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MINI REVIEW

Lifestyle and contextual approaches for sexual dysfunction

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Sexual dysfunction, encompassing entities like erectile dysfunction, Peyronie's disease, ejaculatory and orgasmic disorders, and female sexual dysfunction, is highly prevalent and substantially impacts quality of life. While medical and surgical treatments have significantly advanced in the last half-century, they may not address underlying causes or contextual elements that contribute to these multifactorial disorders. This perspective synthesizes evidence-based, holistic approaches to prevention and management of sexual dysfunction, emphasizing their role in preserving "Sexspan", the period of life characterized by satisfying sexual function and intimacy. We narratively review high-level evidence connecting two broad domains that support sexual wellness: (1) lifestyle pillars (diet, exercise, sleep, stress reduction) and (2) contextual domains (partner dynamics, mental health, hormonal wellness, and preventive health maintenance). We summarize disorder-specific applications of these domains and highlight emerging evidence integrating digital health, artificial intelligence, and regenerative approaches. Lifestyle and contextual factors influence endothelial health, hormonal balance, and psychological resilience, directly impacting sexual disorders. Mediterranean diet adherence, aerobic and resistance exercise, restorative sleep, and stress reduction each demonstrate measurable improvements in sexual outcomes across sexes. Partner-inclusive counseling and treatment, mental health care, hormonal assessment and optimization, and routine preventive screening further strengthen the effectiveness of treatments. Emerging digital tools, including wearables, artificial intelligence, and chatbots, offer precision monitoring and personalized intervention, while regenerative approaches remain investigational. In conclusion, holistic management of sexual dysfunction is evidence-based, broadly accessible, and synergistic with medical and surgical therapies. The integrative concept of Sexspan establishes a measurable framework for patients and sexual medicine practitioners alike.

Key Words: sexual dysfunction, erectile dysfunction, female sexual dysfunction, Peyronie's disease, ejaculatory dysfunction, Sexspan

Introduction

Sexual dysfunction is highly prevalent, encompassing erectile dysfunction (ED), Peyronie's disease, and ejaculatory/orgasmic disorders in men; and female sexual dysfunction (FSD), including desire, arousal, orgasmic, and pain disorders, in women.[1,2] These conditions impair quality of life, strain relationships, and reflect broader systemic health.[3]

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Once thought of as primarily psychogenic in nature, the discovery of underlying biological mechanisms in sexual disorders has led to transformative medical and surgical therapies, such as phosphodiesterase-type-5 (PDE5) inhibitors, penile prostheses, hormonal treatments, and neurotransmission agents.[4,5] However, a management paradigm focused purely on allopathic treatment is incomplete; not all patients respond, side effects reduce adherence, and these interventions often address symptoms rather than upstream contributors, meaning secondary effects on health may be neglected.

These insufficiencies highlight the need for non-medical and non-surgical strategies emphasizing prevention, risk modification, and supportive

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treatment. Such approaches address systemic and contextual drivers of dysfunction, complement existing therapies, and promote Sexspan: the period of life characterized by satisfying sexual function and intimacy.[6] This concept is inherently connected to health-span and lifespan; therefore, extending Sexspan is not only about maintaining intimacy, but also impacting broader cardiovascular, metabolic, and psychosocial health.[7–9]

In this narrative review and perspective, we highlight evidence-based strategies for the holistic management of sexual dysfunction. We organize them into lifestyle pillars (diet, exercise, sleep, and stress reduction) and contextual domains (partner dynamics, mental health, hormonal wellness, and preventive health maintenance) before examining emerging technological directions that can extend the efficacy of these strategies.

Methodology

In this narrative review, we sought to report the available evidence supporting lifestyle and contextual factors that impact Sexspan. Understanding the key pillars of diet, exercise, sleep, and stress reduction, we cross-referenced these keywords with male and female sexual function and specific relevant disorders. We also evaluated contextual elements in a similar fashion, including partner and relational factors, hormonal factors, mental health, and finally, general physical health. High-level and other available evidence is reviewed narratively throughout the manuscript. We also included emerging technology and innovations that are impacting the holistic management of sexual dysfunction. Finally, we provide practical recommendations for implementing these techniques in sexual medicine clinical practice.

Lifestyle Modifications for Sexual Health

Diet, exercise, sleep, and stress reduction comprise the foundational lifestyle pillars of Sexspan. Together, they directly influence the physiologic, endocrine, and psychological pathways underlying healthy sexual function.

Diet and nutritional factors

Nutrition strongly influences vascular and hormonal pathways underlying sexual health. Diets high in vegetables, fruits, legumes, whole grains, fish, and olive oil, such as the Mediterranean diet, are shown to improve International Index of Erectile Function (IIEF) scores in men with metabolic syndrome[10] and reduce ED incidence in healthy men.[11] In women, given the connection between metabolic syndrome and sexual dysfunction, it is likely that similar adherence to a Mediterranean-style diet would be associated with higher Female Sexual Function Index (FSFI) scores and reduced prevalence of dysfunction, which provides an opportunity for high-quality clinical investigation.[9]

Micronutrients and nutraceuticals add further relevance. Higher dietary intake of trace elements such as magnesium, zinc, copper, and selenium is linked to lower prevalence of ED.[12] Antioxidant supplementation, including arginine, carnitine, coenzyme Q10, and other micronutrients, yields modest but statistically significant improvements in IIEF scores, both alone and in combination with PDE5 inhibitors.[13] It is worth considering that the benefits derived from supplementation are likely due to restoring physiologic amounts, with over-supplementation unlikely to show benefits, and potentially add harm. For example, Vitamin D deficiency is associated with ED via multiple potential physiological pathways (ranging from penile tissue structure, endothelial function, endocrine function, and even immunology), and supplementation to restore physiologic levels may enhance therapeutic outcomes.[14]

Antioxidant molecules that support nitric oxide production, namely L-arginine (and L-citrulline, which is converted to arginine *in vivo*), have garnered interest as a low-risk supplementation. In particular, L-arginine, which serves as the substrate for nitric oxide synthase, was evaluated in a meta-analysis assessing various nutraceuticals and their effects on erectile function. While the efficacy was modest alone, the combination with a PDE-5 inhibitor, tadalafil, proved much more effective.[15]

In Peyronie's disease, antioxidants like coenzyme Q10 and pentoxifylline have shown modest curvature reductions in small trials, especially when used as part of combination treatments.[16–18] However, meta-analyses caution that effects are limited, with the American Urological Association guidelines recommending against these treatments due to lack of consistent effects.[19] With emerging methods of characterizing Peyronie's disease that may allow more personalized treatment protocols, these treatments may eventually see consistent therapeutic effect.[20]

Exercise and physical activity

Regular exercise is among the most consistent protective factors against sexual dysfunction, exerting multi-level benefits across ED, ejaculatory disorders,

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and FSD, with indirect benefits in Peyronie's disease through reduced inflammation. Aerobic and high-intensity activity improves endothelial function, nitric oxide bioavailability, and may improve testosterone physiology, suggesting potential downstream improvements for sexual dysfunction.[21,22] Indeed, a randomized controlled trial found that in obese men with ED, lifestyle-induced weight loss and activity improved IIEF scores.[23] These findings were confirmed in a systematic review assessing the impact of supervised aerobic training supplemented with resistance exercise, which found improvements with 160 min per week of moderate-to-high-intensity exercise in as little as 6 months.[24] Exercise has also been found to improve sexual well-being in women with antidepressant-induced sexual dysfunction as well as those who have undergone hysterectomies, possibly by promoting positive body image.[25] However, high-quality evidence from randomized trials with objective outcome measures like FSFI improvement is lacking in women patients, representing another opportunity for future investigation.

A discussion of exercise and sexual health would not be complete without pelvic floor muscle training (PFMT). In men, PFMT combined with anorectal manometry biofeedback has been shown to durably improve both IIEF as well as ejaculatory dysfunction as evaluated both by intra-vaginal ejaculatory latency time (IELT) and premature ejaculation diagnostic tool (PEDT).[26,27] A recent study evaluated diaphragmatic breathing techniques in concert with PFMT and found improvements in IELT in both the exercise-alone group and the combination group.[28] In particular, men who have undergone prostatectomy benefit greatly from PFMT; one study demonstrated improvements in IIEF scores in men with persistent post prostatectomy ED when performing immediate vs. delayed PFMT.[29] Similarly, a meta-analysis of 21 randomized controlled trials that included women practicing PFMT demonstrated sustained improvement in all FSFI domains from arousal, orgasm, satisfaction, and pain as well as overall score, though expectations are tempered due to high study heterogeneity.[30]

Sleep and sleep quality

Sleep is essential for sexual health, with impaired sleep impacting crucial reproductive hormones, sexual health measures, and molecular and signaling mechanisms.[31] One week of sleep restriction reduced morning testosterone by 10–15% in healthy young men.[32] While not directly impacting sexual function per se, sleep disturbances are linked to poor semen parameters.[33] Obstructive sleep apnea (OSA), shiftwork, and insomnia correlate with poor sleep and ED.[34,35] In women, cross-sectional analyses have found that poor sleep correlates with reduced desire and satisfaction, while good sleep quality is linked to higher FSFI scores.[36,37] Of note, the same study found that sleep duration was less important in this regard, with no significant difference in low FSFI scores depending on sleep duration ranging from less than 5 h to more than 7 h.[37] Simple behavioral interventions to optimize sleep (consistent schedules, minimizing screen time before bed, thermal comfort/cooling mattresses, and limiting evening alcohol/caffeine) are low-cost, scalable strategies with broad benefits. Therefore, we suggest that screening for sleeping dysfunction should be strongly considered for the workup of sexual dysfunction.

Stress reduction and mind-body connection

Chronic stress is associated with both male and female sexual dysfunction, with negative impacts on arousal, desire, pelvic floor dysfunction, and premature ejaculation.[38–40] Mind-body therapies demonstrate measurable improvements in arousal, desire, and sexual satisfaction in women, though results varied across studies.[41] Meanwhile, cognitive behavioral sex therapy represents a promising adjunct treatment for psychogenic ED.[42]

Contextual Elements of Sexual Health

Sexual health does not happen in a vacuum; partner satisfaction, psychological well-being, hormonal balance, and preventive care represent important modifiable contextual elements inherently related to the lifestyle factors already discussed. Integrated alongside diet, exercise, sleep, and stress management, they complete a holistic framework for preserving sexual health and extending Sexspan.

Partner and relationship dynamics

Sexual health is inherently relational; dysfunctions should be thought of as "couple's diseases".[43] Evidence shows that addressing dysfunction in one partner improves outcomes in the other. In a randomized trial, Goldstein et al. demonstrated that women reported higher FSFI scores when male partners with ED were treated with vardenafil.[44] Similarly, Gittens et al. found that favorable female sexual function predicted male satisfaction after penile prosthesis.[45] These findings highlight the bidirectional nature of sexual health, where shared interventions, such as

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adopting lifestyle changes as a couple or engaging in relationship counseling, reinforce adherence and intimacy.

Mental health and psychosocial well-being

Relatedly, depression and anxiety strongly influence sexual function. Depression has a bidirectional link to both male and female sexual dysfunction, demonstrated in a large meta-analysis.[46] Similarly, anxiety exacerbates premature ejaculation, orgasmic disorders, and FSD.[47] Making matters more complicated, psychotropic medications, particularly SSRIs, worsen sexual function in up to half of users.[47] Screening for these disorders, careful counseling prior to starting treatments, and a holistic view of management are key to integrating psychological care for both prevention and treatment of sexual dysfunction.[48]

Hormonal wellness

Hormonal disorders are frequent, reversible causes of dysfunction. While addressing hormonal factors qualifies as medical treatment, its relationship to sexual function occurs from an adjunctive, holistic health perspective and warrants discussion here. In men, hypogonadism reduces libido, erectile rigidity, and orgasm; TRT improves desire and erectile function when deficiency is confirmed.[49] In women, estrogen loss after menopause contributes to dryness, dyspareunia, and arousal disorders. Local or systemic estrogen therapy improves lubrication and comfort.[50] Evidence also supports low-dose testosterone therapy in postmenopausal women with hypoactive sexual desire disorder, with improvements in desire and frequency of satisfying sexual events.[51]

Other endocrine axes contribute. Prolactin mediates dopaminergic and serotonergic pathways, and elevations in prolactin lead to ED as well as suppressed sexual desire in both men and women.[52] However, deficiency of prolactin has also been implicated in metabolic syndrome, erectile dysfunction, and premature ejaculation.[53] Thyroid disease, whether hyper- or hypo-thyroid, is linked to low desire, anorgasmia, and ejaculatory disorders, reflecting its vascular, metabolic, and mood effects.[54]

In sum, assessment of testosterone, estradiol, prolactin, and thyroid function when indicated helps identify reversible contributors to sexual disorders, though it should not be considered as monotherapy in the absence of deficiency at this time. Correcting these abnormalities remains a cornerstone of non-medical sexual dysfunction management.

General preventive health maintenance

Sexual dysfunction is often a sentinel marker of systemic disease. ED predicts cardiovascular events years in advance;[7,55] Peyronie's disease is associated with systemic fibrotic disorders;[56] and FSD is linked with diabetes and cardiometabolic disease.[9] Sexual dysfunction should therefore be reframed not as an isolated complaint, but as an opportunity for broad preventive care. Routine health maintenance, including blood pressure monitoring, glucose/HbA1c, lipid screening, weight management, and evaluation for sleep apnea, can uncover these conditions early.

Future Directions and Technology Integration

Holistic management of sexual dysfunction is entering a new era, driven by digital health, artificial intelligence, and regenerative approaches. These tools promise to extend the reach of traditional lifestyle and contextual strategies, making prevention and treatment more personalized, scalable, and effective.

Digital health and wearables

Consumer wearables such as the Apple Watch, Oura Ring, and WHOOP provide continuous data on sleep, activity, and heart rate variability, physiologic parameters directly tied to endothelial health, testosterone production, and sexual performance.[57] These tools may serve both as motivators for behavior change and as clinical monitors for adherence to Sexspan interventions.[58] Integration into electronic medical records is already underway in some health systems.[59] While these devices do not currently replace medical-grade evaluations. Clinicians should be reassured that the devices provide a reasonable degree of accuracy for tracking lifestyle improvements.[60]

Artificial intelligence and predictive models

Artificial intelligence (AI) offers multiple applications for advancing sexual health. Clark et al. recently emphasized its potential to transform men's health, from quality improvement to precision risk stratification.[61] By integrating patient-reported outcome measures and wearable data, AI can enable precision lifestyle medicine, tailoring interventions to an individual's biological and psychosocial profile. Beyond analytics, AI-driven chatbots and digital platforms address barriers of stigma, geography, and cost by delivering education, mindfulness, and cognitive-behavioral therapy (CBT)-based interventions at scale. Early trials in mental health show

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that chatbot-delivered CBT reduces anxiety and depression, two major psychosocial drivers of ED, premature ejaculation, and FSD.[62,63] Applied to sexual medicine, such tools could extend access to prevention and care for populations that rarely engage in traditional clinical settings.

Regenerative and precision approaches

Regenerative therapies aim to restore tissue integrity rather than only palliate symptoms. Low-intensity shockwave therapy has demonstrated improvements in penile hemodynamics in some randomized trials and improved IIEF scores in a meta-analysis, though the most recent randomized study in post-prostatectomy related ED was negative.[64,65] Platelet-rich plasma and stem cell approaches are under active investigation. Looking forward, precision medicine approaches leveraging the microbiome, genomics, and epigenetics may allow clinicians to prescribe tailored lifestyle interventions based on biologic profiles.[66]

Integrating Sexspan and Holistic Interventions into Sexual Medicine Practice

The evidence supporting holistic lifestyle and contextual interventions as pivotal factors in sexual function and overall Sexspan is substantial. For facility of review by clinicians seeking to implement these interventions, the high-level evidence is summarized in Table 1. We propose the following implementation strategies to incorporate these strategies into a clinical sexual medicine practice.

Comprehensive screening and assessment

Sexual dysfunction frequently serves as a sentinel symptom for underlying medical and psychological conditions. Practitioners should implement systematic screening for comorbidities at presentation, given the well-established bidirectional relationships between sexual dysfunction and systemic disease. A targeted screening approach should include assessment of cardiovascular risk factors, metabolic health (including glucose tolerance and lipid profiles), thyroid and reproductive hormone status, mood and anxiety symptoms, sleep quality, and relationship satisfaction.

Structured lifestyle counseling and measurable outcomes

One key aspect of the Sexspan concept is the ability to measure and track individual aspects of overall sexual health. This allows practitioners to implement structured assessment tools to identify specific modifiable factors and establish baseline measurements for

TABLE 1. **Lifestyle interventions and measurable impact on sexual function**

Category	Study	Intervention/association	Population	Measure	Outcome	PMID
Diet	RCT	Mediterranean diet	Men with metabolic syndrome	IIEF	• +3.7 from baseline to 2-year follow-up • +3.0 vs. control diet at 2 years • 13/35 (study) vs. 2/30 (control) achieved normal IIEF (22+)	16395320[10]
	Prospective cohort	Mediterranean diet	Healthy men	Relative ED Incidence	• HR 0.78 (95% CI 0.66–0.92; highest category of diet score vs. lowest)	33185675[11]
	Meta analysis	Antioxidant supplementation	Men with ED	IIEF	• Any antioxidant alone: +1.9 • Arginine alone: +2.7 • Compounds: +2.7	35246405[13]
	Meta analysis	L-arginine	Men with ED	IIEF	• L-arginine alone: +4.94 • L-arginine with tadalafil: +10.44	39279185[15]

(Continued)

TABLE 1. **(Continued)**

Category	Study	Intervention/association	Population	Measure	Outcome	PMID
	RCT	Detailed guidance regarding diet and exercise	Obese men with ED	IIEF	• +3.1 from baseline to 2 years • +3.4 vs. control at 2 years • 17/55 (study) vs. 3/55 (control) achieved normal IIEF (22+)	15213209[23]
Exercise	Systematic review	Aerobic and resistance exercise (160 min/week)	Men with metabolic syndrome and ED	IIEF and IIEF-5	• 14–86% improvement	29661646[24]
	RCT	PFMT + manometric biofeedback	Men	IIEF	• +6.7 at 3 months • 40% achieved normal IIEF • 35% improved	15527607[26]
	Prospective cohort	PFMT + pudendal nerve stimulation + biofeedback	Men	IIEF, PEDT	• +121.2 s, +14.7 at 3 months • 64% (24 months) and 56% (36 months) satisfied postintervention	29974885[27]
	RCT	PFMT + diaphragmatic breathing exercise	Men	IIEF	• +283 s (vs. +204 control)	40580936[28]
	RCT	PFMT	Men 12 months s/p RP with ED	IIEF-EF	• +4.1 (vs. −0.2 control)	26538105[29]
	Meta analysis	PFMT	Women	FSFI	• +7.67 overall score	38191016[30]
Sleep	Cross-sectional analysis	Good sleep quality and FSFI	Sexually active women	FSFI	• HR 1.45 (1.18–1.77) to have abnormal FSFI (<26)	33878089[37]
Relationship	RCT	Partner treatment	Women partners of men with ED receiving medical treatment	FSFI	• +1.8 (vs. −1.2 control) from baseline to last follow-up • +3.9 vs. control at last follow-up	16422806[44]
	Cross-sectional analysis	Patient IPP satisfaction and FSFI	Men	FSFI	• Partner satisfied: 26.93 • Partner unsatisfied: 13.62	21569210[45]

Note. Unless noted, outcomes are provided as point changes in the measured index. Abbreviations: RCT, randomized controlled trial; PFMT, pelvic floor muscle training; FSFI, female sexual function index; IPP, inflatable penile prosthesis; ED, erectile dysfunction; s/p, status post; RP, radical prostatectomy; IIEF, international index of erectile function; PEDT, premature ejaculation diagnostic tool; HR, hazard ratio.

progress tracking. This might include validated questionnaires addressing diet quality and nutritional status, exercise capacity and activity levels, sleep architecture and duration, perceived stress and coping mechanisms, and relationship dynamics. Equally important is establishing clear, measurable, and reasonable goals in collaboration with patients. Regular reassessment using these same instruments provides objective evidence of improvement, encourages patient engagement, and reinforces the therapeutic alliance. Including the partner at visits may serve to strengthen longitudinal adherence with recommendations while also identifying opportunities to improve relational dynamics and even partner health.

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Interdisciplinary collaboration

Additionally, practitioners should consider referral to complementary specialists, including pelvic floor physical therapists (particularly valuable for both erectile dysfunction and FSD), sexual counselors or therapists experienced in addressing relational and psychological factors, registered dietitians for personalized nutritional optimization, and mental health professionals when depression, anxiety, or significant relationship conflict is identified. This integrated, multidisciplinary approach acknowledges that sustainable improvement in sexual function typically requires coordinated attention to multiple lifestyle and relational domains rather than pharmacological intervention alone.

Conclusions

Sexual dysfunction remains a prevalent and consequential health concern worldwide. While medical and surgical therapies continue to develop, they are often incomplete or insufficient. Holistic strategies provide a powerful, evidence-based complement. The lifestyle pillars of diet, exercise, sleep, and stress reduction directly impact the endothelial, hormonal, and psychological pathways that underlie dysfunction and underpin overall health. The contextual domains of partner dynamics, mental health, hormonal wellness, and preventive health maintenance ensure that sexual health is understood as relational and systemic. Together, these strategies extend Sexspan, emphasizing that satisfying sexual health is inseparable from cardiovascular, metabolic, and emotional health.

Looking forward, technology and innovation promise to amplify these strategies, delivering precision interventions and scalable support. By embedding prevention and holistic care into sexual medicine, clinicians can move beyond symptom relief toward sustained intimacy, vitality, and quality of life, making Sexspan a core dimension of healthy aging.

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Conflicts of Interest

The authors declare no conflicts of interest.

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