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ORIGINAL RESEARCH

Effect of Sexual Intercourse on Lower Extremity Muscle Force in Strength-Trained Men

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ABSTRACT

Background: Sex has been deemed taboo for athletic performance going back to ancient Rome and Greece, as the act of sex was thought to promote ease and a sense of relaxation.

Aim: This study examined the effect of sexual intercourse completed 12 hours before a bout of isokinetic dynamometry on muscle force production in strength-trained men.

Methods: 12 Healthy physically active men (age = 25.6 ± 3.8 years) who were sexually active participated in this study. After men completed a familiarization session on day 1, muscle force was measured during 5 sets of maximal unilateral knee extension (KE) and knee flexion exercise at 30 deg/s after men engaged in or abstained from sexual intercourse within the previous 12 hours. The order of this treatment was randomized across participants, and time of day was maintained across all sessions.

Outcomes: Lower extremity muscle strength and endurance were measured.

Results: Data showed no significant effect ($P = .34$ and $P = .39$) of sexual intercourse on peak or average KE or knee flexion torque. For example, after sexual intercourse, KE torque was similar in set 1 (198.9 ± 39.1 ft/lb vs 190.2 ± 28.7 ft/lb) and set 5 (163.2 ± 30.8 ft/lb vs 159.4 ± 35.2 ft/lb) compared to when men abstained from sexual intercourse.

Clinical Translation: Engaging in sexual intercourse on the night before exercise is not detrimental to muscular strength in active men.

Conclusions: This study is strengthened by use of a homogeneous sample of active men as well as precise determination of changes in muscle function via isokinetic dynamometry. However, completion of sexual intercourse was confirmed through self-report rather than direct observation, so it is not certain if participants actually met the requirements of each condition. Results demonstrate that sexual intercourse does not significantly impact lower extremity muscle force, which suggests that restricting sexual activity before short-term, high-force activity is unnecessary. **Valenti LM, Suchil C, Beltran G, et al. Effect of Sexual Intercourse on Lower Extremity Muscle Force in Strength-Trained Men. J Sex Med 2018;XX:XXX–XXX.**

Key Words: Sexual Intercourse; Isokinetic Dynamometry; Knee Extension/Flexion; Muscle Force; Men

INTRODUCTION

Engagement in sexual intercourse before athletic competition has been a subject of controversy for many years. It is not uncommon for coaches to recommend that athletes refrain from sexual intercourse preceding an event in fear that it could harm their performance. Athletes such as Muhammad Ali and Brian Bosworth proclaimed that engaging in sexual intercourse prior to competition was detrimental to their athletic ability.[1] It is suggested that this commonly held belief stems from the idea that abstaining from sexual intercourse elicits an increase in rage and aggressive behavior resulting in improved athletic performance.[2] Consequently, partaking in sexual intercourse resulting in orgasm is thought to reduce the positive effects associated with abstinence and may reduce testosterone levels, which in turn may be detrimental to athletic performance.[2] It is evident that sexual intercourse leading to orgasm elicits various physiological changes including reduced testosterone, slower recovery response, and increased happiness, which may decrease physical function.[3] In addition, there are reports that abstinence may promote a drive to excel in sports, as a world renowned 5K runner famously said, "Sex makes you happy, and happy people don't run a 3:47 mile."[2]

Despite these mostly anecdotal reports, literature pertaining to this topic is relatively limited. In inactive men, Boone and

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Gilmore[4] showed that sex, which was defined as sexual intercourse finishing in orgasm, led to no change in maximal oxygen uptake, heart rate, or blood pressure compared to a trial preceded by abstinence from sex. Almost 30 years earlier, Johnson[5] reported no change in grip strength in former men athletes who engaged in sexual intercourse. Nevertheless, there are reports that sexual intercourse between a man and a woman is correlated with improved psychological and physiological function. For example, participants who partook in penile-vaginal intercourse demonstrated an improved response to stress and increased emotional awareness,[6] which may potentially enhance exercise performance. Additionally, there is evidence demonstrating a relationship between frequency of orgasm via sexual intercourse and risk for mortality. Smith et al[7] reported that individuals who experienced more frequent orgasms had 50% lower all-cause mortality vs individuals with less frequent orgasms, which may improve health status in men. More recently, Corona et al[8] demonstrated reduced risk of major cardiovascular events with higher frequency of sexual intercourse in men with erectile dysfunction. While much of the current literature focuses on changes in hormone levels or aerobic performance in response to sexual intercourse, no studies have examined changes in lower extremity muscle force after sexual intercourse.[9] This omission is unfortunate considering that performance in many sports is highly dependent on muscle strength.

The aim of this study was to examine the effects of sexual intercourse resulting in orgasm on lower extremity muscle force in strength-trained men. It was hypothesized that sexual intercourse would diminish lower extremity force production compared to abstention. This line of inquiry applies to health care professionals who may treat athletes who are recovering from injury or preparing for competition.

METHODS

Experimental Design

Participants completed 3 sessions held at the same time of day within subjects (8:30−11:30 AM). They refrained from physical activity for 24 hours before all sessions and maintained their dietary intake, which were confirmed with a written log. They underwent testing of lower extremity muscle force after partaking in or abstaining from sexual intercourse the night before. After baseline testing, the investigators informed each participant that 2 additional sessions would be required, 1 held after completion of sexual intercourse the night before, or alternatively, abstention. The order of condition was randomized across subjects using a Latin squares design.

Subjects

12 Healthy active men participated in the study. Their demographic traits are shown in Table 1. They were recruited from the surrounding areas through word of mouth. Inclusion criteria included absence of current or previous knee injuries and not ingesting any medications or supplements that might alter the study outcomes. 2 Additional inclusion criteria were that all must undergo strength training a minimum of 2 d/wk in the preceding year and be currently engaged in a relationship with a consenting sexual partner. Exclusion criteria included men with diagnosed disease and knee injury as well as those who do not regularly perform strength training and who do not have a regular sexual partner. Prior to providing written informed consent, all participants filled out a health-history questionnaire to ensure that they met our inclusion criteria. All procedures were approved by the university institutional review board.

Table 1. Participant demographic characteristics (N = 12)

Parameter	Mean ± SD
Age, y	25.6 ± 3.8
Height, cm	177.8 ± 10.4
Body mass, kg	84.9 ± 11.5
Frequency of men who engaged in sexual intercourse for >/<30 min	4/8

Experimental Procedures

The 3 testing sessions were separated by 3−7 days and were held within a 3-week period. Participants were asked to complete muscle force testing after abstaining from sexual intercourse or engaging in sexual intercourse within the past 12 hours, which were verified through surveys as well as verbal confirmation on each day. On day 1, participants reported to the laboratory dressed in exercise attire, and completed a 5-minute warm-up of light cycling (Monark 894e, Vansbro, Sweden). Subsequently, they completed a familiarization session of muscle force testing on the isokinetic dynamometer (Biodex System 3, Shirley, NY) to reduce learning effects. Straps were placed over the exercising leg, trunk, and hips to restrict work to the exercising limb, and settings for the chair height and seat angle were recorded. Then, knee extension (KE) and knee flexion (KF) range of motion was determined for each participant. Participants were instructed to exert maximal effort during 5 sets of 4 repetitions of unilateral KE and KF exercise at a contraction velocity equal to 30 deg/s. There was a 30-second recovery between each set. From each set, peak and average KE and KF torque was determined. Verbal encouragement was not provided during the sessions. In strength-trained men, our laboratory's coefficient of variation for KE and KF torque is between 5% and 6%.

Participants returned a minimum of 72 hours later to a maximum of 7 days later at the same time of day within subjects, following the aforementioned pre-test guidelines, which were confirmed with a written survey. In addition, participants filled out a Fatigue Inventory Scale (R. Kreider, personal communication, June 2010) consisting of various questions (0−10 Likert scale) pertaining to general feelings of fatigue, and a brief survey to confirm that each subject satisfied the sexual activity criterion for that session, ie, they had abstained or participated in sexual