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Role of Exercise, Fitness and Nutrition in Prevention of Male Sexual Dysfunction

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ABSTRACT

Erectile Dysfunction (ED) is one of the many results of degenerative lifestyles which includes lack of exercise, poor fitness and poor nutrition, which most often results from poor circulation. Exercise, fitness and proper nutrition can improve vascular health and reverse or control the factors that contribute to erectile dysfunction. Men who are fit and exercise vigorously for 20 to 30 minutes per day are said to be less likely to have erection problems as inactive men. The incidence of ED was said to be common among of men aged 18 to 59 years., and higher among men with certain medical disorders such as diabetes mellitus, heart disease, hypertension, and decreased HDL levels. Exercise has also shown to regulate blood sugar by increasing the amount of energy utilized and helps maintain a healthy weight and body composition, in addition, to an increase in testosterone levels which enhances libido in the male. Men who are physically inactive are more likely to develop prostate cancer, and fitness appeared to have an impact towards lowering the risk of developing prostate cancer. Maintaining a healthy weight, reducing stress and making healthy food and beverage choices, can have a positive effect on a man's ability to achieve and maintain an erection. Excess body fat is clearly related to several health problems, including cardiovascular diseases, diabetes mellitus (type II), and certain forms of cancers, all of which are detrimental to penal erectile functioning. Men who typically consume foods that promote inflammation and contain cancer-promoting substances; that is high in fat, lots of red meat, and one that is low in fibre, fruits, and vegetables, have a higher risk of developing ED than men who do not eat these foods. Eating foods that contain folic acid, vitamin C, and vitamin E support the pathways that lead to the release of nitric oxide and the promotion of erectile functioning. Alcohol abuse in men, for instance, had been found to cause a disruption in testosterone production and shrinkage of the testes.

Keywords Exercise, Fitness, Nutrition and Erectile dysfunction.

INTRODUCTION

Sexual health and functioning are important determinants of quality of life especially in our society today, and disorders such as Erectile Dysfunction (ED) in the male are becoming increasingly very important [1]. This is the era when youths are supposed to be strapping, strong, and healthy, yet the increased trend of cases of erectile dysfunction among young men, and which use to be problems of older-man [2]. Erectile dysfunction can be so common in some cases among certain sedentary young men in their 30s and 40s to the extent that it is almost considered normal. Well, it may be "normal" in the present day certain context, but certainly not natural. Erectile dysfunction is one of the many results of degenerative lifestyles, such as poor fitness and poor nutrition, which most often results from poor circulation, and abnormal hormonal balance. Indeed, the normal erectile function is easy to maintain if fitness is maintained and as such young people are urged to hold their horses before giving in to dangerous and toxic pharmaceutical solutions [3].

Men and women of all ages are increasingly seeking guidance in an effort to improve their relationships and experience satisfying sexual lives [1]. The term erectile dysfunction refers to a recurring and persistent condition where a man is unable to achieve or maintain an erection and complete sexual intercourse. In most cases, erectile dysfunction is a sign of a deeper, underlying problem and too many clinicians, it is considered to be one of the earliest signs of a cardiovascular disease.

Unfortunately, some people have a gleaned simplistic understanding of the role of 3 Phosphodiesterase-5 (PDE-5) inhibitors (ie, sildenafil such as Viagra, Levitra, and tadalafil) and other chemotherapeutic management of EDs. Most people are not willing to undergo a long evaluation, testing process, and fitness regime to obtain a better understanding and effectively manage their sexual problem [3]. They usually wish to obtain medications where possible by a phone call from their clinician or even over the Internet with minimal or no expert contact. The role of the expert in such situations is usually reduced to educating the people about realistic sexual expectations resulting from lack of exercises, improper fitness and nutrition, and help towards preventing the misuse, overuse, and abuse of medications [4].

Exercise, fitness and proper nutrition can improve vascular health and reverse or control the factors that contribute to erectile dysfunction. They also have direct effects on erectile functioning by improving the general health and circulation of all parts of the body, including the penis. According to the American Council on Exercise (ACE) in 2005, men who are fit and exercised vigorously for 20 to 30 minutes per day are less likely to have erection problems as inactive men. Additionally, ACE sites a University of California study where 78 sedentary men reported more reliable sexual functioning and more frequent sexual activity after exercising one hour per day, three to four times a week.

Erectile dysfunction has the spread among those with almost any disease that may alter the nervous, vascular and hormonal systems [5]. It is usually caused by or associated with vascular diseases and conditions such as diabetes hypertension, and coronary artery disease [6]. Exercise, fitness and proper nutrition conditions the development and adaptation of the body and its various systems towards the prevention of erectile dysfunction. Sexual beneficial changes in cardiovascular, hormonal, metabolic, neurological and respiratory system results with increased exercise capacity, fitness, and nutrition proper diets are needed for functioning and avoidance of certain disease conditions which are detrimental to the human healthy well-being including penile erections. Men, who are physically inactive, unfit and on inadequate diets are more likely to develop detrimental conditions which are adverse to erectile functions than their fitter peers.

Epidemiology of erectile dysfunction

The incidence of moderate or severe ED according to a finding by Derby, Mohr, Goldstein et al, more than doubled between the ages of 40 and 70. In the National Health and Social Life Survey of the United States (NHSLS), this was a nationally representative sample of men aged 18 to 59 years. Indicated that ten percent (10%) of men reported being unable to maintain an erection. Incidence was highest among men in the 50 to 59 age group (21%) and among men who were poor (14%), divorced (14%), and less educated (13%). The incidence of ED was also higher among men with certain medical disorders such as diabetes mellitus, heart disease, hypertension, and decreased HDL levels. In the Massachusetts Male Aging Study (MMAS), a community-based survey of men between the ages of 40 and 70, 52% of responders reported some degree of ED. Complete ED occurred in 10% of respondents, moderate ED occurred in 25%, and minimal ED in 17%. Smoking was said to be a significant risk factor in the development of ED. Medications used to treat diabetes or cardiovascular diseases were also implicated as additional risk factors for the development of the condition [3].

It has been estimated that four out of five men with ED have BMIs (Body Mass Indexes) greater than 25. According to the researchers, overweight men with BMIs of 28.7 (that's about 195 pounds for a 5'9" male) have a 30% greater risk for developing ED than normal-weight men. In addition to the risk of sexual dysfunction, being overweight increases the risk of heart disease, high blood pressure, type 2 diabetes, and other chronic diseases. Furthermore, high blood pressure, diabetes, heavy alcohol consumption, and blood-pressure drugs all put a man at higher risk for ED [6-10]. "It is well-accepted that obesity is a co-factor towards the development of atherosclerotic disease that can impede blood flow to any part of the body [3]. According to Perlow, "Losing weight can improve blood flow and competent not only to the heart and other organs but also includes the penis".

A relationship between obesity, a high-fat diet, and erectile dysfunction was explored by an international team of scientists in 2009, which used a mouse model to evaluate the impact of obesity induced by a high-fat diet on erectile function. They found that compared with mice fed on a normal diet, those fed the high-fat diet had impairments

related to the endothelium and cavernosal relaxation, which leads to erectile dysfunction. In another study, researchers reported that among the 2,725 normal weight, 1,488 overweight, and 350 obese men in their study of sexuality and obesity, obese men were more likely than normal-weight men to experience erectile dysfunction [11,12].

Etiology of erectile dysfunction

Erectile dysfunction is usually of multifactorial origin, ranging from organic, physiologic, endocrine, and psychogenic factors. Broadly speaking, the causes of ED can be divided into organic and psychogenic origins. However, many men with organic aetiologies (such as diabetes, prostate enlargements, and physical trauma of the penis and so on) may also have an associated psychogenic component such as depression, lack of libido, and fear of performance failure. ED is often associated with other vascular diseases and conditions such as diabetes hypertension, and coronary artery disease [6]. Infective diseases conditions such as gonorrhoea and herpes which produce changes in the smooth muscle tissue of the corpora cavernous of the penis also affect ED [13,14].

Conditions associated with reduced nerve and endothelium function, such as aging, hypertension, smoking, hypercholesterolemia, and diabetes, alter the balance between contraction and relaxation factors [15]. These conditions cause circulatory and structural changes in penile tissues, resulting in arterial insufficiency and defective smooth muscle relaxation all over the body.

Exercise and fitness relationship to erectile dysfunction

Exercise is a component of physical activity and is a structured activity specifically planned to develop and maintain physical fitness. Physical fitness is a conditioning referring to the development of the adaptation of the body and its various systems to daily physical strains imposed upon it. Physical characteristics that constitute health-related physical fitness include strength and endurance of skeletal muscles, joint flexibility, body composition, and cardiorespiratory endurance. All these attributes changes in response to appropriate physical conditioning, which and are all related to health [15].

Penile tumescence leading to erection depends on the increased flow of blood into the lacunar network after complete relaxation of the arteries and corporal smooth muscle. The microarchitecture of the corporates composed of a mass of smooth muscle (trabecula) which contains a network of endothelial-lined vessels (lacunar spaces). Subsequent compression of the trabecular smooth muscle against the fibroelastic tunica albuginea causes a passive closure of the emissary veins and accumulation of blood in the corpora.

The normal male sexual function requires (1) An intact libido; (2) The ability to achieve and maintain a penile erection; (3) Ejaculation; and (4) Detumescence. Libido refers to sexual desire and is influenced by a variety of visual, olfactory, tactile, auditory, imaginative, and hormonal stimuli, particularly testosterone. Libido can also be influenced by hormonal, psychiatric disorders, medications and fitness level of the individual. Normal health, proper nutrition, and fitness are essential for interest in sexual functions by an individual [16,17].

Aerobic exercise strengthens the cardiovascular system by making the heart stronger and the lungs more efficient. A stronger heart delivers more blood to the body with fewer beats, which also lowers blood pressure. Efficient lungs can transfer more oxygen into the bloodstream with each breath. Regular exercise enhances venous return and increases the metabolism so that we burn more calories at rest, which is essential for libido [16]. Exercise has also been shown to regulate blood sugar by increasing the amount of energy we use and helps us maintain a healthy weight and body composition. Additionally, exercises can, also causes an increase in testosterone levels which enhances libido in male [15].

Some physical limitations are perhaps only indirectly related to health, but individuals who cannot pick up and hug a child or must struggle to get up from a soft chair surely have a lower quality of life than that enjoyed by their fitter peers, and cannot be expected to enjoy proper erectile performance [18]. Exercise, or the lack of physical activity, can impact erectile function in several ways. Daily moderate exercise, for instance, can stimulate the production of nitric oxide, which is necessary for erection [19]. Maintenance of normal body weight can also promote nitric oxide stimulation by insulin. The cardiovascular system is intimately involved in the development of erectile dysfunction, as such erectile dysfunction can be an early warnings sign of circulatory and heart diseases [20]. Engaging in regular aerobic exercises, such as walking, biking, and other cardiovascular fitness activities reduces the risk of heart disease and enhance blood circulation [12].

In a large study conducted at Harvard University, researchers evaluated the lifestyle habits of 31,742 men ages 53 to 90 years, none of whom had prostate cancer. The researchers discovered that 33 percent of men reported erectile dysfunction within the previous three months, but men who exercised 3 to 5 hours a week had 30 percent less risk of having erectile dysfunction. Given that the risk for erectile dysfunction goes up 5 percent a year after age 50, this study showed that men who exercise regularly can gain 10 more years free of erectile dysfunctions [21].

Exercise can also impact a man's erectile function through its effect on prostate health. Men who are physically inactive are more likely to develop prostate cancer. In one such study published in November 2001 reported that men who regularly engaged in moderate exercise appeared to have a lower risk of developing prostate cancer [22]. Men with prostate cancer generally experience erectile dysfunction as a result of treatment for the condition, as such anything that can lower the risk of prostate cancer will, by association, impact on erectile function [23].

Exercise training favorably alters lipid and carbohydrate metabolism. Exercise-induced increase in high-density lipoproteins which are strongly associated with changes in body weight; and a greater increase in high-density lipoproteins had been found in men who exercise at higher levels of recreational activities such as running [3]. Regular exercise in overweight men enhances the beneficial effect of a low saturated fat and low-cholesterol diet on blood lipoprotein levels. Endurance training has effects on adipose tissue distribution, and the effect on adipose tissue distribution is likely to be important in reducing cardiovascular risk. Exercise training also has an important effect on insulin sensitivity, and intense endurance training has a highly significant effect on fibrinogen levels of healthy older men [24]. Developing and maintaining aerobic endurance, joint flexibility, and muscle strength is important for a comprehensive exercise program geared toward erectile functioning and intact libido, especially as people age [3].

Diet and erectile dysfunction

Many men are usually surprised to learn that their and nutritional habits can have a significant impact on erectile dysfunction. Habits such as smoking, the use of alcohol, and lack of physical exercises can have a negative impact on the ability and maintenance of erection. However, maintaining a healthy weight, reducing stress and making healthy food and beverage choices, can have a positive effect on a man's ability to achieve and maintain an erection [2]. When considered together, choosing good healthy dietary habits can help in the achievement and maintenance of good erectile function. In fact, a study from the University of California, Los Angeles, reported that a multifaceted approach is necessary to maintain and maximize erectile health [10].

The study of human nutrition/diet involves the effects of food on health and survival of the human body. Proper diets are needed for the adequate functioning of the human body, and avoidance of certain disease conditions which are detrimental to its healthy well-being [2]. The human body naturally stores fat tissue under the skin and around organs and joints [20]. Fat is critical for good health because it is a source of energy when the body lacks the energy necessary to sustain life processes, and it provides insulation and protection for internal organs. But the accumulation of too much fat in the body is associated with a variety of health problems among which are erectile dysfunctions [19].

Excess body fat is clearly related to several health problems, including cardiovascular diseases, diabetes mellitus (type II), and certain forms of cancers, all of which are detrimental to the penile erectile functioning [6]. Body composition is affected by diet, but exercise habits play a crucial role in preventing obesity and maintaining acceptable levels of body fat [3].

Obesity is a medical condition characterized by the storage of excess body fat. Research had indicated that there is a relationship between obesity and erectile dysfunction. According to a study published in the Journal of Sexual Medicine in 2008, obesity correlates with a decline in testosterone level. Among the 2,435 participants in the study, all of whom had sought help for sexual dysfunction, 41.5 percent were normal weight and 58.5 percent were overweight or obese [3]. The investigators found that the more severe the obesity, the lower the testosterone level and testosterone level determines erectile functions. Obese men were also more likely to have abnormal penile blood flow which also affects erectile functions [12].

Men who typically consume foods that promote inflammation and contain cancer-promoting substances; that is high in fat, lots of red meat, and one that is low in fiber, fruits, and vegetables, have a higher risk of developing erectile dysfunction than men who do not eat these foods [2]. On the positive side, a diet that is rich in antioxidants, which can be found in fruits and vegetables, whole grains, legumes, and nuts, boosts production of nitric oxide and prevents its breakdown. In particular, eating foods that contain folic acid, vitamin C, and vitamin E support the pathways that lead to the release of nitric oxide and the promotion of erectile function [25]. Eating foods and taking supplements that contain omega-3 fatty acids is also important, as the omega-3s stimulate the release of nitric oxide from the

endothelium. Reducing the intake of sugar, fat, and simple carbohydrates also reduce the side effects that sugar and fatty acids have on endothelial nitric oxide production, which is critical for erectile function.

Most men who enjoy one or two drinks a day are not likely to experience any harm to their sexual health. In fact, such moderate drinking may reduce the risk of coronary heart disease and stroke. Greater intake of alcohol, however, can lead to a variety of health problems, and among them may be erectile dysfunction. Conversely, avoidance of excessive alcohol can preserve normal endothelial function, and moderate alcohol use may have a favorable impact on blood flow and vascular health as well as erectile function [16,17].

Among studies of erectile dysfunction and alcohol usage, investigators had found that alcohol abuse in men can cause a disruption in testosterone production and shrinkage of the testes [12]. When the body breaks down alcohol, it may also disrupt normal sperm structure and mobility [16].

CONCLUSION

Exercise, fitness and adequate nutrition prevent circulatory hormonal and neurological defects especially among healthy older men and among people with cardiac disease or major depressions, which impact significantly on erectile functions [15]. Exercise, fitness and adequate nutrition also improves self-confidence and self-esteem, attenuates cardiovascular and neuro-humoral responses to mental stress which are vital in the prevention of male sexual dysfunction [20].

Despite the positive physical and mental health benefits of exercise, fitness and proper nutrition, long-term adherence to these programs remains problematic. It has been estimated that only 50% of all people who initiate these programs continue the habit for more than 6 months. The issue of non-adherence is particularly important because exercises and proper nutrition for prevention/ maintenance in cases of erectile dysfunction are only beneficial if they are maintained as habits for extended periods of time [24]. It is therefore important for the development of strategies for exercises, improvements in fitness and healthy nutrition, especially for people who are among the least active and nutritionally reckless.

Recommendations for prevention of male erectile dysfunction

Daily Exercises for those whose daily routine is sedentary and their daily activities do not involve much utilization of muscles, daily work out is essential. Walking, swimming, aerobics or any exercise which they enjoy, as long as it is physical and makes them sweat, so as to increase blood flow to all parts of the body. Exercising 30 minutes a day at least five days a week is sufficient for overall healthy erections [15].

Exercises such as Kegel exercises can strengthen the pelvic floor muscles. These exercises can be done anywhere while sitting in your office, driving your car, standing in a line at a bank because they involve voluntarily squeezing or contracting certain muscles of the perineal region and then releasing them. Performing this exercise several times a day for just a few minutes may make a significant impact on the maintenance of erectile functions [24].

Indulgence in safe sex: on a regular basis is necessary to keep the juices flowing and exercising the penis.

Nutrition: For those who are not on a weight reduction diet, they must eat well and have a diet that contains adequate amounts of proteins, carbohydrates, fats, vitamins, minerals, electrolytes. Special attention should be given to the intake of the following:

Zinc: This is because zinc helps in raising testosterone levels. Zinc is found in most foods that are rich in proteins

Vegetarian sources of zinc include Milk, Yogurt and Cheese, Whole grain cereals, Brown rice, Potato, Beans, and Peanuts. Pumpkin seeds are very rich in zinc

Non-Vegetarian sources include Beef, Lamb, Pork, Chicken, Turkey, Salmon and Shellfish [2]

Vitamin C increases the flow of blood to the various parts of the body, including the penis [25]

Fruits source for vitamin C includes oranges, Lemons, Lime, Strawberries, Guava, Leeches, Mangoes, and Peaches

Vegetables source for vitamin C includes Broccoli, Gourd, Green Cabbage, Cauliflower, Tomato, Peppers, Potatoes [25]

Arginine, an amino acid produced by the body, helps in the production of nitric acid which keeps the blood vessels relaxed, thus contributing to the extra flow of blood

Food Sources which helps in the processes of the precursor of Arginine: Nuts and seeds, Meats, Fish, Shellfish, Chicken, Eggs, Turkey, Milk and milk products [26]

Obesity: People who are obese are to be motivated to lose weight [10].

Abstinence from alcohol utilization or abused by men so as not to cause a slow disruption of testosterone production and shrinkage of the testes [12].

Diabetes and cholesterol: Regular blood check up on a half-yearly basis for those above 40 years of age and above is essential. It is even more important particularly for those with a family history of diabetes [6].

Sleep well: learning to sleep well at the right time enough to give the satisfaction of relief from physical activities is essential for adequate functioning of the body, including circulation and penile erections [18].

Drinking of plenty of water: spaced out during the day has a lots of magical benefits upon circulation, including erectile functions [16].

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