

## **Sexual Activity and Successful Aging**

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The World Health Organization defines sexuality as: “a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Sexuality is experienced in thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles, and relationships. Sexuality is influenced by the interaction of biological, psychological, social, economic, political, cultural, ethical, legal, historical, religious and spiritual factors” [1]. Factors related to sexuality are an important dimension of life satisfaction in adulthood, and life satisfaction is a key indicator of successful ageing. While there is no single agreed definition of successful aging, the concept is often described in terms of an absence of disease, the presence of good physical and mental health, participation in social events, and satisfaction with life. In this regard, sexual aspects of aging are an overlooked aspect of successful aging and need to be addressed.

As established, sexuality is a key aspect of healthy adulthood. Sexual activity can play a role in improving the quality of life by positively affecting both emotional, mental, and physical health. With the prolongation of human life and the increase in the proportion of sexually active older individuals, the number of patients over the age of 65 who present to clinicians with some form of sexual dysfunction or difficulty is increasing. Perspectives, beliefs and attitudes regarding the role that having a healthy sex life in later life is rapidly changing, and medications and other treatments are being developed that enable individuals to maintain successful sexual functioning regardless of their age [2]. Such treatments and interventions help facilitate continued sexual activity in participants later life.

Several biological mechanisms have been identified that potentially explain a relationship between sexual activity and aging. In a study by De Baca et al., a positive relationship between sexual intercourse and telomere length was found [3]. Telomeres are repeating nucleoprotein sequences (TTAGGG) that stabilize the ends of chromosomes and protect DNA material from duplication and degradation, which may have a positive effect on sexuality [3]. Another possible mechanism could be related to the testosterone hormone levels secreted. Overall, low testosterone levels have been found to be associated with low sexual desire and higher levels of cardiovascular disease [4]. A growing literature has documented that a higher frequency of sexual activity is associated with a reduction in cardiovascular events in later life, reduced risk of fatal coronary events, prostate and breast cancer, and better reported quality of life [4]. There are plausible mechanisms by which sexual activity may be beneficial for health and wellbeing. First, sexual activity can be considered a form of

physical activity and thus those who engage in regular sexual activity likely yield the mental and physical health benefits acquired from a physically active lifestyle [5]. Secondly, during sexual activity or at the time sexual intercourse is at its peak, there is a release of endorphins, endogenous opioid peptides that function as neurotransmitters, which generates a happy or blissful feeling [6]. Circulating endorphin levels have been shown to be associated with higher natural killer cell activity which may be associated with a lower risk of cancer and viruses, and they have also been found to prevent against infections of the lungs and play an important role in improving lung cancer and many other conditions [6,7].

The most important indicator of physical health in older adults is frailty [8]. Age-associated decline in reserve and function may result in a reduced ability to cope with acute or external stressors faced every day, which is typically defined as frailty [8]. Frailty is one of the geriatric syndromes that has been subject to significant academic inquiry and scrutiny over the last two decades. According to a meta-analysis result in which 32 cross-sectional studies were included, the prevalence of frailty was 13.9%, while the prefrailty frequency was 49.4% [8]. Although there is no study showing how frailty, which as established is the most important indicator of physical health in the elderly, is affected by sexual activity, it may be considered that the factors responsible for frailty onset may be positively affected by sexual activity and that sustained sexual activity in later life may temper the onset of frailty and frailty type symptomology. Despite the increasing interest in frailty, the underlying and preceding pathophysiological changes are not clearly known. Inflammation is one such potential pathophysiological change that may be closely linked with frailty [8]. Pro-inflammatory cytokines may influence frailty either directly by promoting protein degradation or indirectly by affecting important metabolic pathways [8,9]. A direct association between frailty and elevated levels of inflammation, as marked by elevated interleukin-6 (IL-6), C-reactive protein (CRP), fibrinogen, and factor VIII, independent of common chronic disease states has been observed [9]. Sexual activity, which is also considered as a form of physical activity, may help prevent frailty development by reducing inflammation. For example, it has been shown that inflammatory markers detected higher in ankylosing spondylitis patients compared to healthy controls may decrease with sexual function and sexual desire [10]. In another study involving 4554 elderly people, a negative correlation was found between the frequency of sexual activity and inflammatory markers (CRP, fibrinogen, and white blood cell count) [11]. Another hypothesis that is thought to cause the development of frailty is that sex hormones such as testosterone and oestrogen decrease with age [12]. The most important

hormone, which increases for sexual desire and during sexual activity in both women and men, is testosterone, which also has anabolic properties. Indeed, it has been shown that low testosterone levels are associated with frailty, especially in aging men [12]. A positive association of testosterone with physical performance has been reported and lower free testosterone levels are associated with mobility limitation and men with higher baseline total testosterone levels experience reduced loss of lean mass [13]. Therefore, there is a relationship between lower testosterone levels and increased risk of frailty in older men [14]. Similar studies have shown the association of low testosterone levels with the development of sarcopenia in elderly women [15]. Higher levels of testosterone in those with regular sexual activity than those without sexual activity may negate the above-mentioned negative effects and reduce muscle loss and frailty development (Figure 1).

The factors that have a substantial impact on both physical health and frailty are enjoyment of life and the presence of any forms of depression and depressive symptomologies in the elderly. In numerous studies of the English Longitudinal Study of Aging working group evaluating the effects of sexual activity in older adults, it was found that among sexually active men, frequent ( $\geq 2$  times a month) sexual intercourse and frequent kissing, petting, or fondling were associated with greater enjoyment of life and among sexually active women, frequent kissing, petting, or fondling was also associated with greater enjoyment of life, but there was no significant association with frequent intercourse [16]. Enjoying life is very important because enjoying life and sexual activity contributes to successful aging. Despite the recognition that sexual expression should be an integral part of healthy aging, research linking sexuality and successful aging is very limited.

In a sample of 127 Israeli women aged  $\geq 45$  years (the majority of whom were in the 55-65 age group), Woloski-Wruble et al. explored associations between life satisfaction and sexual activity and satisfaction with one's sex life. Although their study was conceptualized using the Rowe and Kahn model, the authors did not operationalize successful aging, but used the Life Satisfaction Index as a proxy. After reporting that life satisfaction was significantly correlated with sexual satisfaction, the authors concluded that women's satisfaction with their sex life is an important contribution to achieving successful aging [17]. In a similar study, Thompson et al. explored the associations among self-rated successful aging, indicators of physical and psychological health, sexual function, sexual activity, and sexual satisfaction [18]. In their community-based sample of 1,235 women aged 60-89 years, of whom 53% were married or in an intimate relationship, the authors found that their single-

item measure of self-rated successful aging (a construct not defined in the questionnaire) was significantly correlated with sexual desire and sexual activity. Clearly, preliminary evidence suggests a relationship between sexuality and successful aging in older adults. Finally, a study conducted in four European countries (Norway, Denmark, Belgium and Portugal) showed an association between sexual activity and sexual enjoyment and successful aging in the past 10 years in both genders [19].

In conclusion, physicians should acknowledge patients' personal values and attitudes regarding sex and sexuality in later life, as well as the values and attitudes of older patients. Most older patients are willing to talk about their sexual concerns but are reluctant to start the discussion. They should therefore be invited by the physician, who in turn needs to be able to talk about sex freely and in a comforting manner. As sexual activity has extremely important and positive effects on physical health, evaluation of sexuality should be a part of geriatric evaluation and the role of sexuality in successful aging should not be neglected.

## **Declarations**

Conflict of interest: None.

Acknowledgements: There is no funding

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**Figure 1. Effects of Sexual activity on Physical Health**

