

Review Article

Male sexual health and dysfunction

pISSN: 2287-4208 / eISSN: 2287-4690
World J Mens Health 2020 Oct 38(4): 495-505
<https://doi.org/10.5534/wjmh.190062>



Role of Yoga in the Management of Premature Ejaculation

Anjali Mangesh Joshi¹, Raveendran Arkiath Veettil^{2,3}, Sanjay Deshpande⁴

¹Consultant Yoga Therapist; Nagpur, ²Department of Internal Medicine, Government Medical College, Kozhikode, India, ³Department of Internal Medicine, Badr Al Samaa, Barka, Sultanate of Oman, ⁴Consultant Sexologist; Sex Education and Counselling Clinic, Nagpur, India

Premature ejaculation (PE) is a common male sexual problem. Various non-pharmacological and pharmacological treatment options are available currently. The importance of yoga in the management of various sexual dysfunctions is increasingly recognized. In this review, we are analyzing the role of yoga in the management of PE. This paper explores the mechanism of yoga practices in the management of PE and the recommended yoga practice for PE. It also discusses the scientific evidence of yoga practices, such as yoga postures (yogasana), breathing practices (pranayama), lock (bandha), gestures (mudra), relaxation, Aum chanting, yoga nidra and meditation with particular reference the management of PE.

Keywords: Meditation; Premature ejaculation; Yoga; Yogasana

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Premature ejaculation (PE) is one of the most common male sexual dysfunction affecting around 30% of a male population [1]. PE can adversely affect the quality of life of the patients and his partner [1]. Still, it is one of the common conditions which are under-reported and under treated [2]. Three domains which define PE include short ejaculatory latency, perceived lack of control on ejaculation and negative personal consequences and interpersonal issues. Length of time between penetration and ejaculation is one of the major components of diagnosis of PE which can be measured using a stopwatch or estimated. Studies show that 80% to 90% of men with a lifelong PE ejaculate

within 1 minute [3]. Inability to control ejaculation and thereby prolonging sexual intercourse is also important for the diagnosis of PE. PE is associated with increased personal distress and interpersonal difficulty adversely affecting self-esteem, self-confidence, quality of life of the person and relationship with the partner [2].

International Society for Sexual Medicine (ISSM) defines lifelong PE as “a male sexual dysfunction characterized by ejaculation which is always or nearly always occurs prior to or within about one minute of vaginal penetration, or, a clinically significant and bothersome reduction in latency time and; inability to delay ejaculation on all or nearly all vaginal penetrations; and, negative personal consequences, such as distress, bother, frustration, and/or the avoidance of sexual in-

Received: Apr 25, 2019 Revised: Jul 16, 2019 Accepted: Aug 1, 2019 Published online Sep 3, 2019

Correspondence to: Raveendran Arkiath Veettil <https://orcid.org/0000-0003-3051-7505>
Department of Internal Medicine, Government Medical College, Kozhikode, Kerala 673008, India.

Tel: +96-892065598, Fax: +00968-26884918, E-mail: raveendranav@yahoo.co.in

timacy" [2]. ISSM defines acquired PE as "reduction in latency time, often to about 3 minutes or less which is clinically significant and bothersome" [2].

Non-pharmacological treatment options like naturopathy, yoga, tantra, tao, mindfulness, and acupuncture in sex therapy have been implicated for enhanced sexual fulfillment, pleasure and improved sexual function. These techniques are not new and have been in practice amongst sexologists since the 1960s [4]. Scientific evaluation of some of the complementary and alternative medicine approaches in the past few decades has proven their efficacy. With global recognition and increasing popularity in the health care sector, yoga shows highest growth in natural therapy, according to a survey from the National Institutes of Health [5]. Although yoga is being practiced since ancient time, yoga as therapy is still a relatively new and emerging trend in the health-care field. Extensive research in yoga has facilitated its practical application and it is now being recognized worldwide as a clinically viable treatment option.

Originated in India more than 5,000 years ago, yoga is a science of right living and is intended to be incorporated into daily life. Traditionally, a mind-body practice with the ultimate goal of spiritual enlightenment, yoga is a science of health management rather than a therapy for treating disease.

PATHOPHYSIOLOGY OF PREMATURE EJACULATION

Psychological and neurological factors are important in the control of ejaculation. In genetically predisposed individuals, there is impairment in the inhibition serotonergic pathway controlling ejaculation. When this inhibitory control is impaired, it results in PE. This is modulated by 5HT_{2c}, 5HT_{1a}, 5HT_{1b} receptors and synaptic serotonin transporters [6,7]. Other conditions like chronic prostatitis and hyperthyroidism predispose to PE [8,9].

ROLE OF YOGA IN PREMATURE EJACULATION

1. Concept of sex in yoga relevant to premature ejaculation

1) Tantra yoga

Although there are various forms of yoga, tantra

yoga is said to be very much linked with sex. Tantra yoga used to be a preferred practice in ancient India for enhanced sexual pleasure. Lousada and Angel [10] proposed potential therapeutic applications of "tantric" practices and similar techniques. They provide a holistic and accessible approach in the management of sexual dysfunction, including intimacy issues, psychological blocks around sexuality, erectile dysfunctions, and PE.

2) Kundalini yoga

Kundalini energy is believed to increase sexual pleasure and extend the longevity of sex by facilitating male orgasms without ejaculation [11]. Kundalini yoga is believed to help in attaining a meaningful relation and satisfying sexual life [12].

3) Bindu Samrakshana (conservation of semen)

There is a unique concept of Bindu Samrakshana (conservation of semen) in the classical text of Hatha Yoga Pradeepika [13]. This can be useful in understanding the concept of PE. It is also suggested that yogic practices for conserving semen may have potential in the treatment of PE [14].

2. The proposed mechanism for improved sexual function with yoga practice

The following are the mechanisms by which yoga is helpful in improving ejaculatory time in people with PE (Fig. 1).

1) Neuro-psycho-physiological mechanism

Yoga practices are believed to have a neuro-psycho-physiological mechanism of action. Yoga therapies have found to improve reproductive functions both in men and women by improving the overall integration of the physiological systems [15].

2) Hormonal regulation

Yoga practices improve sexual desire and overall reproductive health by integrating neuroendocrine axes, improving hormonal secretion, improving age-related decline in testosterone levels, reproductive behaviour, mood and also by reducing anxiety and stress [16].

3) Autonomic function improvement: parasympathetic stimulation

Autonomic function improvement as a result of yoga

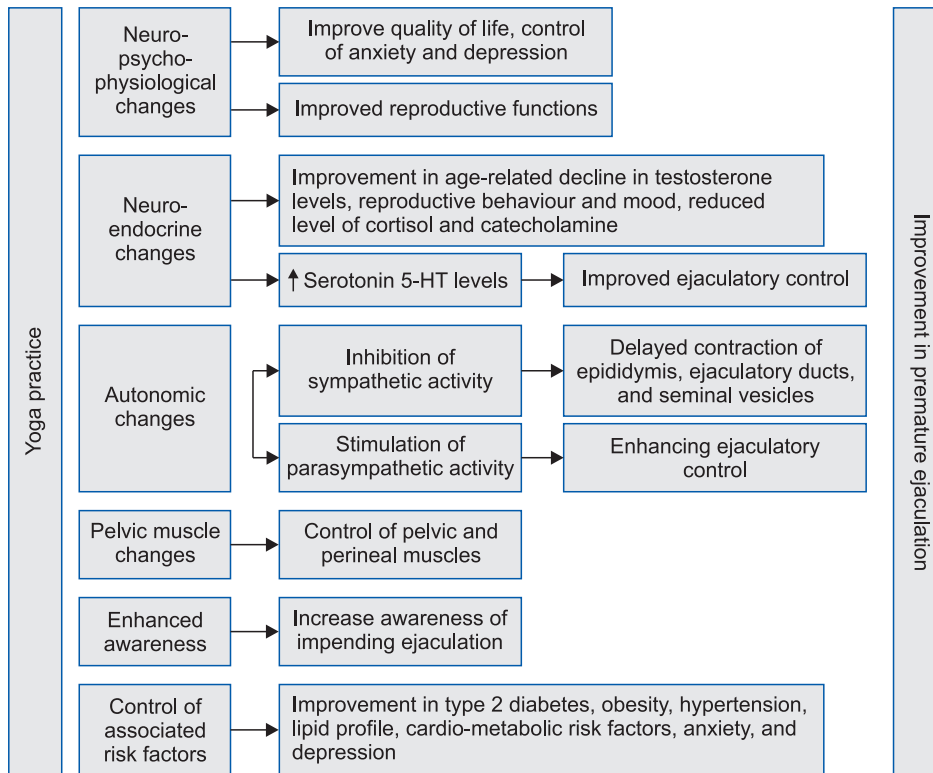


Fig. 1. Proposed mechanisms of beneficial effect of yoga in premature ejaculation. 5-HT: 5-hydroxytryptamine.

practices with suppressed sympathetic activity and predominant parasympathetic activity is thought to benefit reproductive health [16,17]. Contraction of epididymis, ejaculatory ducts, and seminal vesicles is believed to be because of sympathetic nerves stimulation causing ejaculation of semen. Parasympathetic stimulation through yoga practices is beneficial in enhancing ejaculatory control [18].

4) Increase in whole blood serotonin 5-hydroxytryptamine levels

Breath awareness, abdominal breathing and focused attention are important components of yoga practices, such as pranayama and meditation. It is observed that the focused attention on the breathing movements in the lower abdomen was correlated with a significant increase in whole blood serotonin 5-hydroxytryptamine (5-HT) levels [19]. A suggested hypothesis for the pathophysiology of PE is the involvement of 5-HT in ejaculatory control. Elevated concentrations of 5-HT are believed to be involved with ejaculatory control [20].

5) Strengthening pelvic muscles

Yoga practice improves stamina, strength, flexibility, muscle tone, endurance and builds core stability. Yoga

postures develop control of pelvic and perineal muscles resulting in better contraction [14].

6) Enhanced awareness

Improved cardiopulmonary efficiency, deeper breathing, awareness and mindfulness result in a better sensual experience. Improvements in intra-vaginal ejaculation latency time (IELT) with yoga practice may be because of the emphasis on bodily awareness that could potentially increase awareness of the impending ejaculation, allowing more effective withdrawal and pause methods [21].

7) Management of associated risk factors of premature ejaculation

Most types of sexual dysfunction can be corrected by treating the underlying physical or psychological problems. The integrated mind-body practice of yoga improves physical health, mental health, induces relaxation and promotes a sense of overall wellbeing. All these effects help to manage the associated risk factors of sexual dysfunction and reflect on improvement of sexual functions. If mind and body are not in harmony, it is difficult to experience fulfilling sexual life. Physical health, mental health, sense of wellbeing and

sexual health are interrelated. Sexual dysfunction in men and women have been found to be associated with risk factors like diabetes, heart disease and chronic illness. Depression, anxiety, medications used to treat them and substance abuse also contribute significantly to sexual dysfunction [22]. Psychological comorbidities such as depression, anxiety, excessive stress are associated with PE [23].

An integrated approach of yoga therapy is found to be effective in the management of type 2 diabetes, obesity, hypertension and lipid profile, cardio-metabolic risk factors, anxiety and depression, and substance use disorders [24-28].

RECOMMENDED YOGA PRACTICES FOR PREMATURE EJACULATION

Yoga practice involves cleansing processes (kriya), postures (asana), controlled breathing (pranayama), meditation, relaxation, chanting mantras, yogic diet, ethical code of conduct, philosophy and spirituality. These contribute in improving sexual function directly or indirectly by improving overall health, vitality and wellbeing. There are many different styles of yoga, having various components. Many of these practices are safe; however, some can be strenuous, may not be appropriate for everyone and need to be modified to suit individual requirements. The following are a few selected yoga practices with their specific effects on PE (Table 1).

1. Yoga postures

It emphasizes the relationship between body, mind, and awareness. It focuses on the synchronization of breathing and movement. Inverted postures improve blood flow to reproductive organs and pelvic region. Backward bending postures are stimulating, anti-depressive, improve vitality and elevate mood [29]. Woolery et al [29] suggested the potential benefits of using yoga asana that open and lift the chest, particularly backbends, as well as standing poses and inversions to improve mood. Forward bending poses have a calming and soothing effect. Seated poses improve flexibility of the hips, knees and ankles. Twisting and stretching improves suppleness of the spine.

Hectic and stressful lifestyle leads to tightening up of the pelvic region. It is suggested that stretching these muscles will improve the range of movement in

this area and facilitate a more relaxed state of mind so that sexual performance will improve [12]. It is observed that poorly relaxed pelvic and perineal muscles can cause PE. Yoga practices promote a relaxed and focused mind and relaxed perineal and pelvic musculature [30].

Effect of a few yoga poses and mudra such as supine yoga poses Bhujangasan, Shalabhasan, Naukasan, inverted poses Viparit Karni, Sarvangasan, seated poses Yoga Mudra, Supta Vajrasan, Pashchimottanasan, Ashwini Mudra, standing poses Hastapadasan and Trikonasan was evaluated in a study regarding the potential benefits for PE [31].

Patil et al [31] recommended that, seated yoga postures such as Yoga Mudra, Paschimotasan improve the tone and flexibility of the perineal and pelvic muscles more as compared to other postures. It was also suggested that seated yoga postures relax these muscles more allowing an increased ejaculatory threshold.

Inverted poses such as Viparita Karani promote return of venous blood pooled in the big veins and various venous plexuses in the region of pelvis and perineum which otherwise have to drain against gravity. Further, it enhances the flow of fresh blood to the pelvic viscera [32].

2. Kriya (cleansing process)

Kapalbhati, a breathing practice involving forced exhalation (through the nose) and passive, automatic inhalation (through the nose) is one of the kriya (cleansing process). Kapalbhati has been included as a part of the yoga protocol to improve sexual functions in males [18,33]. In tantric breathing technique, a variation of Kapalbhati is recommended to prolong sexual intercourse. This involves Kapalbhati practice through the mouth as the man approaches orgasm. This rapid puffing out of the air through the mouth is believed to change the blood chemistry and prolong ejaculation [34].

3. Pranayama (regulated breathing)

Pranayama is controlled or regulated yogic breathing practice. It is very effective in reducing heart rate and cardiovascular risks, and in improving cardiovascular health [35]. Diaphragmatic breathing effectively reduces the anxiety level through the reduced sympathetic activity and enhanced vagal activity [36]. Immediately after 5 minutes slow pace Bhastrika pranayama with respiratory rate 6 times/min, a significant decrease in

Table 1. Yoga practices for premature ejaculation

Variable	Yoga practice detail	Effect/Mechanism
Surya Namaskar	Sun Salutation involves a dynamic sequence of 12 poses involving forward and backward bending.	Contracting and expanding the pelvic muscles.
Yogasana (yoga postures)		
Standing poses	Garudasan (eagle pose) Trikonasan (triangle pose) Uttanasana (standing forward bend) Vatayanasana (flying horse pose)	Strengthen the pelvic area and tones the reproductive organs. Improved circulation to the pelvic region. Develops the ability to retain seminal fluid and prevents premature ejaculation.
Seated poses	BaddhaKonasan (seated heel-to-heel pose) Yoga mudra (forward bend) Ardha Matsyendrasan (seated spinal twist) Pashchimottanasan (seated forward bend) Janu Shirasana (seated head-to-knee posture) Upavistha Konasan (wide-legged forward bend) Maha Mudra (great psychic attitude) Vajrasana (thunderbolt pose) Marjari Asana (cat stretch pose) Ushtrasan (camel pose) Shashankasan (hare pose) Kapotasana (pigeon pose)	Improved circulation to the pelvic area. Improve the tone & flexibility of perineal and pelvic muscles [28]. Seated poses more effective in PE [28]. Improve the health of the reproductive and urinary system. Facilitate higher arousal. Result in better and controlled orgasms.
Prone poses	Shashank Bhujangasan (striking cobra pose) Bhujangasan (cobra pose) Dhanurasan (bow pose) Utthanpristhasan (lizard pose)	Strengthen the pelvic region. Tone the reproductive organs stimulates the sexual energy centers. Facilitate stronger orgasm. Useful in arousal difficulties and PE.
Supine poses	Supta Vajrasana (sleeping thunderbolt pose) Setubandha Sarvangasan (bridge pose) Supta Baddha Konasan (reclining heel-to-heel pose) Matsyasan (fish pose)	Improve the tone & flexibility of perineal and pelvic muscles [28]. Strengthen the pelvic area and tone the reproductive organs.
Inversions	Vipareet Karani (inverted pose) Sarvangasan (shoulder stand) Halasan (plough pose) Adhomukha Shvanasan (downward dog pose)	Increase circulation to the pelvic organs. Prevent premature ejaculation. Improve the tone & flexibility of perineal & pelvic muscles [28]. Promote the return of venous blood pooled in the big veins and various venous plexuses in the region of pelvis and perineum. Enhance the flow of fresh blood to the pelvic viscera [29]
Relaxation	Shavasana (corpse pose)	Induces deep relaxation. Enhances focus, and energy and awareness.
Kriya (cleansing process)	A variation of Kapalbhathi practice through the mouth, as the man approaches orgasm is recommended for PE.	Rapid puffing out of the air through the mouth prolong ejaculation [31]. The effects have been compared with Viagra.
Diaphragmatic breathing	Rhythmic, slow, deep inhalation and extended exhalation	Reduces the anxiety level through reduced sympathetic activity and enhanced vagal activity [33].
Pranayama	Slow Bhastrika pranayama breathing (respiratory rate 6 times/min)	Systolic and diastolic blood pressure decrease significantly [34].
Pranayama (regulated breathing)	Anulom-vilom (alternate nostril breathing), Chandranadi (left nostril breathing), Sitkari (cooling breaths), Bhramari (humming bee breath)	Improve cerebral blood flow and oxygenation. Improve sympathovagal outflow [32]. Control autonomic nervous system and regularize rate and pattern of breathing [32,35].
Om chanting	Based on the analysis of EEG signal on the basis of fractal dimension, recommended chanting Om for fifty times or more to relax the mind [42].	Results in the stabilization of brain, removal of negative thoughts, increase of energy, mind and body relaxation within minutes of practice [38].

Table 1. Continued

Variable	Yoga practice detail	Effect/Mechanism
Bandha (lock)	Moola bandha (root lock): Contraction of the perineum, the area between the anus and genital organs, puboperinealis muscle	Enhances awareness of genital arousal sensations [15]. Moola bandha works as an exercise to the muscles of the pelvic region especially levator ani and anal sphincters and makes the pelvic and perineal muscles stronger [29].
Meditation	Internalized awareness	Beneficial effects on brain EEG, immune response, pain control, anxiety, depression with potential in the management of sexual dysfunction [42].
Mindfulness	Present moment awareness and paying attention in a nonjudgmental way.	Attention regulation, body awareness, emotion regulation and changes in perspective on the self [43].
Mudra (gesture)	Ashwini mudra (horse gesture): Contracting the sphincter muscles of the anus and then relaxing them Vajroli mudra: Drawing the urethra upward.	Improves the tone and flexibility of perineal and pelvic muscles [28]. Awakens the Kundalini Shakti and useful for PE [36]. Strengthens the pelvic floor, resulting in stronger erections and better ejaculatory control [27]. Regulates the entire sexual system. Regulates testosterone level. Control over premature ejaculation [37].
Yoga nidra (yogic sleep)	Yogic relaxation technique	Reduces the stress and result in physical, mental and emotional relaxation [40,41]. Enhances self-awareness and self-efficacy [41].

PE: premature ejaculation, EEG: electroencephalogram.

systolic and diastolic blood pressure was observed in a study [37].

4. Pranayama: mechanism of action

Neurophysiological effects of pranayama practice have been studied in extensive scientific research. Slow breathing technique in pranayama causes comprehensive changes in body physiology by controlling the autonomic nervous system and regularizes rate and pattern of breathing [35,38]. It also regulates heart rate and heart rate variability [35]. Slow pranayama, such as Anulom-vilom (alternate nostril breathing), Chandranadi (left nostril breathing), Sitkari (cooling breaths), and Bhramari (humming bee breath) improve cerebral blood flow and oxygenation. As a result, neuronal activities of the brain centers improve sympatho-vagal outflow [35].

5. Bandha (lock)

Bandha means hold, tighten or lock. Moola bandha (Root lock) involves contraction of the perineum, the area between the anus and genital organs. The muscle which mainly contracts in the practice of Moola bandha is puboperinealis muscle. Moola bandha works as an exercise to the muscles of the pelvic region, especially levatorani and anal sphincters and makes the pelvic

and perineal muscles stronger [32].

Moola bandha stretches the pelvic floor muscles, strengthens them, improves circulation, improves the efficiency of pelvic and abdominal organs and enhances awareness. Moola bandha is being used as a practice to enhance awareness of genital arousal sensations in many sex therapy sessions at different centers [16].

6. Mudra

1) Ashwini mudra (horse gesture)

Performed by contracting the sphincter muscles of the anus and then relaxing them, Ashwini mudra may be integrated with yoga postures and can also be practiced anytime, anywhere in seated or lying down position. It is believed to awaken Kundalini Shakti and useful for PE [39].

2) Vajroli mudra (thunderbolt/spontaneous psychic attitude)

This mudra is practiced by drawing the urethra upward, the muscle action being similar to holding back an intense urge to urinate. Vajroli mudra involves the functioning of muscles similar to Kegel exercises, which is suggested to gain voluntary control over Pubococcygeus muscle and can provide men with stronger

erections and better ejaculatory control [30]. It also strengthens the pelvic floor, which may help men to attain orgasm without ejaculation, and thus a man can achieve multiple “climaxes” during the sexual act [30]. According to yoga physiology, Vajroli mudra regulates the entire sexual system, regulates testosterone level and sperm production. It gives control over PE and helps correct impotence [40].

7. Aum/Om chanting

Chanting aum mantra results in stabilization of brain, removal of negative thoughts, an increase of energy, mind and body relaxation within minutes of practice [41]. Harne [42] observed encouraging results of Om chanting from analysis of electroencephalogram (EEG) signal on the basis of fractal dimension and recommended chanting Om 50 times or more to relax the mind.

8. Yoga nidra (yogic sleep)

Yoga nidra is a very powerful, comprehensive, profound and deepest possible relaxation while being fully conscious and aware. Yoga nidra has a great potential to reduce the stress and result in physical, mental and emotional relaxation [43,44]. It also enhances self-awareness and self-efficacy [44].

9. Meditation (dhyān)

Meditation and mindfulness have become standardised therapeutic interventions [45]. It is suggested to have beneficial effects on brain EEGs, the immune response, pain control, anxiety, depression with potential in the management of sexual dysfunction.

10. Mindfulness

Mindfulness, a practice of relaxed wakefulness, is based on the ancient eastern tradition of meditation. It involves present moment awareness and paying attention in a non-judgmental way. The exact mechanisms by which mindfulness relates to sexual well-being are poorly understood. However, attention regulation, body awareness, emotion regulation and changes in perspective on the self are the suggested mechanisms [46]. Butterfield et al [27] suggested that sex therapists may play an important role in supporting their patients to adopt yoga-based lifestyle to cope with stress, anxiety, depression and to restore emotional health.

YOGA FOR PREMATURE EJACULATION-EVIDENCE FROM CLINICAL PRACTICE

There is scarcity of high level evidence data on the role of yoga in PE in the available literature. Effect of yoga on PE is evaluated in a few studies and Level of Evidence 2b Grade C has been found in yoga for PE [21]. Dhikav et al [18] successfully treated PE with yoga and proposed it as a potential treatment for PE. He compared the efficacy of 12-week yoga intervention with fluoxetine, a known treatment option for PE and observed significant improvement in PE in the yoga group. In another study, Dhikav et al [33] reported improved Male Sexual Quotient including desire, intercourse satisfaction, performance, confidence, partner synchronization, erection, ejaculatory control, and orgasm. Based on this work, many “bedroom yoga” or “kama yoga” classes have started in few countries. It is claimed that yoga has become “new Viagra” or natural male sexual stimulant [47].

Efficacy of yoga and naturopathy intervention was investigated in a study [14]. No improvement in the total score of the premature ejaculation severity index was identified. However, encouraging results related to IELT and control over ejaculation were observed.

Ejaculatory control can be affected by many factors including performance anxiety with other conditions. Ciocca et al [48] recommended a holistic approach considering the biological, psychological, and relational aspects of the treatment of PE. A relaxed stress-free mind, improved flexibility of pelvic and perineal muscles is the key features of yoga helpful for the treatment for PE.

DURATION OF YOGA PRACTICE FOR PREMATURE EJACULATION

1. Duration of daily practice

The proposed duration of yoga practice for PE is one hour daily [14,18,31]. It is suggested that yoga poses are to be practiced for approximately 30 to 40 minutes [49] or 20 to 30 minutes [31], followed by breathing practices or pranayama for approximately 10 minutes [31,49]. It is also suggested that mudra including perineal and pubococcygeal exercises can be practiced for 10 to 15 seconds at a time and for 15 to 20 times a day. They can be done anywhere, at the workplace, while travel-

ing, reading or watching TV [18].

2. The total duration of yoga practice

It was observed that the total duration of 3 months with a daily practice of 1 hour was effective for significant improvement in intravaginal ejaculatory latencies [18], increase in mean intravaginal ejaculation time [31] and increased duration of the sexual act [49]. One study reported the ineffectiveness of yoga practices in providing relief in PE and the probable reason was thought to be shorter duration (21 days) of treatment [14].

However, it must be understood that the scope of yoga is not just limited to the management of PE for a few months, but it is a way of life, a yogic lifestyle to be adopted for a lifelong practice.

INDICATIONS OF YOGA FOR PREMATURE EJACULATION

Although many treatment options are available for PE, patients' satisfaction and drug side effects are always a concern. Non-pharmacological treatment options like yoga are being explored in sexual fulfillment and pleasure. The efficacy of these approaches has been established in empirical studies [14] and they seem preferable [18]. Yoga also has the potential to be used as an adjuvant to standard medical care *i.e.*, along with selective serotonin reuptake inhibitors in patients with PE [50].

Despite the mental distress, anxiety, embarrassment, and depression; most men with PE do not seek help [23]. The probable reason for this could be due to the stigma and shame associated with sexual dysfunction and lack of awareness about the availability of medical treatment options [18]. Van Lankveld [51] suggested the potential importance of 'self-help therapies' for men who cannot visit a therapist but are motivated to adhere to the advice and prescription. Self-treatment may be recommended only to those cases who are refractory to all medical treatment options or cannot afford medical care [50]. This could benefit lots of patients who otherwise remain untreated. But it is advisable that patients should consult medical practitioners before trying yoga on their own [50].

Yoga is low cost, easily available alternative which can be practiced in the privacy and its proven benefits can be beneficial for such patients. Also, the side ef-

fects of conventional medicines could be averted [47].

Many times, PE is without any physical cause and it may be lifelong or acquired. In both these types of PE, the recurrence rate is higher and the patients need to take the drugs for a long period of time. This is true in case of on demand medication like dapoxetine also. However, patients expect drug-free healthy sexual life, which in many cases is a distant dream. Yoga can fill the gaps between patient expectations and reality.

LIMITATIONS OF YOGA FOR PREMATURE EJACULATION

Results depend on the patients' participation and compliance. The patients need to spend one hour daily to get the desired effect. This requires a high level of motivation of the patient.

In the presence of associated co-morbid conditions, the practice has to be modified according to individual health, endurance, and physical capacity. In these cases, there are limitations and contra-indications to certain yoga practices which may affect the treatment outcome. For example, in patients with hypertension or cardiovascular disease, yoga poses, such as inversions, Kapalbhati kriya, and Bhastrika pranayama are contraindicated [40]. Inverted poses like Sarvangasan may lead to the risk of retinal detachment or bleeding and should be avoided or practiced with utmost care only after ophthalmic evaluation in patients with diabetes [52]. In patients with obesity, older individuals, or those who are unable to perform the difficult yoga postures, modifications depending on their feasibility and acceptability are recommended [33].

If performed under the guidance of a qualified yoga professional, yoga is a safe practice for all age groups. However, to limit injuries and harm, the patients should not exert themselves or push beyond capacity to get into the ideal pose. Balancing poses should be practiced carefully to avoid traumatic injuries. The yoga poses must be practiced slowly, without any sudden jerky movements.

LIMITATIONS OF SCIENTIFIC EVIDENCE

The review of the literature shows that the scientific evidence is sparse with limited empirical studies regarding yoga and its effect on PE. There is a vast

amount of literature claiming the effectiveness of yoga in the treatment of PE, but unfortunately there is limited scientific evidence to support these impressive claims. Although the role of yoga in sexual function is time tested, cost-effective, safe, and appears promising, there is a need for more directed extensive research in this area. Effect of particular yoga posture or yoga technique for PE is investigated in very few studies.

SUMMARY AND SPECIFIC CONCLUSIONS FOR ROLE OF YOGA IN PREMATURE EJACULATION

So far, limited evidence for advocating yoga in PE is available in the scientific literature. However, promising results such as significant improvement in intravaginal ejaculatory latency period, increase in mean intravaginal ejaculation time and increased duration of the sexual act which are attributed to yoga practices have been reported in a few empirical studies.

Yoga as a time tested, safe and cost-effective 'self-help therapy' may be recommended in those cases who are refractory to all medical treatment options, who cannot afford medical care or who cannot visit a therapist but are motivated to adhere to the advice and prescription.

What yoga as therapy can offer is focus on the mind–body connection which is lacking in the contemporary approaches in sex therapy. Yoga practice helps to enrich the sexual life which can be elevated from sensual to a spiritual plane. Yoga can be a good therapeutic alternative in the treatment of PE and can be integrated in contemporary sex therapies and sexual medicine. Integrating yoga as a non-pharmacological treatment modality into contemporary sex therapy has the potential to offer beneficial effects for different facets of human sexuality.

Conflict of Interest

The authors have nothing to disclose.

Author Contribution

Conceptualization: AMJ, RAV. Data curation: all authors. Supervision: RAV, SD. Writing–original draft: all authors. Writing–review & editing: all authors.

REFERENCES

1. Rosen RC. Prevalence and risk factors of sexual dysfunction in men and women. *Curr Psychiatry Rep* 2000;2:189-95.
2. Serefoglu EC, McMahon CG, Waldinger MD, Althof SE, Shindel A, Adaikan G, et al. An evidence-based unified definition of lifelong and acquired premature ejaculation: report of the second international society for sexual medicine ad hoc committee for the definition of premature ejaculation. *Sex Med* 2014;2:41-59.
3. Waldinger MD, Hengeveld MW, Zwinderman AH, Olivier B. An empirical operationalization study of DSM-IV diagnostic criteria for premature ejaculation. *Int J Psychiatry Clin Pract* 1998;2:287-93.
4. Tiefer L. Sex therapy as a humanistic enterprise. *Sex Relatsh Ther* 2006;21:359-75.
5. Leonard K. Yoga shows highest growth in natural therapy [Internet]. Washington: U.S. News & World Report; 2015 [cited 2019 Feb 24]. Available from: <http://www.usnews.com/news/articles/2015/02/10/yoga-shows-highest-growth-in-natural-therapy>.
6. Jern P, Santtila P, Witting K, Alanko K, Harlaar N, Johansson A, et al. Premature and delayed ejaculation: genetic and environmental effects in a population-based sample of Finnish twins. *J Sex Med* 2007;4:1739-49.
7. Janssen PK, Bakker SC, Réthelyi J, Zwinderman AH, Touw DJ, Olivier B, et al. Serotonin transporter promoter region (5-HTTLPR) polymorphism is associated with the intravaginal ejaculation latency time in Dutch men with lifelong premature ejaculation. *J Sex Med* 2009;6:276-84.
8. Maggi M, Buvat J, Corona G, Guay A, Torres LO. Hormonal causes of male sexual dysfunctions and their management (hyperprolactinemia, thyroid disorders, GH disorders, and DHEA). *J Sex Med* 2013;10:661-77.
9. Liang CZ, Zhang XJ, Hao ZY, Shi HQ, Wang KX. Prevalence of sexual dysfunction in Chinese men with chronic prostatitis. *BJU Int* 2004;93:568-70.
10. Lousada M, Angel E. Tantric orgasm: beyond Masters and Johnson. *Sex Relatsh Ther* 2011;26:389-402.
11. Francoeur RT. Sexuality and spirituality: the relevance of eastern traditions. *SIECUS Rep* 1992;20:1-8.
12. Iyengar BKS. *Light on yoga: yoga dipika*. 33rd ed. New Delhi: HarperCollins Publication; 2005.
13. Muktibodhananda S. *Hatha yoga pradiipika*. 2nd ed. Munger: Yoga Publications Trust; 2005;370-3.
14. Mamidi P, Gupta K. Efficacy of certain yogic and naturopathic procedures in premature ejaculation: a pilot study. *Int J Yoga* 2013;6:118-22.

15. Sengupta P. Challenge of infertility: How protective the yoga therapy is? *Anc Sci Life* 2012;32:61-2.
16. Sengupta P, Chaudhuri P, Bhattacharya K. Male reproductive health and yoga. *Int J Yoga* 2013;6:87-95.
17. Shobitha M, Tyagi P, Kohli S. Impact of yoga on mind-body management and its possible scientific mechanisms. *Indian J Clin Anat Physiol* 2016;3:391-4.
18. Dhikav V, Karmarkar G, Gupta M, Anand KS. Yoga in premature ejaculation: a comparative trial with fluoxetine. *J Sex Med* 2007;4:1726-32.
19. Yu X, Fumoto M, Nakatani Y, Sekiyama T, Kikuchi H, Seki Y, et al. Activation of the anterior prefrontal cortex and serotonergic system is associated with improvements in mood and EEG changes induced by Zen meditation practice in novices. *Int J Psychophysiol* 2011;80:103-11.
20. Giuliano F. 5-Hydroxytryptamine in premature ejaculation: opportunities for therapeutic intervention. *Trends Neurosci* 2007;30:79-84.
21. Martin C, Nolen H, Podolnick J, Wang R. Current and emerging therapies in premature ejaculation: Where we are coming from, where we are going. *Int J Urol* 2017;24:40-50.
22. McCabe MP, Sharlip ID, Lewis R, Atalla E, Balon R, Fisher AD, et al. Risk factors for sexual dysfunction among women and men: a consensus statement from the Fourth International Consultation on Sexual Medicine 2015. *J Sex Med* 2016;13:153-67.
23. Porst H, Montorsi F, Rosen RC, Gaynor L, Grupe S, Alexander J. The Premature Ejaculation Prevalence and Attitudes (PEPA) survey: prevalence, comorbidities, and professional help-seeking. *Eur Urol* 2007;51:816-23; discussion 824.
24. Mohammed R, Banu A, Imran S, Jaiswal RK. Importance of yoga in diabetes and dyslipidemia. *Int J Res Med Sci* 2016;4:3504-8.
25. Gadham J, Sajja S, Rooha V. Effect of yoga on obesity, hypertension and lipid profile. *Int J Res Med Sci* 2015;3:1061-5.
26. Yadav R, Yadav RK, Khadgawat R, Mehta N. Beneficial effects of a 12-week yoga-based lifestyle intervention on cardiometabolic risk factors and adipokines in subjects with prehypertension or hypertension. *J Hypertens* 2016;34:e252.
27. Butterfield N, Schultz T, Rasmussen P, Proeve M. Yoga and mindfulness for anxiety and depression and the role of mental health professionals: a literature review. *J Ment Health Train Educ Pract* 2017;12:44-54.
28. Sarkar S, Varshney M. Yoga and substance use disorders: a narrative review. *Asian J Psychiatr* 2017;25:191-6.
29. Woolery A, Myers H, Sternlieb B, Zeltzer L. A yoga intervention for young adults with elevated symptoms of depression. *Altern Ther Health Med* 2004;10:60-3.
30. Waldinger MD, Quinn P, Dilleen M, Mundayat R, Schweitzer DH, Boolell M. A multinational population survey of intravaginal ejaculation latency time. *J Sex Med* 2005;2:492-7.
31. Patil P, Makwana JJ, Thakare GV, Patil SP. Effect of sitting & nonsitting yoga asanas on premature ejaculation. *Inventi Impact Sex Reprod* 2012;2012:204-8.
32. Mishra SP, Singh RH. Effect of certain yogic asanas on the pelvic congestion and its anatomy. *Anc Sci Life* 1984;4:127-8.
33. Dhikav V, Karmarkar G, Verma M, Gupta R, Gupta S, Mittal D, et al. Yoga in male sexual functioning: a noncomparative pilot study. *J Sex Med* 2010;7:3460-6.
34. Mumford J. A Chakra & Kundalini workbook: psycho-spiritual techniques for health, rejuvenation, psychic powers, and spiritual realization. Saint Paul: Llewellyn Publications; 1994.
35. Pal GK. Effects of pranayama on cardiovascular health. *Int J Clin Exp Physiol* 2016;3:57-8.
36. Chen YF, Huang XY, Chien CH, Cheng JF. The effectiveness of diaphragmatic breathing relaxation training for reducing anxiety. *Perspect Psychiatr Care* 2017;53:329-36.
37. Pramanik T, Sharma HO, Mishra S, Mishra A, Prajapati R, Singh S. Immediate effect of slow pace bhastrika pranayama on blood pressure and heart rate. *J Altern Complement Med* 2009;15:293-5.
38. Adhana R, Agarwal M, Gupta R, Dvivedi J. Effect of slow breathing training on heart rate, spontaneous respiratory rate and pattern of breathing. *Int J Res Med Sci* 2016;4:1027-30.
39. Rakshith KR, Shivakumar, Kaushal S, Vijeth Kumar LA. Yogic intervention in sexual dysfunction: a review. *J Ayurveda Integrated Med Sci* 2017;2:243-50.
40. Saraswati SS. Asana, pranayama, mudra bandha. Bihar: Yoga Publications Trust; 2012.
41. Gurjar AA, Ladhake SA, Thakare AP. Analysis of acoustic of "OM" chant to study its effect on nervous system. *Int J Comput Sci Netw Secur* 2009;9:363-7.
42. Harne BP. Higuchi fractal dimension analysis of EEG signal before and after OM chanting to observe overall effect on brain. *Int J Electr Comput Eng* 2014;4:585-92.
43. Dwivedi MK, Singh SK. Yoga Nidra as a stress management intervention strategy. *Purusharta* 2016;9:18-25.
44. Stankovic L. Transforming trauma: a qualitative feasibility study of integrative restoration (iRest) yoga Nidra on combat-related post-traumatic stress disorder. *Int J Yoga Therap* 2011; (21):23-37.
45. Goldmeier D, Mears AJ. Meditation: a review of its use in Western medicine and, in particular, its role in the management of sexual dysfunction. *Curr Psychiatr Rev* 2010;6:11-4.
46. Hölzel BK, Lazar SW, Gard T, Schuman-Olivier Z, Vago DR, Ott U. How does mindfulness meditation work? Proposing

- mechanisms of action from a conceptual and neural perspective. *Perspect Psychol Sci* 2011;6:537-59.
47. Dhikav V. Decade of Dhikav yoga. *Ann Yoga Phys Ther* 2016; 1:1014.
 48. Ciocca G, Limoncin E, Mollaioli D, Gravina GL, Di Sante S, Carosa E, et al. Integrating psychotherapy and pharmacotherapy in the treatment of premature ejaculation. *Arab J Urol* 2013;11:305-12.
 49. Makwana JJ, Patil PJ. Premature ejaculation: a comparative analysis between yoga and stop-start method. *Indian J Res Rep Med Sci* 2012;2:17-20.
 50. Dhikav V. Bedroom yoga: a new sexual performance enhancer? *J Yoga Phys Ther* 2012;2:e106.
 51. van Lankveld J. Self-help therapies for sexual dysfunction. *J Sex Res* 2009;46:143-55.
 52. Shah NJ, Shah UN. Central retinal vein occlusion following Sirsasana (headstand posture). *Indian J Ophthalmol* 2009;57: 69-70.