**Summary**

Ejaculatory disorders include premature, deficient (delayed ejaculation and anejaculation) and retrograde ejaculation. A rare symptom connected to ejaculatory disorders is male anorgasmia. In the past, ejaculatory disorders were considered as typical relational and psychological symptoms. For this reason, a number of behavioural and psycho-relational approaches have flourished from the first ideas of curing sexual problems with empirical therapy, focusing on the symptoms of sexual pathology. Such treatment includes assessment, behavioural and educational components, psychotherapy in the context of the relationship and sexual timetables. Recent advances in understanding the importance and frequency of ejaculatory disorders, insights into their organic and non-organic pathophysiology and the efficacy of a growing arsenal of pharmacological therapies lead to a new challenge which can be confronted only with the development of new, integrated therapeutic alternatives from a modern somato-psychic and holistic viewpoint.

**Keywords:** anorgasmia, behavioural therapies, delayed ejaculation, premature ejaculation, psychotherapy

**Introduction**

Sex therapy is a collective term which indicates many behavioural models of short-term treatment of human sexual dysfunction. The common aim of these therapies is to modify the dysfunctional behaviour as directly as possible, taking into account the role of childhood conflicts, self-defeating attitudes and the quality of the partners’ relationship (Table 1). Whenever possible, the sex therapist involves both partners, working together on the reduction of performance anxiety, change of self-defeating beliefs and attitudes, improvement of sexual communication, enhancement of sexual knowledge and teaching of sexual skill. The groundbreaking work of two sexologists, the gynaecologist Masters and the psychologist Johnson, is at the origin of behavioural therapies (Masters & Johnson, 1966, 1970), which have been modernized with the so-called new sexual therapy of Kaplan (1974), who offered a psychodynamic, or transactional, account of the dyadic causes of sexual dysfunction. Behavioural therapies can be considered as the first effective treatment of sexual symptoms and in the last 30 years, the only change in the management of sexual diseases has been their medical treatment. Behavioural therapies are in fact still used without substantial modification of the original definitions and format (Shover & Leiblum, 1994).

During the evolution of human sexuality, the ability to control the timing of ejaculation has become one of the most important features of couple’s sexual health. In animals, sexual intercourse is usually a brief episode (Hong, 1984). Male genitalia are in fact designed to ejaculate quickly. Even during coital activity the animal must be ready to attack or flee, thus making it essential to deposit semen with the fastest
Table 1. Components of behavioural therapy

(A) Assessment
- General history
- Sexual history
- Relationship history

(B) Educational components
- Understanding of sexual anatomy
- Understanding of sexual physiology

(C) Behavioural components
- Sensate focus
- Squeeze
- Stop-start
- Kegel’s exercises

and safest technique. However, as one of the principal aims of human sexuality is pleasure, men learned to control ejaculation, in order to enhance their own and their partners’ enjoyment. It can be postulated, on the basis of these considerations, that ejaculation control is not natural, but cultural. For this reason, lack of ejaculatory control has a profound psycho-relational basis and its treatment is susceptible to psychotherapy of the male and/or couple. The aim of this review article is to investigate the importance and limits of sexological and behavioural approaches to ejaculatory disorders.

Physiology of ejaculation

The knowledge of male genital tract (MGT) anatomy and neurophysiology of ejaculation is the premise for any therapy of its disorders. Emission, ejaculation and orgasm are three distinct events controlled by the sympathetic nerves (Newman et al., 1982). During emission, smooth muscle cells of MGT, involving testicular tubules, efferent ducts, epididymis and vasa deferentia, contract and seminal fluid is secreted from the seminal vesicles and prostate. The bladder neck then closes to prevent retrograde ejaculation of seminal fluid into the bladder and the seminal bolus in the prostatic urethra is trapped between the distal urethra, closed for erection and the bladder neck. As pressure in the seminal bolus increases, the sensation of ejaculatory inevitability is experienced. Although the timing of emission is under partial voluntary control, ejaculation is the reflex-induced expulsion of semen from the urethra which does, however, require cerebral input. Finally, orgasm is the subjective, perceptual-cognitive event of pleasure that, in normal conditions, coincides with the time of ejaculation (Korenman, 1998).

The emission phase is mediated by the adrenergic system and by the release of norepinephrine, together with other local neurotransmitters (oxytocin, Maggi et al., 1987; endothelin, Peri et al., 1997; and ATP, Mulryan et al., 2000). In fact, local sensory receptors located on glands trigger the afferent stimuli which pass through the penile dorsal nerve into the spinothalamic tract and to the thalamus and sensory cortex. From these regions, the efferent signals run through the anterolateral column of the sympathetic ganglia at T12–L3. The ejaculatory reflex starts from the glands and urethra filled by the seminal bolus, being innervated by somatic, sympathetic and, chiefly, parasympathetic nerves (Yang & Bradley, 1999). As the serotonergic system at the central level acts as a suppressor of the ejaculatory reflex (Foreman et al., 1989), both serotonin reuptake inhibitors and serotonin agonists may hasten time to ejaculation (Marson & McKenna, 1994). D2 dopaminergic receptors act as ejaculation stimulators (Heaton, 2000). Efferent innervation on the contrary, is somatic through the parasympathetic sacral outflow, originates at S2–S4 and runs through the pudendal nerve (Yavetz et al., 1994), causing clonic contractions of the striated MGT muscles. Recent studies in animals suggest, finally, that two transmitters are locally involved in the ejaculation mechanism: nitric oxide, the pivotal regulator of ejaculation (Kriegsfeld et al., 1999), and carbon monoxide (Burnett et al., 1987).

Premature ejaculation

Premature ejaculation (PE), also referred to as early (EE) or rapid ejaculation (RE), is the commonest sexual complaint, affecting 30–40% of sexually active men in an age-dependent way (Frank et al., 1978; Schein et al., 1988). It may also be present in a higher percentage of sexually naive males, such as adolescents and young adults. The introduction of PE to the list of sexual disorders is because of the availability of modern contraceptives, the sexual and feminist revolution of the mid-1960s and the ‘discovery’ of the female orgasm. In fact, Kinsey did not consider PE as a sexual dysfunction, partly because in his historic survey of human sexuality he found that 75% of men ejaculated within 2 min of penetration (Kinsey et al., 1948).

Even if there is no commonly accepted definition of PE (Rowland et al., 2001), it is now considered as the persistent or recurrent inability to voluntarily delay ejaculation (Vandereycken, 1986) upon or shortly after penetration or with minimal sexual stimulation. In this definition, factors affecting duration of the excitement phase, such as age, novelty of the sexual partner or situation and frequency of sexual activity, must be taken into account (American Psychiatric Association, 1994).

The classical distinction, used for PE as well as for almost all other sexual complaints, between psychosocial (or psychodynamic) and organic (or medical) causes has as a corollary that psychological PE should be treated by the psycho-sexologist, while organic PE must be cured by the andrologist. This is a mistake. Pharmacological aid, alongside psychotherapy, is often useful in treatment of a patient with psycho-relational problems. Conversely, the use of a ‘pill’ without a holistic approach, taking into account the personal
and sexual history of the patient and the profound impact that medical treatment may have on the couple, is reductive and often unsuccessful. Furthermore, even if the medical causes of PE are beyond the aim of this review article, it should be noted that their catalogue is growing and organic aetiologies are only now becoming more evident. Premature ejaculation has been associated with low serum testosterone (Cohen, 1997) and seminal plasma magnesium levels (Omu et al., 2001), hyperthyroxinemia (Jannini et al., 1995), major neurological disorders (multiple sclerosis, spina bifida, tumour of the spinal cord), and short frenum of prepuce, penile hypersensitivity and reflex hyperexcitability (Xin et al., 1996; Cold & Van Howe, 1998; Ozcan et al., 2001).

More recently, we provided evidence for an intriguingly high prevalence of prostatic inflammation/infections in PE, as well as for a higher than normal prevalence of PE in patients with chronic prostatitis (Screponi et al., 2001). A careful examination of the prostate should therefore be performed before any pharmacological or psychosexual treatment for PE. In the majority of cases, in fact, PE is the result of a mix of psychogenic, physiological and organic factors, which may interact with each other to exacerbate the symptom.

A sadistic or narcissistic behaviour in PE is considered in classic psychoanalytic theories as the major cause of PE (Ellis, 1936). By ejaculating quickly, a man symbolically and physically ‘steals’ his partner’s orgasm (Kaplan, 1989). However, other psychosocial factors are involved in PE. These include lack of sexual skills, irrational beliefs, cultural and religious influence, sexual orientation, intrapsychological conflict, marital dissatisfaction, sexual abstinence and, frequently, performance anxiety (Strassberg et al., 1987). Irrespective of these possible aetiologies, it has been suggested that a man with PE has not allowed himself to receive sensory feedback from the sensations occurring immediately before orgasm, which would have enabled him to bring his ejaculatory reflex under voluntary control (Kaplan, 1974). Behavioural approach to PE is based, in fact, on the assumption that the lack of awareness of pre-ejaculatory sensations may lead to this symptom.

Therapy – current PE treatments are based on a pharmacological and a sexological approach. The aim of pharmacological PE treatment is to eliminate the symptom, giving the patient time to understand what is happening in his MGT before ejaculation and thus enhancing the ability to control his ejaculation and creating a ‘positive memory’ of sexual success which will help him to overcome the problem. Drugs increasing serotonin levels (such as antidepressants) and those interfering with sympathetic nervous system activation of the ejaculatory reflexes (such as α-adrenergic blockers) are widely prescribed. The effectiveness of tricyclic antidepressants (Goodman, 1980; Haensel et al., 1996; Strassberg et al., 1999) and selective serotonin reuptake inhibitors (SSRIs) (Waldinger et al., 1994, 1997, 2001; Kara et al., 1996; Kim & Seo, 1998; McMahon, 1998) is probably because of their effect of increasing penile threshold without changing the amplitude and latency of sacral evoked response and cortical somatosensory evoked potential. For patients with erection weakness and PE, treatment with sildenafil alone (Abdel-Hamid et al., 2001) or in combination with paroxetine (Montorsi et al., 2001) is currently under examination. Topical agents such as anaesthetics (Andersen, 1989; Berkovitch et al., 1995) and herbal products (Choi et al., 2000) are also used, with limited efficacy (Morales, 2000). Intracavernous injection therapies have been also reported as effective in PE treatment (Fein, 1990; Slob et al., 2002).

Sexological therapy of PE starts from the approach that it is the couple, not the individual, which is dysfunctional. For this reason, sexual homework assignments are often prescribed to the couple, such as the ‘sensate focus’ in which partners take turns giving and receiving stimulation in non-genital body areas. The limitation of genital activity should reduce the pressure to ‘perform’ (Masters & Johnson, 1970). To specifically cure PE, Masters and Johnson suggested the ‘squeeze’ technique. Upon the personal instructions of a sex therapist, the man or his partner squeezes for about 20s the gland of the erect penis, just below the coronal ridge, immediately before ejaculation (Masters & Johnson, 1966). This prevents ejaculation, but erection may be partially lost. The first two or three sessions are performed without coitus, which is subsequently allowed in the female-superior position, in order to create less pressure to ejaculate and to allow the woman to lift off and squeeze the penis easily. After some repetitions, the man should learn to tolerate higher levels of sexual stimulation without ejaculating. The alternative stop–start method for treating PE was introduced by Kaplan (1974), based on the remarkable work of Semans (1955). Here, during sexual stimulation or intercourse, when a man feels he is close to ejaculation, he stops and withdraws from the partner and only restarts when he feels he has regained control. The couple usually starts with simple vaginal containment, without pelvic thrusting. As the feeling of control increases, thrusting can begin, enabling the man to recognize the cues preceding his point of ejaculatory inevitability. Because the squeeze technique carries some risk of discomfort, many sex therapists prefer the stop–start method. Masturbation training has been used in the treatment of individuals without partners (Zeiss, 1978).

Finally, strengthening of the pubococcygeus muscles of the pelvic floor can be considered as part of the sexological approach to PE. These exercises, named after Arnold Kegel, the gynaecologist who created them, involve the patient’s identification of his pubococcygeus muscles by clenching, as if to stop urination in midstream. When the patient is more experienced, he can start the exercises with a few slow, contractions of 2–3 sec, repeated five times per day. As muscles strengthen, the time and the number of each contraction should gradually be extended.
Deficient ejaculation

Delay (delayed ejaculation) in or the impossibility (anejaculation) of reaching ejaculation and/or orgasm is a clinical symptom much rarer than PE (1–4% of sexually active men). Again, it should be considered as a problem of the couple, as the partner of a man with deficient ejaculation may feel unattractive, unsexy and sexually inadequate: marital stress, sexual dissatisfaction, inhibited sexual desire, and avoidance of sexual contact may result. Delayed ejaculation (DE) is an inhibition of the ejaculatory reflex, possibly with reduced or absent orgasm (male anorgasmia). Men with DE may be able to ejaculate with great effort and after a prolonged intercourse, or be unable to ejaculate at all in some circumstances. Psychological aetiologies may result from strict religious backgrounds (causing the person to view sex as sinful), lack of attraction to a female partner, idiosyncratic conditioning caused by unique or atypical masturbation patterns, psychologically traumatic events (such as being discovered in masturbation or illicit sex, or discovering that one’s partner is having an affair) and homosexual attraction. Ejaculatory overcontrol may mirror an overcontrolled personality, frequently found in these patients. Delayed ejaculation has been also recently explained as an ‘autosexual’, rather than heterosexual or homosexual orientation (Apfelbaum, 2000). Delayed ejaculation is considered a psychorelational symptom, but it may be associated with drug therapy (Wein & Van Arsdale, 1988) or with infection/inflammation of the prostate and associated glands. Anejaculation, in contrast with DE, appears to be caused mainly by organic aetiologies (spinal cord injury, diabetes mellitus, myelitis, or multiple sclerosis) (Nehra et al., 1996). Other psychological factors underlying this condition are poorly defined. In fact, psychosexual counselling and/or psychotherapy are not as effective here as in other types of non-organic sexual dysfunction.

Therapy – the first aim of the behavioural approach to impaired ejaculation is to enable the patient to reach conscious ejaculation by learning to absorb himself in the pleasure of the sexual moment. Any fears or anxieties, such as fear of pregnancy or sexually transmitted diseases, should be discussed before and during behavioural treatment. His partner is instructed to create a relaxed atmosphere, not focusing on the achievement of ejaculation (sensate focus). In the graduated homework assignments, the couple engage in sexual activities that minimize performance pressure and maximize focus on pleasure. Treatment begins with a prohibition of complete coitus while the couple gradually enhance their ability to achieve ejaculation through other types of stimulation. Once the patient can ejaculate in the partner’s presence, the partner brings him to the point in which he is about to ejaculate. Then, in the female-superior position, she inserts his penis and thrusts briefly to bring him to ejaculation. This often helps break the pattern of inability to ejaculate within the vagina. Hypnosis is sometimes a useful adjunct to therapy and masturbation training, education and exploration of attitudes for single men with RE have been proposed (Zilbergeld, 1975). Behavioural therapies may be used together with α-adrenergic agonists (phenylpropranolamde and ephedrine) (Howard, 1995) but cannot be used in patients with retrograde ejaculation, a symptom related to the emission phase, exclusively organic in nature (Newman et al., 1982). Finally, as the etiology of pure male anorgasmia is currently unknown (Williams, 1985), a systematic behavioural approach to this disturbance is currently not available.

Evaluation of sexological approach to ejaculatory dysfunction

Although a success rate of 60–95% has been claimed for behavioural approaches to sexual dysfunction (Kilmann & Auerbach, 1979; Seifel & Althof, 1997), the field of psychosexology has taken seriously only recently the task of demonstrating scientifically the efficacy of sex therapies (Bancroft, 1999; Heiman & Meston, 1999). These treatments will continue to play a pivotal role in sexology, not as an alternative to, but probably together with medical sexology. However, some points need to be addressed by a new research effort. While the central role of couple dynamics in the genesis and continuation of many ejaculatory disorders cannot be ignored, no single theoretical approach adequately incorporates the totality of intra- and interpersonal dynamics (Leiblum & Rosen, 1991). Behavioural therapies require the active participation of the partner, but often, political or cultural reasons, this is not possible. The experience of the past 30 years suggests that North American patients agree more easily than Europeans to behavioural treatment and its ‘gymnastic’ aspects (Leumann et al., 1999). Behavioural therapies are inappropriate for subjects in whom profound personal or relationship problems underlie sexual disorders. Furthermore, sexological approach is designed for the couple. These methods therefore cannot be easily proposed to single males with multiple or occasional partners, who may not collaborate with the sexologist. It should be noted that this is the most frequent condition of young men in western societies. Additionally, the success rate of behavioural therapies has been difficult to duplicate and verify in controlled studies (McCarthy, 1989) and there is little information on the long-term results of ejaculatory disorder treatments (LoPiccolo & Stock, 1986). Therapeutic success in sex therapy is often unpredictable (Hawton & Catalan, 1986), being more frequent in highly motivated couples with a good relationship (Kilmann et al., 1987). There are many reasons for therapy failure. Table 2 lists the possibilities of therapy resistance. The most important is probably the ‘sticking to the symptom’. In couples with a long-term sexual problem (such as EP, DE, or erectile dysfunction) vicariant mechanisms are structured to overcome the absence of sexual
happiness. These are couples who are still together, despite their problem. Even if they strongly desire recovery, they may subconsciously fear that cure might destroy their relationship. This is a frequent condition in which the help of a sexual therapist may be decisive.

Conclusions

The aim of psychoanalysis as a tool for sexual dysfunction treatment was to recognize the deep subconscious causes of psychological diseases. It was thus an attempt to propose an aetiological therapy. However, even if it is a powerful theory to explain and cure some neurotic conflicts, the Freudian approach to sexual pathology is slow and very frequently ineffective. For these reasons, in the 60s, Masters and Johnson pioneered a new direct behavioural approach not necessarily focused on the cause of sexual problems, but simply on the symptoms. The symptomatic therapies of Masters and Johnson may now be considered a ‘Copernican’ revolution in the world of psycho-sexology, diverting therapeutic attention from the cause to the symptoms. But it was also a ‘Trojan horse’ which introduced to sexology the possibility of patients’ symptomatic cure. This is now true of medical sexology with its pharmacological and psycho-integrated approach, currently to ejaculatory disorders and erectile dysfunction and, in the near future, also to female sexual disorders. The medical sexologist’s aim is to identify the ‘specific weight’ of each aetiology and to start aetiological and symptomatic therapies in a ‘holistic’ and eclectic way, taking into account the potency of the drugs and the couple’s dynamics as well as providing specific sexual counselling. In the interests of the patient, this complex therapeutic process should be performed not in conflict, but in harmony with behavioural approaches and with the sex therapist. Finally, considering the importance of sexual counselling in the therapy of ejaculatory disorders and the role of prostatic diseases in their pathogenesis, the prevention policy should be focused both on sexual and andrological education of young and adult males.

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References


American Psychiatric Association (1994) Diagnostic and statistical manual of mental disorders, 4Th eds. APA, Washington, DC.


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