

SYNTHESIS ARTICLE – ARTICLES DE SYNTHÈSE

**SEXUAL AND REPRODUCTIVE HEALTH IN MEN WITH SPINAL CORD INJURY**Iurii ARIAN^{1,2} , Maria RUSU¹ , Daniela MACHIDON¹ , Ion DUMBRAVEANU^{1,2} ¹Laboratory of Andrology, Functional Urology, and Sexual Medicine, Chisinau, Republic of Moldova²Nicolae Testemitanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Corresponding author: Iurii Arian, e-mail: iurii.arian@usmf.md

DOI: 10.38045/ohrm.2024.3.01

CZU: 616.69:616.832-001-055.1

Keywords: spinal cord injury, sexual dysfunction, fertility, physical disability, reproductive health.

Introduction. Sexual health is a fundamental aspect of overall well-being, quality of life, and a sense of fulfillment. A significant percentage of men with spinal cord injury (SCI) experience ejaculatory issues (95%), poor semen quality (75%), and erectile dysfunction (80%), making it impossible for them to conceive without medical assistance.

Material and methods. The bibliographic resources were analyzed and selected from databases such as PubMed, SCOPUS, HINARI, and Web of Science to identify studies on the desired topic. Following the initial research, 128 items were identified, and 32 representative articles were selected for this synthesis article.

Results. Damage to the spinal cord can result in partial or complete loss of function below the level of the injury. These injuries lead to impaired ejaculatory and erectile function in addition to reproductive issues, which might include abnormal sperm motility, morphology, and viability, as well as reduced spermatogenesis. Challenges such as loss of bladder and bowel function, changes in physical appearance, spasms, lack of communication, and stereotypes can affect sexual life of men with SCI.

Conclusions. Studying sexual dysfunction in disabled men is essential for promoting comprehensive healthcare, supporting mental health, fostering healthy relationships, and advocating for the rights and inclusion of individuals with disabilities. Understanding the mechanisms affecting sexual function in people with SCI is of particular practical interest both in medical practice and in subsequent studies on patients.

Cuvinte-cheie: leziunea măduvei spinării, disfuncție sexuală, fertilitate, dizabilitate fizică, sănătate reproductivă.

MECANISMELE DISFUNȚIILOR SEXUALE LA BĂRBAȚII CU LEZIUNI ALE MĂDUVEI SPINĂRII

Introducere. Sănătatea sexuală este un aspect fundamental al bunăstării generale, calității vieții și sentimentului de împlinire. Un procent semnificativ de bărbați cu leziuni ale măduvei spinării (LMS) se confruntă cu probleme ejaculatorii (95%), calitate slabă a spermei (75%) și disfuncție erectilă (80%), făcând imposibilă conceperea fără asistență medicală.

Material și metode. Resursele bibliografice au fost analizate și selectate din baze de date precum PubMed, SCOPUS, HINARI și Web of Science pentru a identifica studii privind subiectul vizat. În urma cercetării inițiale au fost identificate 128 de articole, dintre care 32 de articole reprezentative au fost selectate pentru acest articol de sinteză.

Rezultate. Leziunile la nivelul măduvei spinării pot duce la pierderea parțială sau completă a funcțiilor situate sub nivelul leziunii. Aceste leziuni duc la afectarea funcției ejaculatorii și erectile, precum și la probleme de reproducere, care pot include motilitatea, morfologia și viabilitatea anormală a spermatozoizilor, inclusiv reducerea spermatogenezei. Provocări precum pierderea funcției vezicii urinare și a funcției intestinale, modificări ale aspectului fizic, spasme, lipsa de comunicare și stereotipuri pot afecta viața sexuală a bărbaților cu LMS.

Concluzii. Studiarea disfuncției sexuale la bărbații cu dizabilități este esențială pentru promovarea asistenței medicale complete, susținerea sănătății mintale, încurajarea relațiilor sănătoase și susținerea drepturilor și incluziunii persoanelor cu dizabilități. Definirea mecanismelor care afectează funcția sexuală la persoanele cu LMS prezintă un interes deosebit atât în practica medicală, cât și în studiile ulterioare asupra pacienților.

INTRODUCTION

Sexual health is a fundamental aspect of overall well-being, quality of life, and a sense of fulfillment. The World Health Organization declared everyone's right to sexual health to be fundamental in 2000. They defined sexual health as "a state of physical, emotional, mental, and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction, or infirmity" (1).

Men with physical disabilities encounter a unique set of challenges that can impact various aspects of their lives, including intimate relationships and personal well-being. Understanding the mechanisms and effects of physical disabilities is vital for advancing medical knowledge and developing effective treatments. By studying physical disabilities, researchers can work towards reducing social stigma and promoting inclusion. A deeper understanding of these conditions helps challenge stereotypes, fostering a more inclusive and supportive attitude towards individuals with physical disabilities.

There is a common but inaccurate assumption that people with disabilities may not be interested in or capable of engaging in sexual activities. This misconception contributes to the lack of emphasis on studying sexual dysfunction within this population. An estimated 1.3 billion people experience significant disability. This represents 16% of the world's population. Nearly 200 million of them experience difficulties in functioning (2). Traumatic spinal cord injury (SCI) most commonly occurs in young males, at the peak of their reproductive health (3). A significant percentage of men with SCI experience ejaculatory issues (95%), poor semen quality (75%), and erectile dysfunction (80%), making it impossible for them to conceive without medical assistance (4).

The *aim* of this study was to define the morphological and pathophysiological mechanisms, clinical symptoms, psychological changes, and management of sexual dysfunction in men with SCI.

MATERIAL AND METHODS

The bibliographic resources were selected from databases such as *PubMed*, *SCOPUS*, *HINARI*, and *Web of Science* using keywords such as "spinal cord injury," "sexual dysfunction," and "reproductive health," which were used in various combinations to maximize search efficiency.

For targeted selection of bibliographic sources, the following filters were applied: full-text articles, articles in the English language, and articles related to male sex. A total of 128 articles matching the search criteria were found. After excluding records unrelated to the study's aim, 32 representative articles, including different types of publications such as WHO documents, books, reviews, clinical studies, and sociological studies, were considered potentially relevant for the given synthesis.

Articles that did not align with the purpose of the study and were not available for full viewing, articles with insufficient information, articles lacking data on sexual dysfunction in men with SCI, and studies on pediatric populations (<17 years) were excluded from the bibliography.

RESULTS

Spinal cord injury (SCI) is a condition that results in either temporary or permanent changes to the cord's function. There are two categories of SCI aetiologies: traumatic and non-traumatic. Non-traumatic SCI occurs when an acute or chronic disease, such as a tumor, infection, or degenerative disc disease, causes the primary injury. Traumatic SCI often results from accidents such as car crashes, falls, or sports injuries. Damage to the spinal cord can result in partial or complete loss of function below the level of the injury (5), as the injury can be complete or incomplete (fig. 1).

Central Cord Syndrome

Sensory and motor deficits occur below the injury level. The upper extremities are affected more than the lower extremities because the axons of the corticospinal tracts that supply the upper extremities are situated closer to the spinal cord, while those that supply the lower extremities are located closer to the periphery. The mechanism of injury is hyperextension, and it is frequently observed in elderly patients (7).

Anterior Cord Syndrome

Bilateral loss of motor function, pain, and temperature sensation below the injury level (injury to the spinothalamic tracts). Intact vibration and proprioception (unaffected dorsal columns).

Posterior Cord Syndrome

Loss of vibratory, proprioceptive, and tactile sen-

ses (injury to the dorsal columns). Intact pain, temperature sensation, and motor function (unaf-

ected spinothalamic and corticospinal tracts).

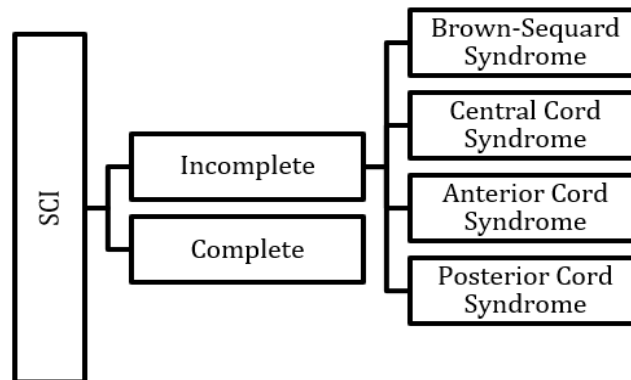


Figure 1. Spinal cord injury classification.

Complete Transection of the Spinal Cord

Complete loss of motor function on both sides, as well as proprioception, tactile, temperature, vibratory, and pain perception below the injury level (8).

The clinical outcomes of SCI depend on the severity and location of the lesion (tab. 1) (9). Studies have shown that individuals with tetraplegia die at a higher rate (80%) than those with paraplegia (20%), most likely as a result of respiratory compromise (10).

Table 1. Spinal cord injury levels and their effects.

Region	Subregion	Injury impact on body's functions
CERVICAL	C1-C4	Quadriplegia May not be able to breathe on their own. Requires complete assistance with activities.
	C5-C6	Paralysis in wrists, hands, trunk, and legs. Can raise their arms, bend elbows, and speak but breathing will be weakened.
	C7-C8	Paralysis in hands, trunk, and legs. Has some hand movement. May be able to grasp and release objects. Horner's syndrome (miosis, ptosis, and facial hypohidrosis) may accompany a cervical cord lesion at any level.
THORACIC	T1-T5	Paralysis in trunk and legs. Have normal arm, hand, and upper-body movement. Disturbances of bladder and bowel function.
	T6-T12	Paralysis in trunk and legs. Affects the abdominal, lower back muscles, and the legs.
LUMBAR	L1-L5	Some loss of function in the hips and legs. Little or no voluntary control of the bowel or bladder. Sexual function may be affected.
SACRAL	S1-S5	Prominent bladder and bowel dysfunction (urinary retention and incontinence with lax anal tone), and impotence. The bulbocavernosus (S2-S4) and anal (S4-S5) reflexes are absent.

Mechanism of Neurogenic Shock

The primary causes of spinal cord injury are disruptions to the neural parenchyma and axonal networks of the spinal cord caused by damage to astrocytes, neurons, microglia, and oligodendrocytes (11). Secondary injury results from swelling, inflammation, reactive oxygen species, and

the release of excitatory amino acids that inhibit neuronal repair and growth.

Due to sympathetic blunting in SCI above T6, the somatic and autonomic systems experience an acute state of neurogenic shock, which includes areflexia, profound unopposed parasympathetic dominance, resulting in neurogenic bradycardia,

neurogenic orthostatic hypotension (NOH), bronchiolar constriction, mucus secretion, and priapism in addition to the sensory and motor paralysis associated with traumatic SCI. Furthermore, hypovolemic shock related to blood loss from internal injuries is common in patients with traumatic SCI; this condition should be accompanied by compensatory tachycardia, but the parasympathetic dominance prevents this from happening. To maintain the proper cardiac output in cases of acute neurogenic bradycardia linked to high thoracic and cervical SCI, transcutaneous pacing may be necessary (12). The immediate result of SCI is vascular damage, which is followed by ischemia. Vasospasm, intravascular thrombosis, and primary disruption of vessels ultimately lead to local ischemia. Due to its higher metabolic demands, the highly vascularized grey matter containing neurons is more vulnerable to injury. When an injury is severe enough, there is a noticeable disruption of the grey matter as the injury volume increases and blood is extravasated (13).

Erectile Dysfunction

There are two main types of erection:

1. Reflexogenic erection (S2-S4 nerve roots intact) is caused by direct stimulation of the penis. The spinal parasympathetic reflex pathway located in the sacral spinal cord is involved. The sacral spinal cord receives sensory data from the penis upon physical contact, which causes motor output and penile erection. Reflex erections can still occur in SCI patients if the sacral spinal cord is unharmed.
2. Psychogenic erection (T11-L2 nerve roots intact). It has been demonstrated that the sympathetic nervous system regulates psychogenic erections, which are induced by ideas, images, sounds, and fantasies rather than genital stimulation. The penis becomes erect as a result of signals sent by supraspinal centers to the sympathetic preganglionic neurons in the spinal cord following stimulation. SCI at or above T11 disrupts supraspinal control and decreases psychogenic erections (14).

Erection occurs when the formation of nitric oxide (NO) increases by the non-adrenergic/non-cholinergic neurons and endothelial cells, which stimulates the formation of cyclic guanosine monophosphate (cGMP), resulting in a decreased

level of intracellular calcium. This decrease causes the smooth muscle to relax, leading to an erection. Phosphodiesterase type 5 (PDE5) breaks down cGMP to return it to the flaccid state. The inhibition of PDE5 results in the maintenance of high levels of cGMP, and therefore, the maintenance of the erection (15).

Anejaculation

Ejaculation depends on the proper functioning of the parasympathetic, sympathetic, and somatic nervous systems, in addition to an intact ejaculatory reflex.

There are two phases of ejaculation:

1. *Emission* - Seminal fluids and sperm deposit in the posterior urethra, then the seminal vesicles and prostate contract. This phase is mediated by the sympathetic nervous system (the ejaculation center is between T12 and L2).
2. *Expulsion* - The ejection of semen through the urethral meatus. The bladder neck closes (preventing retrograde ejaculation), the pelvic floor and bulbocavernosus muscles contract (S2-S4), and then the external urinary sphincter relaxes. This phase is mediated not only by the sympathetic nervous system but also by the parasympathetic and somatic nervous systems (15).

The integration between spinal centers and the autonomic nervous system is organized by interneurons that shape the spinal ejaculation generator (SEG), which is responsible for ejaculation. The location of the SEG in male humans has recently been determined to be in the L3-L5 segment (16).

Semen Quality

Males with SCI often have variable morphology, low sperm motility and viability, and altered semen plasma content. Though controversial, the root cause of low sperm quality in men with SCI is complex and may involve anejaculation, infections of the reproductive tract, prostatic dysfunction, and/or an inability to control scrotal temperature as a result of wheelchair use. Other factors that may adversely affect fertility include changes to structural proteins, mitochondrial activity, and DNA damage (17).

Most men with SCI cannot ejaculate by masturbation, so they require medical assistance for sperm retrieval (electroejaculation, vibratory stimulation).

Moreover, according to a study, 27% of men produced brown-colored semen (the cause may be related to seminal-vesicle dysfunction), but this was not associated with the duration of anejaculation or frequency of ejaculation. Additionally, other changes were present, such as leukocytospermia (not associated with genitourinary tract infection), and low viability and motility of sperm (15).

Consistent with earlier reports, one study found no relationship between the time after SCI and the main sperm parameters, including semen volume, total sperm count, progressive motility, vitality, and normal sperm morphology (18).

Genetic and Epigenetic Involvement

In recent years, the modern literature has offered few genetic studies on infertile males with SCI. Indeed, there are no genome-wide association studies (GWAS). In contrast to cancer, which is related to heritable somatic genes that can be studied, it is important to consider that the lack of GWAS is caused by the isolated nature of the event. Nonetheless, a genetic reason could explain the ways in which SCI affects germline DNA and why the manifestation and severity of infertility in men with SCI vary widely. It is well known that DNA methylation and histone modification impact spermatogenesis, fertilization, and early embryogenesis.

According to one study on rats, the critical neuron population that makes up the spinal ejaculation generator experienced a long-term decrease in galanin and GRP mRNA following contusion injury at mid-thoracic spinal levels. A critical future question to be addressed is identifying the mechanisms by which SCI causes a reduction in neuropeptide expression in lumbar spinothalamic cells. These modifications seem to be the consequence of long-term changes in supraspinal influences and epigenetic modifications leading to reduced mRNA expression of the neuropeptides rather than acute inflammatory processes occurring at the site of injury (19).

Psychological changes

Numerous studies have examined quality of life indicators related to sexual activity in men with SCI. Between 30-70% of men with SCI are sexually inactive (20, 21). Various challenges can affect sexual life, such as changes in physical appearance, loss of bladder and bowel function, spasms, erectile dysfunction, lack of communica-

tion, weakness, low sexual desire, and stereotypes (22).

People with disabilities encounter social norms that primarily assume them to be asexual, immature, and having low sexual desire (23). For both the patient and their family, a spinal cord injury is a very stressful and overwhelming condition. A significant component of the clinical care of patients with this condition must be patient education. Counseling is required regarding the prognosis, complications, and outcomes. Support groups can assist in managing problems such as depression, loneliness, frustration, and anxiety. Studies involving healthcare professionals have revealed that they frequently see numerous obstacles when it comes to discussing sexuality with their patients (24).

Anxiety is considered the primary cause of rapid ejaculation. The sympathetic nervous system increases anxiety levels and is responsible for rapid ejaculation, whereas low anxiety delays ejaculation (25). Cortisol is a hormone associated with mental stress and high alertness in stressful situations. A recent study showed a relationship between cortisol, stress, and premature ejaculation (26).

Many patients are uncomfortable talking about their sexuality, are unsure of which healthcare professional to ask their questions to or are unsure of the provider's comfort level when it comes to sexual health (27).

Treatment options

Oral phosphodiesterase-5 inhibitors (PDE-5 inhibitors) are commonly used to treat erectile dysfunction in men with spinal cord injuries (fig. 2). They usually respond well to this medication (3). Intracavernosal injections, surgical penile prostheses, and specialized vacuum devices are possible options for men with SCI who do not respond well to PDE-5 inhibitors. Considering that most of them cannot ejaculate, techniques like penile vibratory stimulation (PVS) or electroejaculation (EEJ) are highly successful in obtaining sperm for artificial insemination.

Surgical sperm retrieval is regarded as the last option when EEJ and PVS are not successful or tolerated. Current advances in assisted reproductive technologies, such as intravaginal insemination, intrauterine insemination, and in vitro fertilization, have led to favorable pregnancy rates despi-

te impairments in semen quality in men with spinal cord injuries (28).

The process of adjustment can be aided by behavior modification and the treatment of depression

and anxiety using methods like cognitive behavioral therapy, mindfulness-based cognitive therapy, interpersonal psychotherapy, and psychoeducation (29).

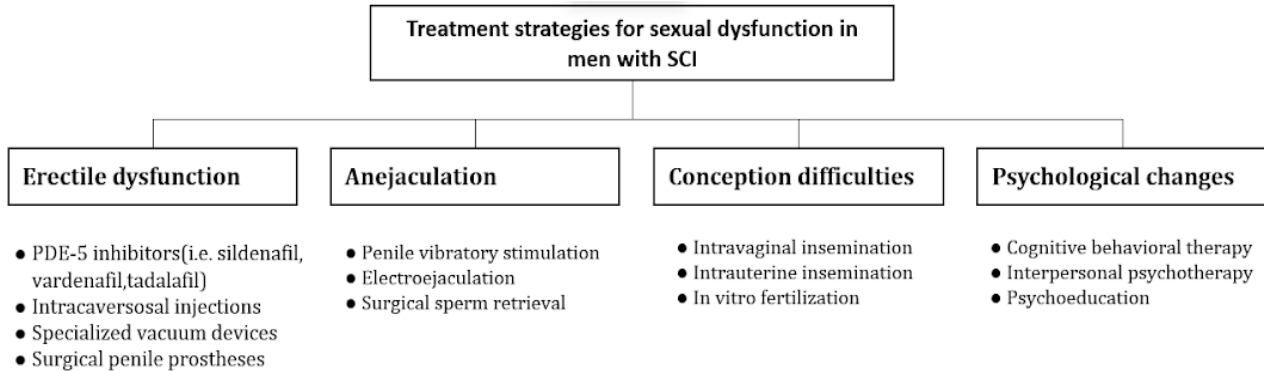


Figure 2. Sexual dysfunction treatment options in men with SCI.

DISCUSSIONS

Most men with SCI have severe impairments in their reproductive and sexual functioning as a result of abnormalities in their semen and/or ejaculatory, erectile dysfunction (30). In addition to the direct and indirect effects of neuronal damage in people with spinal cord injury, social, cultural, and personal contexts may also affect an individual's capacity to view sexual activities as pleasurable and fulfilling (31). There is substantial evidence to support the idea that societal stigmas and misconceptions about people with disabilities, which see them as asexual, create obstacles to men with traumatic spinal cord injuries receiving sexual health rehabilitation (32).

It's important to note that while genetic studies may provide valuable insights into the mechanisms underlying infertility in men with SCI, comprehensive clinical assessments and interdisciplinary approaches involving urologists, endocrinologists, and reproductive specialists are typically

necessary to evaluate and manage infertility in this population.

The reviewed articles predominantly agree that men with traumatic spinal cord injuries have medical options to address their sexual health. Treatment should be integrated with the patient's residual sexual potential. Considering the complex nature of sexual dysfunction and its effects on multiple aspects of patients' quality of life, pharmacological and psychological approaches may be combined to produce appropriate therapy alternatives.

Comprehensive, long-term studies are crucial in understanding the evolving nature of sexual dysfunction in men with SCI and the effectiveness of various interventions over time. It is also essential to develop and implement training programs for healthcare providers to enhance their knowledge and sensitivity in addressing the sexual health concerns of men with SCI.

CONCLUSIONS

1. SCI remains an important cause of sexual dysfunction in men, affecting each aspect of their lives. Studying sexual dysfunction in disabled men is essential for promoting comprehensive healthcare, supporting mental health, fostering healthy relationships, and advocating for the rights and inclusion of individuals with disabilities. It contributes to a clearer understanding of the challenges faced by this population and facilitates the development of targeted interventions and support systems.
2. Current studies in the field of sexual health of people with physical disabilities are limited, with the vast majority approaching the subject from a social rather than a medical perspective. Understanding the mechanisms affecting sexual function in people with SCI is of particular practical interest, both in medical practice and in subsequent studies on patients.

3. A wealth of evidence indicates that stigma from society and oneself maintains stereotypes about men with disabilities as asexual and/or unattractive, which adds even more obstacles to the provision of sexual health rehabilitation services for men who have suffered traumatic spinal cord injuries.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. World Health Organization (WHO). *Sexual and reproductive health. Defining sexual health*. 2018. Available from: http://www.who.int/reproductivehealth/topics/sexual_health/sh_definitions/en/ [Accessed on 20 October 2023].
2. World Health Organization. *World Report on Disability Summary: WHO guideline*. Geneva: WHO. 2011. Available from: <https://www.who.int/publications/i/item/WHO-NMH-VIP-11.01> [Accessed on 20 October 2023].
3. Ibrahim E, Lynne CM, Brackett NL. Male fertility following spinal cord injury: an update. *Andrology*. 2016;4(1):13-26. doi:10.1111/andr.12119
4. Hentzen C, Musco S, Amarenco G, Del Popolo G, Panicker J.N. Approach and management to patients with neurological disorders reporting sexual dysfunction. *Lancet Neurol*. 2022;21:551-562. doi:10.1016/S1474-4422(22)00036-9
5. Ahuja CS, Wilson JR, Nori S, et al. Traumatic spinal cord injury. *Nat Rev Dis Primers*. 2017;3:17018. doi:10.1038/nrdp.2017.18
6. Rodríguez-Quintero JH, Romero-Velez G, Pereira X, Kim PK. Traumatic Brown-Séquard syndrome: modern reminder of a neurological injury. *BMJ Case Rep*. 2020;13(11):e236131. doi:10.1136/bcr-2020-236131
7. Segal DN, Grabel ZJ, Heller JG, Rhee JM, Michael KW, Yoon ST, Jain A. Epidemiology and treatment of central cord syndrome in the United States. *J Spine Surg*. 2018;4(4):712-716. doi:10.21037/jss.2018.11.02
8. Bennett J, M Das J, Emmady PD. Spinal cord injuries. *StatPearls*. 2023. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK560721/> [Accessed on 20 October 2023].
9. Stephen L, Fauci AS, Kasper DL, et al. *Harrison's neurology in clinical medicine*. 3th ed. New York: The McGraw-Hill Companies, Inc.; 2015 Available from: <https://neurologie.usmf.md/sites/default/files/inline-files/HARRISON.pdf> [Accessed: 2023 sept 6].
10. Chhabra HS, Sharawat R, Vishwakarma G. In-hospital mortality in people with complete acute traumatic spinal cord injury at a tertiary care center in India-a retrospective analysis. *Spinal Cord*. 2022;60(3):210-215. doi:10.1038/s41393-021-00657-x
11. Hakim S, Gaglani T, Cash BD. Neurogenic Bowel Dysfunction: The Impact of the Central Nervous System in Constipation and Fecal Incontinence. *Gastroenterol Clin North Am*. 2022;51(1):93-105. doi:10.1016/j.gtc.2021.10.006
12. Henke AM, Billington ZJ, Gater DR Jr. Autonomic Dysfunction and Management after Spinal Cord Injury: A Narrative Review. *J Pers Med*. 2022;12(7):1110. doi:10.3390/jpm12071110
13. Guest J, Datta N, Jimsheleishvili G, Gater DR Jr. Pathophysiology, classification and comorbidities after traumatic spinal cord injury. *J Pers Med*. 2022;12(7):1126. doi:10.3390/jpm12071126
14. Wulf MJ, Tom VJ. Consequences of spinal cord injury on the sympathetic nervous system. *Front Cell Neurosci*. 2023;17:999253. doi:10.3389/fncel.2023.999253
15. Zizzo J, Gater DR, Hough S, Ibrahim E. Sexuality, intimacy, and reproductive health after spinal cord injury. *J Pers Med*. 2022;12(12):1985. doi:10.3390/jpm12121985
16. Soni KK, Jeong HS, Jang S. Neurons for ejaculation and factors affecting ejaculation. *Biology (Basel)*. 2022;11(5):686. doi:10.3390/biology11050686
17. Vargas-Baquero E, Johnston S, Sánchez-Ramos A. et al. The incidence and etiology of sperm DNA fragmentation in the ejaculates of males with spinal cord injuries. *Spinal Cord*. 2020;58(7): 803-810 doi:10.1038/s41393-020-0426-6
18. Chalas C, Jilet L, Wolf JP, et al. Prospective analysis over time of semen parameters in spinal cord-injured patients: Results of a pilot study. *Andrology*. 2022;10(1):120-127. doi:10.1111/andr.13089
19. Wiggins JW, Sledd JE, Coolen LM. Spinal cord injury causes reduction of *galanin* and *gastrin releasing peptide* mRNA expression in the spinal ejaculation generator of male rats. *Front Neurol*. 2021;12: 670536. doi:10.3389/fneur.2021.670536
20. Gomes CM, Miranda EP, de Bessa J Jr, et al. Erectile Function Predicts Sexual Satisfaction in Men With Spinal Cord Injury. *Sex Med*. 2017;5(3): e148-e155. doi:10.1016/j.esxm.2017.06.002
21. Anderson KD, Borisoff JF, Johnson RD, Stiens SA, Elliott SL. The impact of spinal cord injury on sexual function: concerns of the general population. *Spinal Cord*. 2007;45(5):328-337. doi:10.1038/sj.sc.3101977
22. Collier L. Seeking intimacy people with physical disabilities fight hurtful stereotypes when looki-

- ng for relationship partners. *American Psychological Association*. 2017;48(11). Available from: <https://www.apa.org/monitor/2017/12/seeking-intimacy> [Accessed on 20 October 2023].
23. Arian Iu. Sexual health of people with locomotor disabilities – a comprehensive study. *Buletin de Perinatologie*. 2014;4(64):64. Available from: https://ibn.idsi.md/sites/default/files/imag_file/64-64_59.pdf [Accessed on 15 October 2023].
 24. Pieters R, Kedde H, Bender J. Training rehabilitation teams in sexual health care: A description and evaluation of a multidisciplinary intervention. *Disabil Rehabil*. 2018;40(6):732-739. doi:10.1080/09638288.2016.1271026
 25. Soni KK, Jeong HS, Jang S. Neurons for Ejaculation and factors affecting ejaculation. *Biology (Basel)*. 2022;11(5):686. doi:10.3390/biology11050686
 26. Fiala L, Lenz J, Konecna P, Zajicova M, Cerna J, Sajdlova R. Premature ejaculation and stress. *Andrologia*. 2021;53(7):e14093. doi:10.1111/and.14093
 27. Elliott S, Hocaloski S, Carlson M. A multidisciplinary approach to sexual and fertility rehabilitation: the sexual rehabilitation framework. *Top Spinal Cord Inj Rehabil*. 2017;23(1):49-56. doi:10.1310/sci2301-49
 28. Aikman K, Oliffe JL, Kelly MT, McCuaig F. Sexual health in men with traumatic spinal cord injuries: a review and recommendations for primary health-care providers. *Am J Mens Health*. 2018;12(6):2044-2054. doi:10.1177/1557988318790883
 29. Nakao M, Shiotsuki K, Sugaya N. Cognitive-behavioral therapy for management of mental health and stress-related disorders: Recent advances in techniques and technologies. *Biopsychosoc Med*. 2021;15(1):16. doi:10.1186/s13030-021-00219-w
 30. Čehić E, Kasum M, Šimunić V, Orešković S, Vujić G, Grgić F. Fertility in men with spinal cord injury. *Gynecol Endocrinol*. 2016;32(12):937-941. doi:10.1080/09513590.2016.1202231
 31. Latella D, Maggio MG, Manuli A, Militi D, Calabrò RS. Sexual dysfunction in male individuals with spinal cord injury: What do we know so far? *J Clin Neurosci*. 2019;68:20-27. doi:10.1016/j.jocn.2019.07.038
 32. New PW, Seddon M, Redpath C, Currie KE, Warren N. Recommendations for spinal rehabilitation professionals regarding sexual education needs and preferences of people with spinal cord dysfunction: a mixed-methods study. *Spinal Cord*. 2016;54(12):1203-1209. doi:10.1038/sc.2016.62

Date of receipt of the manuscript: 09/01/2024

Date of acceptance for publication: 29/06/2024