

The Association of Exercise with Both Erectile and Sexual Function in Black and White Men

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ABSTRACT

Introduction. There is growing interest in using exercise to treat. Although many studies have highlighted the relationship between better erectile function and exercise, black men have been underrepresented in the literature. **Aims.** This study aims to determine whether or not exercise is associated with better erectile as well as sexual function in black men and define a minimum exercise threshold for which better erectile/sexual function is seen in a cross-sectional study.

Methods. Our study population consisted of 295 healthy controls from a case-control study assessing risk factors for prostate cancer conducted at the Durham Veterans Affairs Medical Center, which contained a substantial proportion of black men ($n = 93$; 32%). Exercise and erectile/sexual function were both determined from self-reported questionnaires. Subjects were stratified into four exercise groups: <3 (sedentary), 3–8.9 (mildly active), 9–17.9 (moderately active), and ≥ 18 (highly active) metabolic equivalents (MET) hours/week. The association between exercise and erectile/sexual function was addressed utilizing multivariable linear regression analyses.

Main Outcome Measures. Erectile/sexual function was defined by the validated Expanded Prostate Cancer Index Composite sexual assessment, which was analyzed as a continuous variable (sexual function score). Clinically significant better function was defined as half a standard deviation (SD) (16.5 points).

Results. Median sexual function score was 53 (SD = 33). Higher exercise was associated with a better sexual function score ($P < 0.001$). Importantly, there was no interaction between black race and exercise (P -interaction = 0.772), meaning more exercise was linked with better erectile/sexual function regardless of race. Overall, exercise ≥ 18 MET hours/week predicted better erectile/sexual function ($P < 0.001$) with a clinically significant 17.3-point higher function. Exercise at lower levels was not statistically ($P \geq 0.147$) or clinically (≤ 8.14 points higher function) associated with erectile/sexual function.

Conclusions. In a racially diverse population, exercise ≥ 18 MET hours/week is highly associated with better erectile/sexual function regardless of race. **Simon RM, Howard L, Zapata D, Frank J, Freedland SJ, and Vidal AC. The association of exercise with both erectile and sexual function in black and white men. J Sex Med 2015;12:1202–1210.**

Key Words. Exercise; Exercise Therapy; Penile Erection; Erectile Dysfunction; Impotence

Introduction

Sexual dysfunction is a common problem among older men typically presenting as erectile dysfunction (ED) in 60% in men above the age of 65 [1]. In addition to increased age, other con-

ditions such as obesity, diabetes, sedentary lifestyle, smoking, coronary artery disease, and lower socioeconomic status have also been highly associated with the presence and progression of ED [2–14]. Given the high prevalence of ED, multiple new pharmacologic options have been developed

for treating ED [15,16]. However, as these medications are not without side effects and are not 100% effective [16], there is growing interest in alternative ED treatments—specifically exercise [6,17–20].

Several large observational studies have highlighted the relationship between physical activity and erectile function [1,2,4,6,21]. Additionally, several randomized control trials have demonstrated improved erectile function with exercise [15,18,20,22,23]. Notably, a randomized trial conducted by Esposito et al. [20] demonstrated a significant increase in erectile function with increased exercise and decreased caloric intake in obese men ages 35–55 [20]. Consequently, several studies have attempted to determine a minimum amount of exercise needed to achieve an improvement in erectile function [6,17–19]. Importantly, a randomized trial conducted by Khoo et al. demonstrated sedentary obese Asian men had a significant increase in erectile function after 200–300 minutes of moderate intensity exercise (16.5–25 metabolic equivalents [MET] hours/week) [18]. However, in that study, men randomized to exercise of <11.5 MET hours/week did not demonstrate significant improvements in erectile function [18]. This suggests there may be a threshold below that exercise is not related to erectile function. Consistent with this, several observational studies found a similar threshold of minimal exercise to achieve better erectile function of approximately 16–40 MET hours/week [17,19,24].

Although numerous studies have highlighted the effect of exercise and erectile function, there has been minimal representation (<10%) of black men in these prior studies as well almost no analysis of other components of sexual function [4,6,15,17–22]. As such, the effect of exercise on both erectile and sexual function in this population is relatively unknown. Moreover, no study has ever addressed the minimal amount of exercise needed to improve erectile and sexual function in black men. Although it is debated whether black race is a risk factor for ED or not [11], several studies have demonstrated the increased prevalence of ED risk factors in the American black population including obesity, diabetes, sedentary lifestyle, and lower socioeconomic status [5,7–11,25]. As such, two key questions remain that we sought to address: Is exercise associated with erectile/sexual function in black men? If so, is there a minimum exercise threshold that is associated with better erectile/sexual function in black men? We hypothesized that (i) there would be a statistically and

clinically significant association with exercise and better erectile/sexual function in black men and in our population overall, and (ii) there would be a minimum exercise threshold for which this association was observed. To test our hypotheses, we examined self-reported exercise and erectile/sexual function from a group of men who served as healthy controls for an ongoing case-control study of prostate cancer risk factors, which contained a substantial proportion (32%) of black men [26].

Materials and Methods

Study Population

Our accrual process for this study has been reported previously [26]. Briefly, our study population consisted of healthy controls from a case-control study assessing risk factors for prostate cancer conducted at the Durham Veterans Affairs Medical Center (DVAMC) in Durham, North Carolina. Subjects for this analysis were recruited from the DVAMC Internal Medicine, Dermatology, and Urology Clinics [26]. Eligibility criteria were age ≥ 18 , no prior history of prostate cancer, and having a prostate-specific antigen (PSA) test conducted in the year prior to enrollment but not recommended to undergo biopsy. Questionnaires were administered to subjects to assess family, medical, and social history as well as questions to assess amount of exercise per week and erectile/sexual function. Participants were instructed to complete the questionnaire at home at their convenience and return it to study personnel in a provided, pre-addressed stamped envelope. Between 2007 and 2012, we identified 596 potential healthy controls of whom 498 signed written consent forms for this study (84% accrual rate). We excluded men that had missing data in our measures of weekly exercise ($n = 158$), erectile/sexual function ($n = 35$), waist circumference ($n = 2$), body fat percentage ($n = 6$), smoking status ($n = 1$), and coronary artery disease ($n = 1$). Thus, a total of 295 men were included in the analyses. We compared the two groups and found that except for fewer smokers (70.2% vs. 72.5%, $P = 0.043$), and more black men in the excluded group (47% vs. 32%, $P < 0.001$), there were no other differences between groups. Institutional Review Board approval was obtained at Duke University and at the DVAMC, and all subjects signed an informed consent prior to enrollment.

Exercise was assessed using the leisure score index of the Godin Leisure-Time Exercise Questionnaire [27]. The leisure score index contains

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