



ISSN: 3106-0668
e-ISSN: 3104-4700



JOURNAL OF MEDICINE-24

JOURNAL OF MEDICINE–24

Volume: 3 Issue: 3

2026

International Indexing



Founder

Researcher Mubariz HUSEYINOV, Azerbaijan Science Center / Azerbaijan
<https://orcid.org/0000-0002-5274-0356>
tedqiqat1868@gmail.com

Editor-in-Chief

Elcin Huseyn

Erasmus Universiteit Rotterdam, Netherlands / Doctor of Biomedical and Neurosciences
dr.elcinhuseyn@gmail.com
ORCID ID: 0000-0001-5965-7419
Scopus ID: 57205364492
Google Scholar: [Profile](#)

Editors

Nuru Bayramov

Azerbaijan Medical University, Azerbaijan / Doctor of Medical Sciences, Professor
ORCID ID: 0000-0001-6958-5412
Scopus ID: 23977799800
Google Scholar: [Profile](#)

Umit Murat Shahiner

Hacettepe University, Türkiye / Doctor of Medical Sciences, Professor
ORCID ID: 0000-0003-0088-913X
Scopus ID: 15760793100
Google Scholar: [Profile](#)

Nikolay Briko

First Moscow State Medical University named after I.M. Sechenov, Russia / Doctor of Medical Sciences, Professor
ORCID ID: 0000-0002-6446-2744
Scopus ID: 7004344976
Google Scholar: [Profile](#)

Alexandru Corlateanu

Nicolae Testemitanu State University of Medicine and Pharmacy, Moldova / Doctor of Medical Sciences, Professor
ORCID ID: 0000-0002-3278-436X
Scopus ID: 56289644400
Google Scholar: [Profile](#)

Javanshir Isayev

Azerbaijan Medical University, Azerbaijan / Doctor of Pharmaceutical Sciences, Professor
ORCID ID: 0000-0003-1728-4559
Scopus ID: 8898843200
Google Scholar: [Profile](#)

Assistant editors

Assoc. Prof. Dr. Rafiq BAYRAMOV, Azerbaijan Medical University / Azerbaijan
<https://orcid.org/0000-0002-1869-814X>

Assoc. Prof. Dr. Jamila YUSIFOVA, Azerbaijan Medical University / Azerbaijan
<https://orcid.org/0000-0002-1084-945X>

Assoc. Prof. Dr. Maleyka Karimova, Azerbaijan Medical University / Azerbaijan
<https://orcid.org/0009-0004-2201-1357>

Assoc. Prof. Dr. Mushfig ORUJOV, Qarabağ University / Azerbaijan
<https://orcid.org/0000-0002-3355-8911>

Researcher Gulnar ALIYEVA, Azerbaijan Science Center / Azerbaijan
<https://orcid.org/0009-0004-1769-777X>

EDITORIAL BOARD

Prof. Dr. Elchin AGHAYEV, Azerbaijan Medical University / Azerbaijan

Prof. Dr. Nuran ABDULLAYEV, University of Cologne / Germany

Prof. Dr. Bulent KARADAGH, Marmara University / Türkiye

Prof. Dr. Sudeyf IMAMVERDIYEV, Azerbaijan Medical University / Azerbaijan

Prof. Dr. Hasan YÜKSEL, Manisa Celal Bayar University / Türkiye

Prof. Dr. Irina TUZANKINA, Institute of Immunology and Physiology / Russia

Prof. Dr. Musa GANIYEV, Azerbaijan Medical University / Azerbaijan

Prof. Dr. Ivane CHKHAIDZE, Tbilisi State Medical University / Georgia

Assoc. Prof. Dr. Ali Arslanoğlu, University of Health Sciences / Türkiye

Assoc. Prof. Dr. Salim DOVLATOV, Bukhara State Medical Institute named after Abu Ali ibn Sino / Uzbekistan

Management of Osteitis Pubis in Athletes: Rehabilitation, Adjunctive Treatments, and Return-to-Sport Outcomes

Natig Suleymanov 

Abstract. *Background:* Osteitis pubis (OP) and related pubic bone stress presentations can cause persistent groin pain and time loss in athletes. Treatment approaches include activity modification, exercise-based rehabilitation, physical modalities, injections, and surgery, but published evidence is limited and diagnostic terminology varies. *Objective:* To summarise clinical evidence on rehabilitation, physical modalities, injection-based interventions, surgery, and return-to-sport outcomes in athletes with aseptic OP or clearly described pubic bone stress. *Methods:* Targeted searches of PubMed-indexed records, publisher/open-access pages, and review references were conducted on 13 February 2026. This was a focused, non-exhaustive search, not a systematic multi-database search. No complete record export, deduplication, independent screening, full-text exclusion log, or formal risk-of-bias assessment was performed; therefore, PRISMA flow counts and pooled estimates are not reported. *Results:* A 2011 systematic review included 25 articles and found no randomised controlled trials under its search strategy; most evidence consisted of case reports and case series. A review of nonoperative rehabilitation identified four studies, all level IV. In a randomised study of 44 amateur football players with aseptic OP/pubic overload, shock-wave therapy added to intensive rehabilitation was associated with earlier pain relief and return to football. A 2024 randomised trial in 50 adolescent football players found greater improvements in several strength and function outcomes with a modified active physiotherapy programme, while the traditional physiotherapy group showed greater pain reduction. A review of surgical treatment identified 51 cases across eight studies and no comparative surgical studies. *Conclusion:* Progressive, individualised rehabilitation and appropriate load management are the most defensible initial approach. Shock-wave therapy may be a useful adjunct in selected athletes, but evidence remains limited. Active physiotherapy has promising findings in adolescent players, although the mixed outcome pattern and short follow-up require caution. Injection and surgery should be considered selectively. A completed systematic review requires reproducible database searches and transparent study selection and appraisal.

Keywords: osteitis pubis, athletes, athletic groin pain, rehabilitation, exercise therapy, shock-wave therapy, return to sport

1. Introduction

Groin pain is a common and diagnostically complex problem in sports involving sprinting, kicking, acceleration, cutting, and rapid changes of direction. Osteitis pubis (OP) is generally used to describe a painful, non-infective condition involving the pubic symphysis and adjacent bone.

Azerbaijan Sports Academy, Baku, Azerbaijan

E-mail: natigsuleymanov@gmail.com

Received: 23 April 2026; Accepted: 24 September 2026; Published online: 15 October 2026

© The Author(s) 2026. This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

In published research, the term can overlap with pubic-related groin pain and pubic bone stress, so diagnostic definitions should be stated clearly (Weir et al., 2015; Choi et al., 2011; Giai Via et al., 2019). The differential diagnosis matters because multiple pain generators can coexist around the pubic region. Clinical history and examination should be interpreted with imaging, and clinicians should consider adductor-related, inguinal-related, hip-related, aponeurotic, and other causes (Weir et al., 2015; Elattar et al., 2016). Septic arthritis or osteomyelitis of the pubic symphysis is a separate condition that requires prompt infection-directed evaluation and should not be grouped uncritically with aseptic OP (Choi et al., 2011).

Treatment options described in the literature include relative rest and load modification, progressive exercise rehabilitation, symptom-relieving medication, physical modalities, injections, and surgery for selected refractory cases. Choi et al. reviewed 25 articles and found no randomised controlled trials under their search strategy; most evidence consisted of case reports and case series (Choi et al., 2011). A later review of nonoperative rehabilitation identified only four studies, all classified as level IV evidence (Cheatham et al., 2016).

This review summarises the available clinical evidence without implying that all treatment modalities have been tested in comparable populations or that the existing evidence supports a definitive treatment ranking (Giai Via et al., 2019; Athanasiou et al., 2022).

2. Methods

2.1 Review Design

This is a narrative review with a focused, non-exhaustive literature search. It is not a systematic review, and no PRISMA flow diagram, protocol registration, or formal systematic risk-of-bias assessment is claimed. The review was designed to summarise clinically relevant evidence on rehabilitation, adjunctive interventions, and return-to-sport outcomes rather than to estimate pooled treatment effects.

2.2 Information Sources and Search Approach

On 13 February 2026, targeted searches were used to identify key PubMed-indexed records, publisher/open-access articles, and relevant reference lists. Search concepts included “osteitis pubis,” “pubic symphysis,” “pubic bone stress,” “pubic overload,” “athlete,” “football,” “rehabilitation,” “shock-wave therapy,” “injection,” “surgery,” and “return to sport.” Sources included clinical reviews, a randomised study of shock-wave therapy, an adolescent physiotherapy trial, case series, and reports of injection and surgical approaches (Choi et al., 2011; Cheatham et al., 2016; Schöberl et al., 2017; Mahmoud et al., 2024; Athanasiou et al., 2022). The search was focused and non-exhaustive; exact database-specific search strings, record exports, and duplicate counts were not generated.

2.3 Scope of the Review

Population: Athletes or sports participants with aseptic osteitis pubis (OP), pubic symphyseal overload, or clearly described pubic bone stress. Studies with mixed groin-pain populations were considered only where the OP-related findings could be distinguished.

Interventions: Exercise-based rehabilitation, load modification, physiotherapy, shock-wave therapy, other physical modalities, injections, surgery, and combined approaches.

Outcomes of interest: Pain, function, return to training or competition, return-to-sport proportions and timing, recurrence, adverse events, and imaging findings where reported.

Evidence considered: Clinical trials, observational studies, case series, case reports, and review articles used to contextualise the primary literature. These designs were not treated as methodologically equivalent.

Scope limits: Non-human studies and unrelated conditions were outside the clinical focus. Infectious osteomyelitis and septic arthritis were treated as distinct diagnostic entities rather than as aseptic OP.

2.4 Evidence Interpretation and AI-Assisted Editing

Because the search was not exhaustive and no formal record-level screening or risk-of-bias assessment was performed, the evidence is described narratively. Study design, sample size, population, and key limitations are considered when interpreting findings. No meta-analysis or pooled estimate is presented. An AI language model was used to assist with manuscript organisation and language editing. The author must critically review the text, verify every factual statement and reference against the original sources, and accepts full responsibility for the submitted content.

3. Narrative Synthesis of Selected Evidence

Table 1 summarises selected publications relevant to the clinical question. It is not a complete census of all eligible studies, and the selected evidence should not be interpreted as an exhaustive systematic-review dataset.

Table 1

Selected clinical evidence on osteitis pubis in athletes

Source	Design / population	Treatment focus	Main finding and limitation
Choi et al. (2011)	Systematic review; 25 articles	Conservative treatment, injections, prolotherapy, surgery; infection-related cases	No RCTs found by that review's search; evidence largely case reports/series.
Cheatham et al. (2016)	Review of nonoperative rehabilitation; four studies	Rehabilitation and return to preinjury participation	All included studies were level IV; reported return commonly 4–14 weeks, with one report at 30 weeks.
Schöberl et al. (2017)	Prospective randomised study; 44 athletes with aseptic OP/pubis overload	Shock-wave therapy plus intensive rehabilitation vs rehabilitation alone	Earlier pain relief and return to football reported with adjunct shock-wave therapy; small subgroup and specific population.
Mahmoud et al. (2024)	Randomised trial; 50 adolescent football players completed treatment	Modified active physiotherapy vs traditional physiotherapy over 12 weeks	Active programme improved several strength/function outcomes more; traditional group showed greater pain reduction. Short follow-up and narrow population.

Athanasίου et al. (2022)	Surgical review; 51 cases in eight studies	Arthrodesis, curettage, symphysectomy/resection, mesh techniques	No comparative surgical studies; low-level evidence from selected refractory cases.
Holt et al. (1995)	Retrospective series; 12 intercollegiate athletes	Corticosteroid/local-anaesthetic injections in persistent cases	Some athletes returned after injection; uncontrolled design, small sample, and treatment selection limit inference.
Giai Via et al. (2019)	Narrative review	Diagnosis, rehabilitation, return to training, surgery	Supports individualised conservative care first; surgery for selected refractory cases.

3.1 Rehabilitation and Load Management

The most defensible initial strategy is relative modification of provocative loads followed by progressive, individualised rehabilitation. Reported programmes commonly include adductor and abdominal strengthening, trunk and lumbopelvic control, hip mobility where indicated, general conditioning, and graded progression to running, acceleration, cutting, kicking, and full training. The evidence supports rehabilitation as a reasonable first-line approach, although the optimal protocol and its comparative effectiveness remain uncertain (Choi et al., 2011; Cheatham et al., 2016; Giai Via et al., 2019).

A case series of five professional and academy football players with MRI-confirmed pubic bone stress described a rehabilitation pathway with objective clinical and functional progression criteria. The programme included hip and thoracic mobility, adductor strengthening, trunk and lumbopelvic stability, gym-based strength training, and field-based conditioning. Mean return to training and match play were approximately 40.6 and 49.4 days, respectively; these descriptive values should not be treated as a guaranteed recovery timeline (McAleer et al., 2017).

3.2 Shock-Wave Therapy

Schöberl et al. assessed 143 amateur football players with groin pain and clinical/radiological pubic overload; 44 athletes diagnosed with aseptic OP were randomised to intensive rehabilitation with or without shock-wave therapy. Earlier pain relief was reported in the shock-wave group ($p < 0.001$), as was earlier return to football ($p = 0.048$). These findings suggest a possible benefit from adding shock-wave therapy to rehabilitation in this particular population (Schöberl et al., 2017).

This study supports a possible adjunct role for shock-wave therapy in a specific population; it does not establish that shock-wave therapy is effective for every cause of pubic-region pain or that it can replace active rehabilitation. Replication in larger, clearly defined cohorts would improve confidence in this finding (Schöberl et al., 2017; Giai Via et al., 2019).

3.3 Active Physiotherapy in Adolescent Football Players

Mahmoud et al. compared a modified active physiotherapy programme with traditional physiotherapy in adolescent football players aged 12–18 years. Fifty participants completed the 12-week study: 24

in the active programme and 26 in traditional physiotherapy. Outcomes included pain, hip and trunk muscle strength, and lower-extremity function. The active programme produced greater improvements in several strength and function measures, while the traditional physiotherapy group showed greater pain reduction (Mahmoud et al., 2024).

These findings support active strengthening and functional training, but they should be interpreted in the context of a single-setting adolescent sample, a short follow-up period, and a complex treatment package. The mixed outcome pattern should be reported rather than described as unqualified superiority (Mahmoud et al., 2024).

3.4 Injections

Corticosteroid/local-anaesthetic injections and dextrose prolotherapy have been described in small case series. Holt et al. reported outcomes in 12 intercollegiate athletes; among athletes who remained symptomatic after initial conservative care, some returned to full participation after injection, while others required repeat injection or did not return (Holt et al., 1995). Topol and Reeves reported improved symptoms and return to sport in a case series of elite athletes receiving dextrose injections for chronic groin pain at pubic attachments; however, this was not a controlled OP-specific trial and should not be interpreted as definitive evidence for prolotherapy in OP (Topol & Reeves, 2008).

3.5 Surgery

Surgical options described for refractory noninfectious OP include pubic symphysis curettage, symphysectomy or resection, arthrodesis, stabilisation procedures, and mesh techniques. A review identified 51 surgically treated cases across eight studies and found no comparative surgical studies, leaving the evidence largely observational (Athanasίου et al., 2022). Earlier reports describe symphyseal curettage in professional soccer players after failure of conservative management (Mulhall et al., 2002) and arthrodesis for selected patients with demonstrable symphyseal instability (Williams et al., 2000). Surgery should be reserved for carefully selected athletes after adequate nonoperative treatment and diagnostic reassessment.

3.6 Diagnostic Safeguards

OP should not be assumed to explain all groin pain or all pubic imaging abnormalities. Adductor-related, inguinal-related, hip-related, aponeurotic, and other pelvic conditions can mimic or coexist with OP (Weir et al., 2015; Elattar et al., 2016). Septic arthritis or osteomyelitis of the pubic symphysis is a distinct condition requiring infection-directed evaluation and treatment and should be differentiated from aseptic OP (Choi et al., 2011).

4. Discussion

The available evidence favours a rehabilitation-first strategy, but confidence in comparative treatment effects remains limited. The literature contains small studies, case series, and variable diagnostic definitions. The shock-wave trial and the 2024 active physiotherapy trial examine different interventions and populations; their results should not be combined as if they estimate the same treatment effect (Schöberl et al., 2017; Mahmoud et al., 2024). Earlier reviews similarly highlighted the low level and heterogeneity of the evidence base (Choi et al., 2011; Cheatham et al., 2016; Gai Via et al., 2019).

A criterion-based programme should monitor symptom response and functional capacity while progressively restoring adductor strength, trunk and lumbopelvic control, single-leg loading, running, acceleration, cutting, kicking, and tolerance of full training. Return-to-sport decisions should integrate clinical examination, functional performance, athlete confidence, and graded sport-specific exposure rather than relying on a fixed calendar alone (McAleer et al., 2017; Elattar et al., 2016).

Passive modalities, including laser, electrotherapy, and TECAR, should not be described as established stand-alone treatments for OP unless direct clinical evidence supports that claim. They may be considered adjuncts for selected symptoms or impairments, but active rehabilitation should remain central. Injections and surgery may have a role in selected refractory cases, but current evidence is insufficient to make strong comparative claims (Choi et al., 2011; Holt et al., 1995; Athanasiou et al., 2022).

4.1 Limitations

The principal limitation is the focused, non-exhaustive search and narrative design. No duplicate-removal process, independent screening, formal risk-of-bias assessment, or systematic-review flow counts were performed. The small number of clinical studies, variable diagnostic definitions, heterogeneous interventions, and predominance of observational reports also limit comparisons between treatments. No meta-analysis or formal certainty-of-evidence grading was attempted.

4.2 Research Priorities

Future research should use standardised diagnostic criteria, clearly report coexisting groin conditions, compare defined active rehabilitation programmes, and evaluate adjunct modalities in adequately powered trials. Outcomes should include pain, validated function, return-to-sport criteria and timing, recurrence, adverse events, and longer-term follow-up (Weir et al., 2015; Cheatham et al., 2016).

5. Conclusion

For athletes with aseptic osteitis pubis or clearly described pubic bone stress, individualised progressive rehabilitation and appropriate load management remain the most defensible initial approach. One randomised study suggests that shock-wave therapy may accelerate pain relief and return to football when added to rehabilitation in amateur players, while a trial in adolescents supports active physiotherapy but reports a mixed pattern across outcomes (Schöberl et al., 2017; Mahmoud et al., 2024). Injection and surgical options are supported mainly by small case series and selected refractory cohorts. Overall, the evidence base remains limited, and treatment should be guided by careful diagnosis, progressive functional criteria, and shared decision-making (Choi et al., 2011; Giai Via et al., 2019; Athanasiou et al., 2022).

List of abbreviations

OP, osteitis pubis; RCT, randomised controlled trial; SWT, shock-wave therapy.

Declarations

Ethics approval and consent to participate

Not applicable. This narrative review analyses published literature and does not involve new human-participant data or animal experiments.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable. No new dataset was generated or analysed for this narrative review.

Competing interests

The author declares that they have no competing interests.

Funding

The author received no specific funding for this work.

Authors' contributions

NS conceptualised the review and prepared the manuscript.

Generative AI use

A generative AI language model was used to assist with manuscript organisation and language editing. The author reviewed the output and accepts full responsibility for the accuracy and integrity of the manuscript.

Acknowledgements

Not applicable.

References

- Athanasίου, V., Ampariotou, A., Lianou, I., Sinos, G., Kouzelis, A., & Gliatis, J. (2022). Osteitis pubis in athletes: A literature review of current surgical treatment. *Cureus*, 14(3), e22976. <https://doi.org/10.7759/cureus.22976>
- Cheatham, S. W., Kolber, M. J., & Shimamura, K. K. (2016). The effectiveness of nonoperative rehabilitation programs for athletes diagnosed with osteitis pubis. *Journal of Sport Rehabilitation*, 25(4), 399–403. <https://doi.org/10.1123/jsr.2015-0016>
- Choi, H., McCartney, M., & Best, T. M. (2011). Treatment of osteitis pubis and osteomyelitis of the pubic symphysis in athletes: A systematic review. *British Journal of Sports Medicine*, 45(1), 57–64. <https://doi.org/10.1136/bjsm.2008.050989>
- Elattar, O., Choi, H. R., Dills, V. D., & Busconi, B. (2016). Groin injuries (athletic pubalgia) and return to play. *Sports Health*, 8(4), 313–323. <https://doi.org/10.1177/1941738116653711>
- Giai Via, A., Frizziero, A., Finotti, P., Oliva, F., Randelli, F., & Maffulli, N. (2019). Management of osteitis pubis in athletes: Rehabilitation and return to training—A review of the most recent literature. *Open Access Journal of Sports Medicine*, 10, 1–10. <https://doi.org/10.2147/OAJSM.S155077>
- Holt, M. A., Keene, J. S., Graf, B. K., & Helwig, D. C. (1995). Treatment of osteitis pubis in athletes: Results of corticosteroid injections. *The American Journal of Sports Medicine*, 23(5), 601–606. <https://doi.org/10.1177/036354659502300515>
- Mahmoud, W. S., Ibrahim, M. M., & Radwan, N. L. (2024). Efficacy of modified active physical therapy program on pain, muscle strength, and function in adolescent football players with osteitis pubis. *Bulletin of Faculty of Physical Therapy*, 29, 2. <https://doi.org/10.1186/s43161-023-00170-7>
- McAlee, S. S., Lippie, E., Norman, D., & Riepenhof, H. (2017). Nonoperative management, rehabilitation, and functional and clinical progression of osteitis pubis/pubis bone stress in professional soccer players: A case series. *Journal of Orthopaedic & Sports Physical Therapy*, 47(9), 683–690. <https://doi.org/10.2519/jospt.2017.7314>
- Mulhall, K. J., McKenna, J., Walsh, A., & McCormack, D. (2002). Osteitis pubis in professional soccer players: A report of outcome with symphyseal curettage in cases refractory to conservative management. *Clinical Journal of Sport Medicine*, 12(3), 179–181. <https://doi.org/10.1097/00042752-200205000-00006>
- Schöberl, M., Prantl, L., Loose, O., Zellner, J., Angele, P., Zeman, F., et al. (2017). Non-surgical treatment of pubic overload and groin pain in amateur football players: A prospective double-blinded randomised controlled study. *Knee Surgery, Sports Traumatology, Arthroscopy*, 25(6), 1958–1966. <https://doi.org/10.1007/s00167-017-4423-z>

- Topol, G. A., & Reeves, K. D. (2008). Regenerative injection of elite athletes with career-altering chronic groin pain who fail conservative treatment: A consecutive case series. *American Journal of Physical Medicine & Rehabilitation*, 87(11), 890–902. <https://doi.org/10.1097/PHM.0b013e31818377b6>
- Weir, A., Brukner, P., Delahunt, E., et al. (2015). Doha agreement meeting on terminology and definitions in groin pain in athletes. *British Journal of Sports Medicine*, 49(12), 768–774. <https://doi.org/10.1136/bjsports-2015-094869>
- Williams, P. R., Thomas, D. P., & Downes, E. M. (2000). Osteitis pubis and instability of the pubic symphysis: When nonoperative measures fail. *The American Journal of Sports Medicine*, 28(3), 350–355. <https://doi.org/10.1177/03635465000280031101>

Analysis of the Causes and Correction Methods of Constipation in Children

Saadat Ahmadova 

Abstract. *The aim of this study is to analyze the factors contributing to constipation in children and summarize approaches to its management. This descriptive review draws on scientific literature to synthesize information on nutrition, defecation behavior, psychosocial factors, and medical causes. No separate clinical study, participant selection, or statistical analysis is presented. The literature identifies low fiber and fluid intake, physical inactivity, stool withholding, toilet-related fear, and stress as contributing factors. Family circumstances, school toilet conditions, certain medications, and coexisting diseases are also considered. Prolonged stool retention may worsen painful defecation and lead to encopresis. Management approaches include balanced nutrition, age-appropriate fluid and fiber intake, physical activity, regular toilet routines after meals, and emotional support. Dietary restrictions should be based on individual assessment and implemented under professional supervision. Overall, managing constipation in children requires an individual assessment of its causes and a consistent, comprehensive approach. Medical supervision, parental support, and ongoing follow-up should aim to improve the child's physical comfort and quality of life.*

Keywords: constipation, children, nutrition, fiber, encopresis, toilet habits

Introduction

Constipation is a common functional problem in children and can affect their physical, psychological, and social well-being. The main symptoms include abdominal pain, loss of appetite, fear of going to the toilet, holding in stool, and irritability. Possible causes include diet, low fluid intake, lack of physical activity, toilet habits, stress, family environment, allergies, and certain medications. If constipation continues for a long time, its causes should be investigated in more detail (Ayyubova et al., 2018, p. 122).

Main Causes of Constipation in Children

Constipation in children can have several causes. Common factors include an unhealthy diet, low intake of fiber, fruits, vegetables, and fluids. Fiber supports normal bowel movements, but too much may cause gas and bloating. Healthy fats also help the digestive system work properly. Drinking too little water can make stools hard and difficult to pass. Children should drink enough water and include soups and other liquid foods in their diet (Mulhem et al., 2022, p. 411).

Toileting Habits and Defecation Behavior

Toilet habits play an important role in constipation in children. When a child delays going to the toilet, stool remains in the bowel longer, loses water, and becomes hard and painful to pass. Pain can make

Yeni Klinika, Pediatrician, Baku, Azerbaijan

E-mail: saadetahmadova@gmail.com

Received: 19 May 2026; Accepted: 11 September 2026; Published online: 15 October 2026

© The Author(s) 2026. This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

the child afraid of using the toilet and lead to stool-holding behavior (Kliegman & Geme, 2019, pp. 143–145). Parents should avoid pressure or punishment and provide calm support. Proper toilet posture, with the feet supported, can make bowel movements easier. Regular toilet sitting after meals can also help develop a healthy routine. School toilet conditions and toilet training should also be considered carefully. Positive encouragement and consistent habits are important for prevention and treatment (Ozen & Gurakan, 2018, pp. 288–291; Safiyeva et al., 2026).

The Role of Psychological and Social Factors

Constipation in children is not only a physical problem but is also linked to psychological and social factors. Functional constipation affects about 9.5% of children worldwide. Stress caused by family problems, school, fear, or emotional pressure can worsen bowel habits and make passing stool difficult (Panova & Sadykova, 2023, p. 241). Some children avoid using toilets at school or in public places, which can lead to harder stools and chronic constipation. Long-term constipation may reduce self-confidence, social activity, and school performance. In some cases, encopresis may also develop. Emotional support, a stable family environment, and reducing toilet-related fear are important parts of effective treatment (Zakharova et al., 2018, pp. 82–83).

Link to Allergies and Food Sensitivities

Constipation in children is a multifactorial condition, and food allergy or food sensitivity may contribute in some cases. Foods such as cow's milk protein, wheat, soy, eggs, nuts, and seafood can affect bowel function in sensitive children. Food allergy may cause inflammation in the intestine, which can slow bowel movements and make stools harder to pass. Food sensitivity, on the other hand, may lead to gas, bloating, abdominal discomfort, and changes in bowel habits through non-immune mechanisms (Guandalini & Dhawan, 2022, p. 112).

Some studies suggest that temporarily removing suspected foods, especially cow's milk or wheat, may reduce constipation and abdominal symptoms in certain children. However, elimination diets should not be used routinely because removing important food groups may cause nutritional deficiencies and negatively affect growth. Such diets should therefore be supervised by a doctor or dietitian.

Diagnosis should include a detailed dietary history, symptom monitoring, and, when appropriate, allergy tests or elimination and reintroduction of suspected foods (Hyams et al., 2016, pp. 244–246). Keeping a food diary may also help identify possible triggers. Gut microbiota, fiber balance, and psychological factors should also be considered. Overall, food-related causes should be assessed individually, and treatment should focus on accurate diagnosis, balanced nutrition, and a comprehensive approach (Tabbers et al., 2014, pp. 188–189).

The Effects of FODMAPs and Certain Carbohydrates

Constipation in children is not caused only by low fiber and fluid intake. In some children, sensitivity to fermentable carbohydrates known as FODMAPs may also affect bowel function. Foods containing lactose, certain fruits, wheat products, and sugar alcohols can increase gas, bloating, abdominal pain, and discomfort. In selected cases, temporarily reducing FODMAP intake may improve these symptoms, but this diet should only be used under professional supervision because unnecessary food restriction may lead to nutritional deficiencies (Isayev et al., 2017, p. 349).

Long-term constipation may also lead to encopresis, a condition in which stool leaks involuntarily, usually in children older than four years. Chronic stool retention can enlarge the rectum and reduce its sensitivity, so the child may not feel the need to pass stool. Softer stool can then leak around the hard stool and soil the underwear. This is not intentional behavior (Melnikova et al., 2020, p. 182).

Encopresis can negatively affect a child's self-confidence, social life, and school adjustment. Effective treatment should include more than medication (Törüner & Şimşek, 2019, p. 156). A balanced diet, regular toilet habits, daily routine, psychological support, and appropriate parental behavior are also important. Early intervention, individual assessment, and long-term follow-up are essential for improving both physical and emotional well-being (Turkish Society of Pediatric Gastroenterology, 2022, p. 35).

Table 1

Numerical data on FODMAP, functional constipation, and encopresis

Indicator	Percentage/figure	Explanation
The average prevalence of functional constipation in children	9.5–14%	Overall prevalence of constipation among children
Maximum prevalence of constipation in some studies	20–30%	It may vary depending on the age group and diagnostic criteria.
Reduction in abdominal pain when FODMAPs are reduced	30–50%	Possible improvement observed in sensitive children
Reduction of bloating and gas complaints when FODMAPs are reduced	Up to 40%	Regarding the reduction of fermentable carbohydrates
Prevalence of encopresis among children	1.5–4%	It is primarily observed in children over the age of 4.
Encopresis in 4-year-old children	4%	It is most commonly encountered in early childhood.
Encopresis in 10-year-old children	1.6%	The incidence rate decreases with age.
The association between cases of encopresis and constipation	90–95%	In most cases, the primary cause is functional constipation.
Duration for the diagnosis of encopresis	At least 3 months	Symptoms must be persistent.
Recurrence for the diagnosis of encopresis	At least once per month	It is taken into account in the clinical assessment.

Positive result in comprehensive treatment	70–90%	When nutrition, behavior, and toileting routines are implemented together
--	--------	---

Source. Prepared by the author.

Table 1 presents key data on FODMAP sensitivity, functional constipation, and encopresis in children. Functional constipation affects about 9.5–14% of children, while encopresis occurs in 1.5–4%. Most encopresis cases are related to constipation. FODMAP reduction and comprehensive treatment may significantly improve symptoms and overall outcomes.

Medications and Other Medical Reasons

Constipation in children is not always caused by diet, low fluid intake, or poor toilet habits. In some cases, it may develop as a side effect of medications. Opioid painkillers, diuretics, anticholinergic drugs, iron supplements, some antiepileptic medicines, and certain blood pressure medications can slow bowel movements and make stools harder. Therefore, all medications should be reviewed when evaluating a child with constipation.

Increasing fiber and fluids may not be enough if the problem is medication-related. A doctor should assess the dose, duration, and possible alternatives. Parents should not stop prescribed medicines without medical advice (Zeevenhooven et al., 2017, pp. 5–7).

Constipation may also be linked to digestive disorders such as gut microbiota imbalance, SIBO, impaired bowel movement, or irritable bowel syndrome. Endocrine, metabolic, neurological, and congenital conditions may also contribute. Hypothyroidism and calcium-related disorders are examples of possible medical causes.

Further medical evaluation is especially important when constipation is long-lasting, does not improve with treatment, or is associated with poor growth, weight loss, severe abdominal pain, or blood in the stool. Effective management requires identifying the underlying cause and creating an individualized treatment plan for the child (Yüce et al., 2020, p. 482).

Correction Methods

Correction of constipation in children requires a comprehensive and gradual approach. Key methods include dietary adjustment, increased fluid and fiber intake, healthy fats, physical activity, and proper toilet habits. Emotional support and stress reduction are also important. In some cases, medication may be prescribed by a physician. FODMAP-containing or allergenic foods can be adjusted individually when necessary. Probiotics may help support healthy gut microflora (Wyllie et al., 2021, p. 675). Children should be encouraged to sit on the toilet regularly, especially after meals. Overall, treatment should be individualized, consistent, and adapted to the child's needs to achieve better and lasting results (Ivashkin et al., 2019, pp. 14–16).

Conclusion

Constipation in children is a multifactorial issue; factors such as diet, fluid intake, physical activity, psychological state, family environment, toilet habits, allergies, and underlying medical conditions play significant roles in its development. It is incorrect to view constipation merely as a failure to empty the bowels; the condition impacts a child's overall health and quality of life. Effective management requires balancing the diet, increasing fluid and fiber intake, incorporating healthy fats,

ensuring physical activity, and establishing proper toilet habits. In cases that are chronic or recurrent, medical supervision, family support, and an individualized approach are essential.

Declaration of Competing Interests

The author declares that they have no competing interests.

References

- Ayyubova, A. A., Gabulov, H. H., & Sultanova, N. H. (2018). *Uşaq xəstəlikləri (Childhood diseases)*. Təbib.
- Guandalini, S., & Dhawan, A. (2022). *Textbook of pediatric gastroenterology, hepatology and nutrition*. Springer.
- Hyams, J. S., Di Lorenzo, C., Saps, M., Shulman, R. J., Staiano, A., & van Tilburg, M. (2016). Childhood functional gastrointestinal disorders: Child/adolescent. *Gastroenterology*, 150(6), 1456–1468. <https://doi.org/10.1053/j.gastro.2016.02.015>
- Isayev, I. I., Khanmammadova, S. G., Mammadova, R. R., & Huseynov, N. Q. (2017). *Pediatric (Pediatrics)*.
- Ivashkin, V. T., Maev, I. V., Shelygin, Yu. A., et al. (2019). *Clinical guidelines: Constipation*. Russian Gastroenterological Association.
- Kliegman, R. M., & St. Geme, J. W. (2019). *Nelson textbook of pediatrics*. Elsevier.
- Melnikova, I. Yu., Novikova, V. P., & Dumova, N. B. (2020). *Constipation in children*. GEOTAR-Media.
- Mulhem, E., Khondoker, F., & Kandiah, S. (2022). Constipation in children and adolescents: Evaluation and treatment. *American Family Physician*, 105(5), 469–478.
- Özen, H., & Gürakan, F. (2018). *Pediatric gastroenterology*. Güneş Medical Publishing.
- Panova, L. D., & Sadykova, D. I. (2023). Functional constipation in preschool and school-age children. *Medical Council*, 17, 186–193.
- Safiyeva, A., Gasimov, N., & Ramazanova, S. (2026). Structural and functional defecographic findings in obstructed defecation syndrome: A retrospective study of 146 patients. *Journal of Medicine-24*, 3(2), 17–24. <https://doi.org/10.36719/3104-4700/5/17-24>
- Tabbers, M. M., Di Lorenzo, C., Berger, M. Y., Faure, C., Langendam, M. W., Nurko, S., Staiano, A., Vandenplas, Y., & Benninga, M. A. (2014). Evaluation and treatment of functional constipation in infants and children. *Journal of Pediatric Gastroenterology and Nutrition*, 58(2), 258–274. <https://doi.org/10.1097/MPG.0000000000000266>
- Törüner, M., & Şimşek, H. (2019). *Gastroenterology*. Hacettepe University Press.
- Turkish Society of Pediatric Gastroenterology, Hepatology and Nutrition. (2022). *Constipation in children: Diagnostic and treatment approaches*.
- Wyllie, R., Hyams, J. S., & Kay, M. (2021). *Pediatric gastrointestinal and liver disease*. Elsevier. <https://doi.org/10.1016/C2017-0-02744-1>
- Yüce, A., Gürakan, F., Özen, H., Demir, H., & Saltık Temizel, İ. N. (2020). *Pediatric gastroenterology, hepatology and nutrition*. Ankara Nobel Medical Publishing.
- Zakharova, I. N., Berezhnaya, I. V., & Dmitrieva, Yu. A. (2018). Functional constipation in children: Modern diagnostic criteria and approaches to therapy. *Medical Council*, 17, 88–94.
- Zeevenhooven, J., Koppen, I. J. N., & Benninga, M. A. (2017). The new Rome IV criteria for functional gastrointestinal disorders in infants and toddlers. *Pediatric Gastroenterology, Hepatology & Nutrition*, 20(1), 1–13. <https://doi.org/10.5223/pghn.2017.20.1.1>

CONTENTS

Natig Suleymanov

Management of Osteitis Pubis in Athletes: Rehabilitation, Adjunctive Treatments, and
Return-to-Sport Outcomes 4

Saadat Ahmadova

Analysis of the Causes and Correction Methods of Constipation in Children 12

Signed: 09.10.2026
Online publication: 15.10.2026
Format: 60/84, 1/8
Stock issuance: 2, 25 p.s.
Order: 233

It has been published on aem.az
Address: 19 A.M.Sharifzade,
Yasamal Dist., Baku, Azerbaijan
Phone: +994 50 209 59 68
e-mail: info@aem.az

