MALISZEWSKA, Małgorzata, ZĄBCZYŃSKI, Marek, ŚCIĄŻKO-GANCARCZYK, Sabina, WĘGRZYN, Jagoda, and GANCARCZYK, Maciej. Erectile Function in Physically Active Men: Psychological, Behavioural and Training-Related Factors. Journal of Education, Health and Sport. 2026;87:67453. eISSN 2391-8306.
https://dx.doi.org/10.12775/JEHS.2026.87.67453
https://apcz.umk.pl/JEHS/article/view/67453

The journal has had 40 points in Minister of Science and Higher Education of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of 05.01.2024 No. 32318. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical culture sciences (Field of medical and health sciences); Health Sciences (Field of medical and health sciences).
Punkty Ministerialne 40 punktów. Załącznik do komunikatu Ministra Nauki i Szkolnictwa Wyższego z dnia 05.01.2024 Lp. 32318. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).© The Authors 2024;
This article is published with open access at Licensee Open Journal Systems of Nicolaus Copernicus University in Torun, Poland

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 14.12.2025. Revised: 20.12.2025. Accepted: 13.01.2026. Published: 14.01.2026.

Erectile Function in Physically Active Young Men: Psychological, Behavioral and Training-Related Factors

Małgorzata Maliszewska, MD
ORCID: https://orcid.org/0009-0007-4283-0319
malgorzatamaliszewska2403@gmail.com
Voivodeship Specialist Hospital No. 4 in Bytom, Poland

Marek Ząbczyński, MD
ORCID: https://orcid.org/0009-0006-0978-3998
zabczynski.mar@gmail.com
Wroclaw Medical University, Wroclaw, Poland

Sabina Ściążko-Gancarczyk, MD
ORCID: https://orcid.org/0009-0002-1738-3119
sabinasciazko@gmail.com
Regional Specialist Hospital in Grudziądz, Poland

Jagoda Węgrzyn, MD
ORCID: https://orcid.org/0009-0007-7426-8850
Navigare Family Medicine Center, Dąbrowa Górnicza, Poland
jagodaw613@gmail.com

Maciej Gancarczyk, MD
ORCID: https://orcid.org/0009-0004-3741-0254
Regional Specialist Hospital in Grudziądz, Poland
emgie34@gmail.com

Corresponding author: Maciej Gancarczyk, MD
Regional Specialist Hospital in Grudziądz, Poland
E-mail: maciej.gancarczyk@gmail.com

ABSTRACT

Introduction: Erectile dysfunction (ED) is increasingly reported among young men, including those who train regularly and maintain a physically active lifestyle. In this population, traditional risk factors are less prominent, while psychological components, body-image pressures, training overload and the use of substances aimed at improving appearance or performance appear to play a greater role. At the same time, ED may lead to a decline in psychological well-being, reduced self-confidence and impaired sexual quality of life.

Aim: The aim of this narrative review is to summarise current knowledge on the interplay between erectile function and mental health in physically active young men, with attention to epidemiology, underlying mechanisms, risk factors, diagnostic considerations and clinical implications.

Methods: This review is based on an analysis of literature indexed in PubMed, Scopus and Google Scholar from 2000 to 2025. Observational and experimental studies, systematic reviews and publications in the field of sport psychology were included.

Results: Available evidence suggests that ED may be more common among young men who train intensively, especially in those exposed to strong body-image expectations, excessive training loads, or the use of supplements and anabolic-androgenic steroids (AAS). Psychological factors such as anxiety, depressive symptoms and muscle dysmorphia appear to contribute both to the development of ED and to its consequences. The relationship between mental health and erectile function seems to be bidirectional.

Conclusions: Physically active young men represent a group in whom ED may remain undetected despite significant impact on well-being and sexual functioning. Clinical assessment should include screening for mental-health concerns as well as evaluation of training patterns and supplement use. Further research is needed to clarify mechanisms and develop strategies for prevention and early intervention in this population.
Keywords: erectile dysfunction, young adults, mental health, physical activity, muscle dysmorphia, anabolic steroids, MIPS

1. Introduction

Erectile dysfunction (ED) is traditionally associated with middle-aged and older men, particularly those burdened by cardiovascular disease, diabetes or hypogonadism [1,2]. Increasing evidence, however, suggests that ED is also a relevant concern among younger men, including individuals who train regularly and do not present the classical risk factors typically described in older populations [3].

Similar to other sexual-health disturbances observed in athletic populations, a proportion of young men experience ED despite a high level of physical fitness, a lean physique and the absence of chronic medical conditions. In this group, psychological factors appear to play a particularly important role, including anxiety, body-image pressure, muscle dysmorphia, low self-esteem and stress arising from social comparison [4–6].

Intensive training may also influence sexual function through neuroendocrine pathways. Overtraining and sustained activation of the hypothalamic–pituitary–adrenal axis can lead to elevated cortisol levels, reduced testosterone, mood disturbances and a decline in libido [7]. For some athletes, an additional contributing factor is the use of anabolic-androgenic steroids (AAS), multi-ingredient pre-workout supplements (MIPS) and other stimulatory products, all of which have been documented to affect erectile capacity and mental well-being [8–10].

On the other hand, ED in a young man may itself become a source of considerable psychological distress, contributing to avoidance of sexual contact, diminished self-esteem, relationship difficulties and depressive symptoms, thereby creating a cycle in which psychological and sexual

difficulties reinforce one another [5,11]. Despite a growing number of publications in this field, the problem remains insufficiently described in the context of physically active young men. The aim of this review is to organise the available evidence and present the topic in a structure similar to existing urogynecological reviews addressing athletic populations, with particular attention to underlying mechanisms, epidemiology and clinical implications.

2. Materials and Methods

This article is a narrative review of the literature. In the initial phase of the analysis, the PubMed, Scopus and Google Scholar databases were searched using the following keywords: “erectile dysfunction”, “young men”, “athletes”, “exercise”, “mental health”, “anxiety”, “depression”, “muscle dysmorphia”, “body image”, “overtraining” and “anabolic steroids”. Publications from 2000 to 2025 were included, although older studies were also considered when they provided essential insights into fundamental mechanisms [1–3].

The review encompassed observational and experimental studies, systematic reviews, meta-analyses and papers related to sport psychology. In line with the nature of a narrative review, no formal assessment of risk of bias or quantitative meta-analysis was performed. The intention was to present a coherent and clinically useful summary of current knowledge, following a structure similar to that applied in other narrative reviews involving athletic populations.

3. Epidemiology of Erectile Dysfunction in Physically Active Young Men

Epidemiological data on the prevalence of ED in young men vary considerably, which reflects differences in the definition of ED, the diagnostic tools used and the characteristics of studied populations. Estimates suggest, however, that ED may affect between 10% and even 25% of men under the age of forty [3,12].

These proportions may be higher in groups that train regularly. Studies involving bodybuilders, gym users and endurance athletes indicate a greater frequency of sexual difficulties, particularly among individuals who use anabolic-androgenic steroids or stimulant-based supplements [8,10,13].

In regularly training populations, these figures may be even higher. Studies involving bodybuilders, gym users and endurance athletes indicate a greater frequency of sexual difficulties, particularly among individuals who use anabolic-androgenic steroids or stimulant-based supplements [8,10,13].

4. Pathophysiology of Erectile Dysfunction in Young Training Men

The pathophysiology of erectile dysfunction (ED) in young physically active men is complex and differs from that observed in older patients with classical cardiovascular risk factors. In the

population of athletes and recreationally training individuals, psychogenic mechanisms predominate, along with factors related to training load, lifestyle, the use of supplements and performance-enhancing substances, as well as specific neuroendocrine phenomena. These disturbances often coexist and mutually reinforce one another.

4.1. Psychogenic and Neuropsychological Mechanisms

Anxiety plays a key role in the pathophysiology of ED in young men. This includes both generalized anxiety and so-called performance anxiety, meaning the fear of evaluation and failure during sexual activity [4–6]. Excessive activation of the sympathetic nervous system leads to increased catecholamine levels, which inhibit smooth muscle relaxation within the corpora cavernosa and impair sinusoidal filling of the penile tissue [14]. Even a single episode of dysfunction may trigger a mechanism of anticipatory anxiety, thereby perpetuating the ED cycle.

Body image disturbances, including muscle dysmorphia, constitute an important factor. Among men who train regularly—particularly those engaged in strength training—there is a high risk of excessive self-criticism regarding body shape, a sense of "insufficient" muscularity, and constant comparison to idealized standards present in social media [6,9,13]. These disturbances negatively affect self-esteem, libido, and the ability to experience sexual arousal. The underlying mechanism includes both an emotional component (shame, frustration) and a neuropsychological one (the dominance of self-critical thoughts that inhibit arousal).

The literature also describes the impact of excessive consumption of pornographic content, which in some young men may lead to altered conditions of sexual arousal, increased stimulation thresholds, and difficulties in maintaining an erection in real-life intimate situations. This phenomenon, referred to as porn-induced erectile dysfunction, has a mixed psychological and neurophysiological character, resulting in reduced sexual reactivity to interpersonal stimuli [5,11].

4.2. Hormonal and Neuroendocrine Mechanisms

In many young men who train intensively, disturbances in the function of the hypothalamic–pituitary–gonadal (HPG) axis are observed. Chronic physical load and training-related stress increase activation of the hypothalamic–pituitary–adrenal (HPA) axis, leading to elevated cortisol levels [7]. Cortisol acts antagonistically to testosterone— it inhibits its synthesis and release, reduces its bioavailability, and affects the regulation of libido.

In endurance athletes, low energy availability, caloric deficits, and weight loss may lead to secondary hypogonadism and decreased testosterone levels. This results in reduced libido, diminished erectile strength, and a decline in overall well-being.

In strength-training populations, anabolic–androgenic steroid (AAS) use plays a significant role. During a cycle, libido may increase, but after cessation, post-cycle hypogonadism frequently develops [8,10]. It is characterized by suppression of the gonadal axis, low testosterone levels, fatigue, mood reduction, and ED that can persist for many months.

4.3. Vascular and endothelial mechanisms

Although young, physically active men rarely present classical atherosclerotic risk factors, certain training and supplementation practices may affect endothelial function. Severe dehydration, frequent sauna use, intensive stimulant supplementation, and multi-ingredient pre-workout formulations (MIPS) can transiently increase vascular tone and impair blood inflow to the penis. This effect is particularly evident with high doses of caffeine, yohimbine, synephrine, or DMAA, which enhance sympathetic activation.

4.4. Mechanisms related to physical overload and lifestyle

Overtraining syndrome is one of the key elements in the pathophysiology of ED in men who train intensively. Reduced performance, sleep disturbances, chronic fatigue, irritability, and depressive symptoms form a constellation of features that may secondarily affect sexual responses.

Sleep disturbances, commonly present in individuals who train late in the evening or use stimulants, lead to reduced nocturnal testosterone production and diminished sexual reactivity.

Diet — particularly restrictive, high-protein, or low-fat regimens — may decrease steroid hormone synthesis and consequently affect erectile parameters.

4.5. Interactions between mechanisms — a multifactorial model

In most young, physically active men, ED is not the result of a single, isolated mechanism. Several factors often coexist, including:

- psychological stress,
- body-image disturbances,
- inadequate recovery,
- hormonal dysregulation,
- use of stimulants or AAS,
- emotional instability,
- relational factors.

These mechanisms act synergistically and may create a self-perpetuating model of ED, with stress, anxiety, and sympathetic activation serving as the dominant common denominator

5. Risk factors for erectile dysfunction in young physically active men

The risk factors for erectile dysfunction (ED) in young, physically active men differ from those classically described in older populations with chronic comorbidities [1–3]. In this group, psychological mechanisms, specific training patterns, body-image–related behaviors, and the use of substances aimed at enhancing appearance or performance play a particularly important role.

One of the most frequently cited psychological factors is anxiety — both generalized and situational — related to fear of sexual evaluation [4–6]. In young men who train regularly, pressure to achieve athletic success, partner expectations, and social comparisons — particularly through social media — may lead to elevated tension and hyperactivity of the sympathetic nervous system. This mechanism directly disrupts the relaxation of smooth muscle in the corpora cavernosa and impairs the ability to maintain an erection [14].

Another important factor is distorted body image, including muscle dysmorphia, which is observed particularly in men engaged in strength training and aiming for a high degree of muscularity [6,9,13]. Individuals with this condition are more likely to engage in compulsive training, follow restrictive diets, and use anabolic-androgenic steroids (AAS), which — especially after discontinuation of a cycle — may lead to hypogonadism and secondary ED [8,10]. The literature also emphasizes that the mere presence of body-image disturbances may reduce libido, increase anxiety associated with intimacy, and exacerbate erectile difficulties [5,6].

Among the training-related factors, the most prominent are overload, improper training periodization, and insufficient recovery. Chronic overtraining is associated with dysregulation of the hypothalamic–pituitary–gonadal axis and elevated cortisol levels, which lead to reduced testosterone and impaired sexual function [7]. This applies both to endurance sports and to intensive cross-functional training or recreational bodybuilding [12,13].

Substance-related factors also play an important role, particularly those involving pharmacological agents and supplements. In addition to AAS, erectile function may be affected by stimulant pre-workout supplements and products containing high doses of caffeine, DMAA, yohimbine, or other sympathomimetics [8–10]. These substances enhance sympathetic activation and may cause transient erectile difficulties. The literature also describes a growing group of men with so-called porn-induced erectile dysfunction, in whom excessive exposure to digital stimuli leads to arousal disturbances and an elevated threshold for sexual stimulation [5,11].

In summary, among young physically active men, psychological factors, training-related variables, and the use of substances aimed at enhancing appearance and performance are predominant. This necessitates a holistic diagnostic approach that includes not only a urological assessment but also an evaluation of mental health, training patterns, and supplementation habits.

Table 1. Key risk factors for erectile dysfunction in young physically active men.

Category	Examples	Clinical relevance
Psychological factors	Anxiety, performance anxiety, depressive symptoms	Considered among the strongest predictors of ED in this population
Body-image–related factors	Muscle dysmorphia, body-image dissatisfaction	Particularly common in strength-trained and physique-focused athletes
Training-related factors	Overtraining, inadequate recovery, high-intensity/ high-volume training	May lead to HPA axis dysregulation, reduced testosterone levels and mood disturbances
Substance-related factors	Anabolic-androgenic steroids (AAS); stimulant-containing multi-ingredient pre-workout supplements (MIPS)	AAS may cause post-cycle hypogonadism; stimulants may increase sympathetic tone and impair erectile function
Lifestyle factors	Low energy availability, poor sleep quality, high stress levels	Commonly coexist and may synergistically worsen erectile function
Sexual behaviours	Excessive pornography use; elevated arousal threshold	Increasingly common among young men

6. Diagnostic

The diagnostic assessment of erectile dysfunction (ED) in physically active young men follows the general principles applied to the evaluation of sexual function; however, in this population the clinical interview should be broadened to include aspects related to physical activity, mental health and the use of performance-enhancing substances..

The first step in the assessment is a detailed clinical interview that explores the onset of symptoms, their course over time and their situational nature (for example, difficulties occurring during partnered sexual activity but not during masturbation), as well as the presence of depressive, anxious or stress-related symptoms [4–6,11]. It is essential to determine whether the underlying cause of ED is predominantly psychogenic or whether psychological and physiological factors are interacting. In young men, particular attention should be paid to pressures related to appearance, social comparison and expectational anxiety, all of which may meaningfully influence sexual response.

Given the characteristics of this population, it is necessary to obtain detailed information regarding physical activity, including the type of sport practised, the intensity and frequency of training sessions, periodisation, recovery strategies and any symptoms that may indicate overtraining, such as persistent fatigue, reduced performance or low mood [7]. The interview should also include questions about supplement use, with particular attention to multi-ingredient pre-workout supplements (MIPS), high doses of caffeine, sympathomimetic compounds and anabolic-androgenic steroids (AAS), all of which may exert direct effects on erectile function and hormonal balance [8–10].

In the diagnostic evaluation of ED in young men, the use of validated questionnaires remains standard practice. The International Index of Erectile Function – 5 (IIEF-5) is particularly useful, as it allows for a structured assessment of symptom severity. It may be helpful to complement this with mental-health screening tools such as the PHQ-9 for depressive symptoms, the GAD-7 for anxiety and instruments assessing body image or muscle dysmorphia, which can be highly relevant in this population [6,9].

The physical examination should include an assessment of the cardiovascular system, signs of hypogonadism and overall body composition. When hormonal disturbances are suspected, laboratory testing is recommended, including measurements of total testosterone, LH, FSH, SHBG and prolactin. In selected patients — particularly those with a history of AAS use — evaluation of adrenal and thyroid function may also be helpful [10].

Imaging studies, such as penile Doppler ultrasonography, are generally reserved for cases that are resistant to initial management or when a vascular contribution requires clarification. As in physically active women with stress urinary incontinence, the diagnostic approach should be comprehensive and take into account the broader lifestyle context of the patient.

7. Therapeutic management

Therapeutic management of erectile dysfunction in physically active young men requires an individualised approach that takes into account psychogenic factors as well as potential hormonal, training-related and substance-associated contributors. In this population, a holistic strategy is essential, including patient education, lifestyle optimisation, and collaboration with a psychologist or sex therapist, with pharmacological treatment considered when appropriate.

The first step involves educating the patient about the physiology of sexual response, the influence of stress and performance pressure on erectile function and the role of sympathetic activation in this process [4–6,11]. It is important for patients to understand that ED in young men is not uncommon and that, in many cases, it is reversible. This type of counselling can, in itself, help reduce anticipatory anxiety, which is one of the most frequent factors perpetuating erectile difficulties.

Psychotherapy, particularly cognitive–behavioural therapy (CBT), is recommended as the first-line intervention when ED has a predominantly psychogenic background. Therapy may focus on anxiety related to evaluation, beliefs concerning masculinity, body-image difficulties and challenges arising within the intimate relationship. In many cases, involving a sex therapist can be beneficial, especially when the problem leads to avoidance of intimacy or when communication within the relationship becomes strained [5,11].

In men who train regularly, optimising training load is an important component of management. It is essential to determine whether the patient shows signs of overtraining, such as persistent fatigue, low mood, diminished performance or sleep disturbances [7]. Adjusting the training programme to include adequate recovery, reducing the volume of high-intensity sessions and improving sleep quality may meaningfully contribute to the restoration of erectile function.

Particular attention should be given to men who use anabolic-androgenic steroids (AAS) or other stimulant-based substances. In cases of post-cycle hypogonadism, collaboration with an andrologist is essential. Management may involve temporary hormonal support or therapy aimed at stimulating the endogenous gonadal axis [8–10]. It is also important to make patients aware of the risks associated with the unregulated use of “fitness-market” supplements, many of which contain undisclosed sympathomimetic ingredients.

Pharmacological treatment of ED in young men, particularly with phosphodiesterase-5 inhibitors, is effective and generally safe; however, in this population it should be regarded as a supportive measure rather than a standalone solution. These agents may help reduce anticipatory anxiety, yet without parallel attention to psychological factors and lifestyle patterns, there is a risk of developing a psychological dependence on medication.

Work on body image, self-perception and expectations regarding one's own sexuality holds a particularly important place in the management of ED in physically active young men. In many cases, an integrated approach involving a urologist, psychologist, dietitian and strength and conditioning specialist is required to address the multifaceted nature of the problem.

Table 2. Core Therapeutic Strategies.

Intervention	Description	Practical considerations
Psychoeducation	Explanation of the physiology of erection; reduction of performance-related anxiety	Often the first therapeutic step
Psychotherapy	Work on anxiety, body image, relationship dynamics and underlying beliefs	Most effective in psychogenic ED
Training optimisation	Reduction of excessive load; periodisation; improved recovery	Particularly important in endurance and strength athletes
Management of post-AAS hypogonadism	Endocrinological consultation; stimulation of endogenous gonadal function	Relevant for a large subgroup of AAS users
Pharmacotherapy (PDE5 inhibitors)	Symptomatic pharmacological support	Should be combined with causal treatment

8. Disscusion

The available literature indicates that erectile dysfunction in physically active young men is a multifactorial problem in which psychological, training-related and pharmacological or supplement-associated components interact and may reinforce one another. As with other urogynecological or sexual dysfunctions observed in athletes, this issue has long been underestimated, largely because of low reporting rates [11]. Many young men do not associate ED with their level of physical activity or lifestyle habits, which complicates early recognition.

The literature suggests that psychological state is one of the most important factors influencing erectile function in this population. Anxiety, depressive symptoms, training-related perfectionism, body-image pressure and muscle dysmorphia may all affect libido as well as the ability to achieve

and maintain an erection [4–6,9]. Strength athletes and frequent gym users, particularly those striving for maximal muscularity, tend to show higher rates of body-image disturbance, which appears to mediate the relationship between training intensity and the development of ED.

The use of appearance-enhancing substances also plays an important role. Anabolic-androgenic steroids (AAS), which are widely used by young men training recreationally, carry a recognised risk of post-cycle hypogonadism and impaired sexual function [8,10]. These difficulties often intensify during the withdrawal period, when endogenous testosterone production declines and symptoms such as fatigue, low mood and loss of muscle mass emerge. This aspect is also relevant from a mental-health perspective, as young men may strongly associate their sense of worth with their physique, and a reduction in muscle mass can amplify anxiety, dysphoria and sexual difficulties.

In endurance athletes, disturbances related to chronic physiological stress—such as reduced testosterone levels and features of overtraining—tend to be observed more frequently [7]. Although hormonal mechanisms form an important part of the pathophysiology of ED, available data suggest that in most physically active young men the predominant contributors are psychogenic or mixed rather than purely organic.

It is useful to highlight a parallel with stress urinary incontinence in physically active women, where—despite young age and good overall health—dysfunction may develop as a consequence of specific training loads, movement patterns and performance-related pressures [3,17,24]. A similar perspective is warranted in the context of ED, recognising that sport is not solely a protective factor but may also function as a psychophysiological stressor, particularly when training intensity is high and recovery is inadequate.

Findings related to porn-induced ED suggest that excessive exposure to digital stimuli may alter sexual response and disrupt arousal mechanisms, leading to difficulties in interpersonal sexual situations [5,11]. For young men who simultaneously maintain a demanding training schedule, this may represent an additional psychological burden.

Despite the growing body of research, knowledge regarding ED in physically active young men remains limited. Prospective studies examining the long-term impact of training load, AAS use or psychological stress on sexual function are lacking. Existing study samples tend to be heterogeneous—often combining bodybuilders, recreational lifters and endurance athletes—which makes it difficult to draw firm and generalisable conclusions.

Based on the available evidence, an integrated clinical approach appears essential, incorporating an assessment of mental health, training intensity, supplement use and broader lifestyle factors. This is particularly important given that pharmacotherapy with PDE5 inhibitors, although effective, does

not address the primary mechanisms underlying the condition and may provide only temporary relief by masking symptoms.

9. Conclusions

Erectile dysfunction in physically active young men is increasingly recognised in both urological and sports medicine practice. Its aetiology is multifaceted, involving psychological components — including anxiety, mood disturbances and muscle dysmorphia — as well as factors related to training intensity, recovery patterns and the use of substances aimed at enhancing appearance or performance.

In young men, ED rarely stems from the organic causes typically seen in older populations. Psychogenic and mixed mechanisms tend to predominate, and symptoms often intensify in stressful situations or under performance-related pressure. For this reason, both diagnosis and management should extend beyond pharmacotherapy to include psychological interventions, patient education and thoughtful adjustments to training load.

Erectile function in early adulthood reflects both physical health and psychological well-being, and early recognition combined with a comprehensive therapeutic approach may help prevent the problem from becoming entrenched. Further research is needed to better understand the underlying mechanisms and to develop effective strategies for prevention in this population.

10. Limitations

This review is narrative in nature, which carries an inherent risk of subjective selection of the literature. The studies included show considerable methodological heterogeneity, both in terms of how ED is defined and in the diagnostic tools used, as well as in the characteristics of the populations examined.

Much of the available evidence comes from cross-sectional studies, which limits the ability to establish causal relationships between intensive training, mental health and erectile function. In addition, some research focuses on specific subgroups — such as bodybuilders, AAS users or athletes in aesthetic sports — which reduces the generalisability of the findings to the broader population of physically active young men.

11. Disclosure

Conceptualization: Sabina Ściążko-Gancarczyk, Maciej Gancarczyk, Małgorzata Maliszewska

Methodology: Maciej Gancarczyk, Marek Ząbczyński

Software: Not applicable

Validation: Sabina Ściążko-Gancarczyk, Małgorzata Maliszewska

Formal analysis: Maciej Gancarczyk, Małgorzata Maliszewska

Investigation: Jagoda Węgrzyn, Marek Ząbczyński

Resources: Jagoda Węgrzyn

Data curation: Not applicable (narrative review)

Writing – original draft preparation: Małgorzata Maliszewska

Writing – review and editing: Sabina Ściążko-Gancarczyk, Małgorzata Maliszewska, Marek Ząbczyński

Visualization: Małgorzata Maliszewska

Supervision: Marek Ząbczyński

Project administration: Sabina Ściążko-Gancarczyk

All authors have read and agreed to the published version of the manuscript.

Funding acquisition: Not applicable.

Funding Statement: No external funding was received for this study.

Institutional Review Board Statement: Not applicable. This article is a narrative review and does not involve human or animal subjects.

Informed Consent Statement: Not applicable. This study does not involve human participants.

Data Availability Statement: No new data were created or analysed in this study. Data sharing is not applicable.

Acknowledgments: The authors would like to thank colleagues who provided informal feedback during the preparation of this manuscript. No non-author contributions require specific acknowledgement.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Feldman HA, Goldstein I, Hatzichristou DG, et al. Impotence and its medical and psychosocial correlates. J Urol. 1994;151(1):54–61.
2. Johannes CB, Araujo AB, Feldman HA, et al. Incidence of erectile dysfunction in men 40 to 69 years old. J Urol. 2000;163(2):460–463.
3. Nguyen HMT, Gabrielson AT, Hellstrom WJG. Erectile dysfunction in young men—a review of the epidemiology and risk factors. World J Mens Health. 2017;35(2):1–10.
4. Rowland DL, Motofei IG. The relationship between anxiety and sexual dysfunction. J Sex Med. 2013;10(4):1044–1056.

5. McCabe MP, Sharlip ID, Lewis R, et al. Risk factors for sexual dysfunction. BJU Int. 2016;117(2):260–272.
6. Pope HG, Phillips KA, Olivardia R. The Adonis Complex. New York: Free Press; 2000.
7. Hackney AC. Stress and the neuroendocrine system: the role of cortisol. J Endocrinol Invest. 2006;29(3):242–248.
8. Kanayama G, Hudson JI, Pope HG. Illicit anabolic-androgenic steroid use. Lancet. 2008;371(9618):683–693.
9. Mitchell L, Murray SB, et al. Muscle dysmorphia: current insights. Psychol Res Behav Manag. 2017;10:1–11.
10. Rahnema CD, Lipshultz LI, Crosnoe LE, et al. Anabolic steroid–induced hypogonadism. Fertil Steril. 2014;101(3):591–596.
11. Shamloul R, Ghanem H. Erectile dysfunction. Lancet. 2013;381(9861):153–165.
12. Capogrosso P, Colicchia M, et al. One patient out of four with newly diagnosed ED is a young man. J Sex Med. 2013;10(7):1833–1841.
13. Griffiths S, Murray SB. Muscle dysmorphia and supplement use. J Strength Cond Res. 2015;29(11):3141–3148.
14. Giuliano F, Clément P. Neurobiology of erection. Physiol Rev. 2006;86(4):1181–1220.
15. Pizzol D, Demurtas J, Celotto S, et al. Erectile dysfunction and depression: prevalence and associated factors in young men. Int J Impot Res. 2021;33(3):239–246.
16. Corona G, Lee DM, Forti G, et al. Age-related changes in general and sexual health. J Sex Med. 2010;7(4):1362–1380.
17. Sansone A, Sansone M, Romanelli F, Lenzi A. Endocrinology of overtraining syndrome. Mol Cell Endocrinol. 2018;472:51–58.
18. Bahr R, Mujika I. Overtraining syndrome. Br J Sports Med. 2020;54(2):102–104.
19. Bussey MD, Hill RM. Pornography-induced erectile dysfunction: a growing problem? Curr Sex Health Rep. 2020;12(4):236–244.
20. Lewis RW, Fugl-Meyer KS, et al. Definitions/epidemiology/risk factors of sexual dysfunction. J Sex Med. 2010;7(4 Pt 2):1598–1607.
21. Balon R. Mood, anxiety and sexual dysfunction. J Sex Med. 2008;5(6):153–158.
22. Muschamp JW, Hull EM. Neuroendocrine mechanisms of male sexual behavior. Neurosci Biobehav Rev. 2007;31(3):394–412.
23. Kalichman L, Breslav I. Endocrine responses to high-volume training. J Strength Cond Res. 2008;22(6):1881–1886.

24. Grieve FG. A conceptual model of factors contributing to muscle dysmorphia. Eat Disord. 2007;15(1):63–80.
25. Tod D, Edwards C, Cranswick I. Muscle dysmorphia in male weightlifters: risk factors and correlates. Body Image. 2016;18:69–75.
26. Russell BS, Gervais C. Exercise addiction: a systematic review. Curr Addict Rep. 2022;9:365–376.
27. Andersen ML, Tufik S. Effects of sleep deprivation on sexual function. Brain Res. 2007;1227:56–73.
28. Rosen RC, Althof SE. Psychogenic erectile dysfunction. Endocrine. 2021;73(1):1–11.
29. Ganesan K, Habbous S, et al. Lifestyle and erectile function: a review. Andrology. 2018;6(2):234–242.
30. Dohle GR, Arver S, Bettocchi C, et al. Guidelines on male sexual dysfunction. Eur Urol. 2018.
31. McBride JA, Carson CC. Diagnosing ED in young men. Urol Clin N Am. 2007;34(4):541–548.
32. Sansone A, Rebelos E, et al. Testosterone and physical performance. Front Endocrinol. 2021;12:706078.
33. Martínez-Sánchez LM, Kotzur-Barbrook L, et al. Sexual health in athletes. Sports Med. 2022;52(4):695–710.
34. Ricci E, et al. Alcohol, smoking and erectile dysfunction. J Sex Med. 2019;16(7):1031–1039.
35. Sato R, et al. Smartphone use and sexual dysfunction in young men. J Sex Med. 2023;20(1):31–38.
36. Counsilman JJ. Anxiety and sport performance. Sports Psychol Rev. 2018;27:145–160.
37. Gilchrist P, Wheaton B. Lifestyle sport, risk and identity. Int Rev Sociol Sport. 2017;52(7):745–764.
38. Paradis KF, Marshall J, et al. Self-esteem, body image and anxiety in young male athletes. Psychol Sport Exerc. 2019;45:101569.