will be attractive to the opposite sex	Exp	23	4.09	1.041	4.26	1.010
	Cont	26	3.92	1.383	3.92	1.383
I am always concerned about my shape, size and image.	Exp	23	3.17	1.154	3.57	1.037
	Cont	26	3.08	1.412	3.08	1.412
I am dissatisfied with my body	Exp	23	3.22	1.347	3.57	1.037
	Cont	26	2.69	1.258	3.08	1.412
I am ashamed of my body	Exp	23	1.30	.703	1.78	.998
	Cont	26	2.08	1.294	2.15	1.347

Table 7. Significance of differences in body image consciousness

Paired Samples Test					
Body Image Consciousness among Study Respondents	Paired Differences		T	Df	Sig. (2-tailed)
	Mean	Std. D.			
I consciously monitor my body weight	-.163	.553	-2.066	48	.044*
I accept and appreciate my natural body shape	.102	.743	.962	48	.341
I want a perfect body.	-.388	.862	-3.150	48	.003*
I feel like my body does not represent me.	-.265	.569	-3.263	48	.002*
I want to reduce the size of my waist.	-.041	.286	-1.000	48	.322
I follow exercise regimes to the letter to maintain my figure	-.633	1.035	-4.280	48	< 0.001*
I am determined not to allow age to mess my physical appearances	-.061	.317	-1.353	48	.182
I am very concerned about what others think of my body weight.	.000	.408	.000	48	1.000
I am physically attractive.	-.245	.630	-2.720	48	.009*
I experience emotional distress on account of my body	-.020	.249	-.573	48	.569
I am concerned about my body weight all the time	-.388	.862	-3.150	48	.003*
I feel uncomfortable and awkward in my body	.041	.498	.573	48	.569
I often feel proud because of my looks	-.061	.475	-.903	48	.371
I often feel that people ignore me because of my looks	.082	.344	1.662	48	.103
I feel that my body does not measure up to image of an ideal body depicted by the social media	.041	.200	1.429	48	.159
I accept and appreciate body differences	-.102	.421	-1.698	48	.096
I feel comfortable around persons with different looks	-.061	.556	-.771	48	.444

Table 8. Relationship between health-related fitness and perceived body image of premenopausal female primary school teachers

Component of fitness	Group	N	R	Df	Sig.
Cardiovascular endurance	Experimental	23	.784	47	.000
	Control	26	.243	47	.056
Low Back Flexibility	Experimental	23	.453	47	.001
	Control	26	.157	47	.287
Abdominal Strength	Experimental	23	.246	47	.092
	Control	26	.187	47	.202
Upper Body Strength	Experimental	23	.246	47	.098
	Control	26	.223	47	.128

4.8 Discussions

This study examined the impact of an eight-week walking program on the health-related fitness levels and perceived body image of premenopausal primary school teachers in Mvita, Mombasa County. Key findings focused on cardiovascular endurance, abdominal muscular endurance, low back flexibility, upper body strength-endurance, and Body Mass Index (BMI). Perceived body image was analyzed through four themes: body image consciousness, influencing factors, socio-cultural effects, and coping strategies. The study highlighted the program's role in improving fitness and body image perceptions.

5. CONCLUSIONS

This study involved 23 premenopausal teachers, aged 30 to 45 years, from Mvita Sub-county, who participated in an eight-week walking program. Their health-related fitness components, including cardiovascular endurance, abdominal muscular endurance, low back flexibility, upper body strength-endurance, and body mass index (BMI), were evaluated before and after the program. The results showed significant improvements in cardiovascular endurance, abdominal muscular endurance, upper body strength-endurance, and BMI, though low back flexibility did not show notable changes.

The second objective of the study focused on the perceived body image of the participants. The majority of respondents expressed satisfaction with their body image, desiring a perfect body, particularly aiming to reduce waist size. They were determined not to let age affect their physical appearance and generally felt attractive, proud, and accepting of body differences. However, many participants were neutral about

closely monitoring their body weight or being concerned with others' perceptions of their body weight. Most rejected the idea that emotional distress or discomfort about their bodies existed. As a result, the null hypotheses regarding the effects of the walking program on health-related fitness components and body image, as well as the relationship between fitness and body image, were rejected, and the alternate hypotheses were accepted.

The Eight-Week Walk Programme significantly enhanced participants' health-related fitness, including cardiovascular endurance, abdominal and upper body strength, and Body Mass Index (BMI). Additionally, the study revealed that perceived body image is primarily shaped by individual factors rather than social media ideals, challenging previous beliefs that media influenced body ideals. For premenopausal teachers, body image perceptions were more influenced by personal factors than external influences like media.

6. RECOMMENDATIONS

The study recommended;

- Promote walking as a simple and effective way to improve Health-Related Fitness (HRF) components.
- Encourage governing bodies, such as the Teachers Service Commission, to reinforce walking programs for better health.
- Advocate for incorporating simple exercises, like walking, into daily routines.
- Recommend further research on:
- Methods to integrate walking into teachers' and professionals' lives.
- Strategies to improve the self-image of premenopausal women.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

CONSENT AND ETHICAL APPROVAL

Ethical and logistical approvals were obtained from Kenyatta University's Graduate School, Ethics Review Committee, and NACOSTI. Additionally, permission was granted by the County Director of Education to allow the participation of female teachers in Mvita, Mombasa. All participants provided informed consent, and confidentiality was maintained throughout the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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