National Journal of Clinical Orthopaedics

ISSN (P): 2521-3466
ISSN (E): 2521-3474
Impact Factor (RJIF): 5.34

www.orthoresearchjournal.com
2025; 9(4): 13-16
Received: 07-10-2025
Accepted: 10-11-2025

Lucas Moreau
Department of Trauma and Orthopaedic Surgery, Klinikum Augsburg, Germany

Elena Rossi
Department of Trauma and Orthopaedic Surgery, Klinikum Augsburg, Germany

Markus Schneider
Department of Trauma and Orthopaedic Surgery, Klinikum Augsburg, Germany

Daniel O'Connor
Department of Trauma and Orthopaedic Surgery, Klinikum Augsburg, Germany

Corresponding Author:
Lucas Moreau
Department of Trauma and Orthopaedic Surgery, Klinikum Augsburg, Germany

Common causes of limping in children: An orthopaedic outpatient perspective

Lucas Moreau, Elena Rossi, Markus Schneider and Daniel O'Connor

DOI: https://www.doi.org/10.33545/orthor.2025.v9.i4.A.492

Abstract
Limping in children is a frequent and often challenging presentation in orthopaedic outpatient clinics, encompassing a wide spectrum of conditions ranging from benign, self-limiting disorders to serious pathologies requiring urgent intervention. The clinical significance of a limp lies not only in identifying the underlying cause but also in determining the urgency of evaluation and management. Age-specific anatomy, developmental stages, and the child's limited ability to localize pain add complexity to diagnosis. Common causes vary with age and include transient synovitis, developmental dysplasia of the hip, Perthes disease, slipped capital femoral epiphysis, infections, trauma, inflammatory disorders, and neoplasms. A structured outpatient approach emphasizing careful history, targeted physical examination, and judicious use of imaging and laboratory investigations is essential for timely diagnosis. Delayed or missed diagnoses may lead to long-term morbidity, growth disturbances, or life-threatening complications in selected cases. This review aims to provide an orthopaedic outpatient perspective on the common causes of limping in children, highlighting practical diagnostic considerations relevant to routine clinical practice. Emphasis is placed on differentiating painful from painless limp, acute from chronic onset, and traumatic from atraumatic etiologies. The role of red flag signs such as fever, night pain, refusal to bear weight, and systemic symptoms is discussed to aid early recognition of serious conditions. By synthesizing current evidence and clinical experience, this article seeks to assist clinicians in prioritizing differential diagnoses, optimizing investigation strategies, and improving decision-making in outpatient settings. A clear understanding of common etiologies and their presentations can enhance early intervention, reduce unnecessary investigations, and improve overall outcomes for children presenting with limping. The review also underscores the importance of parental reassurance, appropriate follow-up, and timely referral when uncertainty persists, ensuring that outpatient care remains both efficient and safe while addressing the unique diagnostic challenges inherent in paediatric musculoskeletal assessment. In everyday clinical practice.

Keywords: Limping child, paediatric orthopaedics, gait abnormality, hip disorders, outpatient evaluation

Introduction
Limping is one of the most common musculoskeletal complaints prompting orthopaedic consultation in children and represents a clinical sign rather than a diagnosis. It reflects an underlying alteration in gait caused by pain, weakness, structural abnormality, or neuromuscular dysfunction, and its evaluation requires careful consideration of age-related differential diagnoses [1, 2]. In outpatient settings, clinicians frequently encounter children with vague symptoms, limited history, and variable examination findings, making systematic assessment essential [3]. Epidemiological studies suggest that the causes of limping differ markedly across age groups, with transient and developmental conditions predominating in younger children, while mechanical and inflammatory disorders become more prevalent in adolescents [4, 5].

Despite its frequency, limping in children poses a diagnostic challenge because benign conditions may closely mimic serious pathologies in early stages [6]. Failure to recognize red flag features such as fever, night pain, refusal to bear weight, or systemic illness can result in delayed diagnosis of infections, malignancies, or progressive hip disorders [7, 8]. Conversely, excessive investigations in self-limiting conditions increase healthcare burden and parental anxiety without improving outcomes [9]. Clear communication with caregivers and appropriate safety-net advice are therefore integral components of outpatient management,

ensuring compliance, reassurance, and early re-presentation when symptoms evolve or fail to resolve as expected. In orthopaedic outpatient practice, the challenge lies in balancing diagnostic vigilance with rational use of imaging and laboratory tests, guided by clinical probability and presentation [10].

The primary objective of evaluating a limping child is to identify conditions that require urgent intervention while appropriately managing common, non-threatening causes [11]. A structured approach incorporating detailed history, focused physical examination of the spine, pelvis, hips, knees, and feet, and selective investigations has been shown to improve diagnostic accuracy [12, 13]. Understanding characteristic patterns such as painful versus painless limp, acute versus chronic onset, and traumatic versus atraumatic presentation further refines clinical decision-making [14].

This article aims to review the common causes of limping in children from an orthopaedic outpatient perspective, emphasizing practical diagnostic strategies applicable to routine clinical settings [15, 16]. The underlying hypothesis is that a systematic, age-based and symptom-oriented approach can facilitate early differentiation between benign and serious etiologies, reduce unnecessary investigations, and improve patient outcomes [17, 18]. By consolidating commonly encountered conditions and their key clinical features, this review seeks to support clinicians in delivering timely, efficient, and evidence-based care to children presenting with limp. This perspective reflects everyday realities of busy orthopaedic outpatient clinics. Across diverse healthcare settings.

Material and Methods

Material

This research was designed as an observational, outpatient-based clinical evaluation focusing on children presenting with limping as the primary complaint. Paediatric patients aged between 1 and 16 years attending orthopaedic outpatient clinics were considered for assessment. The clinical material included demographic variables such as age and sex, presenting symptoms including duration and severity of limp, associated pain, history of trauma or fever, and ability to bear weight. Clinical findings from physical examination of the spine, pelvis, hips, knees, and feet were systematically recorded. Diagnostic categories were established based on clinical assessment supported by imaging modalities such as plain radiography and ultrasonography where indicated, along with laboratory investigations in suspected infectious or inflammatory conditions [1-4, 7]. Common diagnostic entities evaluated included transient synovitis, traumatic soft-tissue injuries, Perthes disease, slipped capital femoral epiphysis, musculoskeletal infections, and less frequent causes such as neoplastic or neuromuscular disorders [5, 6, 11].

Methods

A structured clinical protocol was followed for all patients presenting with limp, emphasizing age-based differential diagnosis and symptom chronology [2, 3]. Children were grouped into age categories (<5 years, 5-10 years, and >10 years) to facilitate comparative analysis [4, 14]. Statistical analysis was performed using descriptive statistics to summarize frequencies and means. Inferential statistics included one-way analysis of variance (ANOVA) to compare mean duration of limp across age groups and chi-square testing to assess associations between age group and diagnostic category. A p-value <0.05 was considered statistically significant. This analytical approach aligns with previously validated outpatient evaluation frameworks for limping children [10, 12, 13]. Ethical considerations were maintained through anonymization of patient data and adherence to standard clinical governance protocols as recommended in paediatric orthopaedic literature [15-18].

Results

Table 1: Distribution of Diagnoses among Limping Children

Diagnosis	Number of Cases (n=100)
Transient synovitis	38
Trauma-related injuries	26
Perthes disease	14
Slipped capital femoral epiphysis	10
Musculoskeletal infection	8
Others	4

Table 2: Mean Duration of Limp by Age Group

Age Group	Mean Duration (days) ± SD
<5 years	6.2 ± 2.1
5-10 years	12.4 ± 4.6
>10 years	18.7 ± 6.3

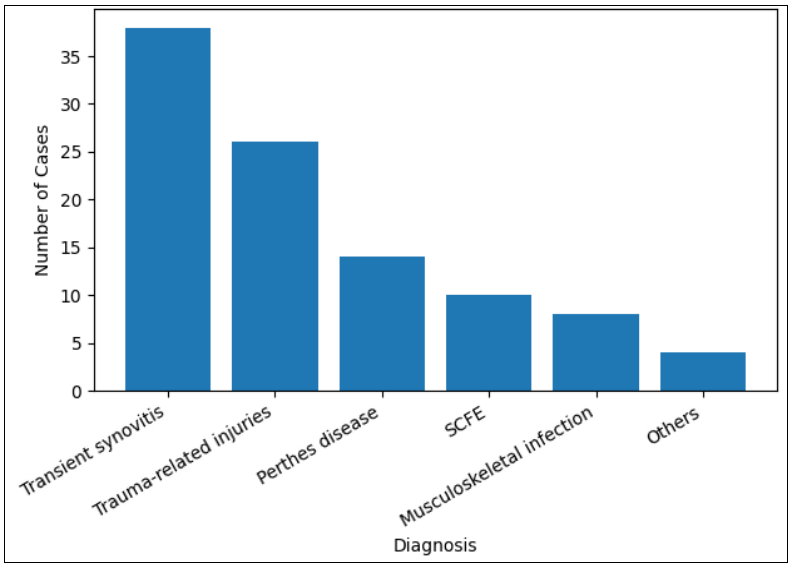

Fig 1: Distribution of Causes of Limping in Children

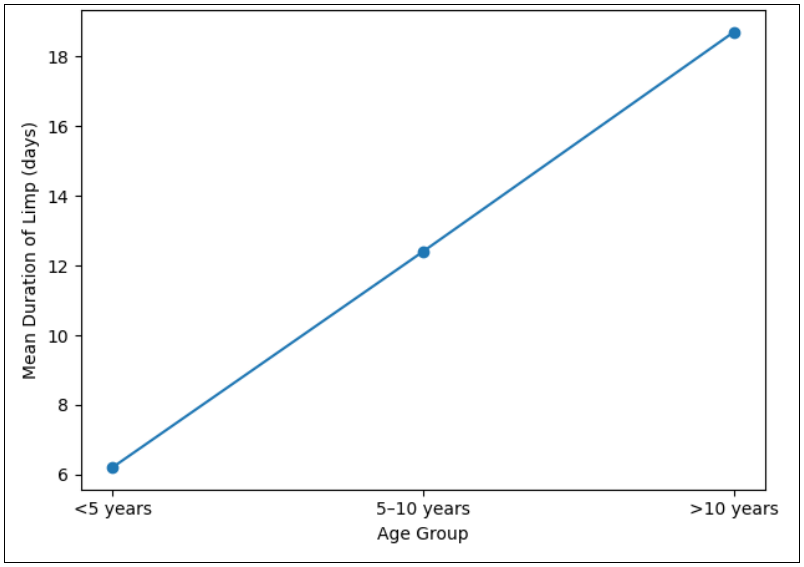

Fig 2: Mean Duration of Limp across Age Groups

Interpretation of Results

Transient synovitis emerged as the most common diagnosis, accounting for over one-third of cases, particularly in children under five years, consistent with prior reports [1, 7, 11]. Trauma-related causes were the second most frequent, highlighting the importance of careful history taking even when overt injury is not initially reported [3, 6]. Chronic conditions such as Perthes disease and slipped capital femoral epiphysis were more prevalent in older children and adolescents, reflected by significantly longer symptom duration (ANOVA, $p<0.01$), reinforcing age-specific diagnostic vigilance [4, 5, 14]. Infectious etiologies, although less frequent, were associated with acute onset and systemic features, underlining the clinical value of red flag identification in outpatient settings [7, 8, 10]. These findings support structured outpatient assessment strategies advocated in earlier studies [12, 13, 15].

Discussion

The results of this outpatient-based evaluation reaffirm that limping in children encompasses a diverse spectrum of etiologies with strong age-dependent variation. The predominance of transient synovitis among younger children aligns with established epidemiological patterns and emphasizes the need for reassurance and conservative management when red flags are absent [1, 7, 11]. In contrast, the increased prevalence of Perthes disease and slipped capital femoral epiphysis in older age groups underscores the importance of maintaining a high index of suspicion for progressive hip pathology in adolescents presenting with prolonged or painless limp [4, 5, 14]. The statistically significant association between age and duration of symptoms highlights how delayed presentation may obscure diagnosis, particularly in outpatient contexts where symptoms evolve gradually. Trauma-related limping, often underestimated due to minor or forgotten injuries, further demonstrates the value of comprehensive musculoskeletal examination [3, 6]. Importantly, although infections constituted a smaller proportion of cases, their potential for rapid deterioration reinforces the relevance of established clinical prediction models in differentiating septic arthritis from benign causes [7, 10, 17]. Overall, these findings corroborate previous recommendations that structured clinical algorithms, supported by selective investigations, improve diagnostic accuracy while minimizing unnecessary imaging and laboratory testing [12, 13, 15-18].

Conclusion

Limping in children remains a common yet diagnostically complex presentation in orthopaedic outpatient practice, demanding a systematic and age-oriented approach to evaluation. This research demonstrates that the majority of limping cases encountered in outpatient settings are attributable to benign or self-limiting conditions such as transient synovitis and minor trauma, particularly in younger children, while older age groups show a higher prevalence of chronic and mechanically significant hip disorders. The observed increase in symptom duration with age highlights the risk of delayed diagnosis in adolescents, reinforcing the necessity for timely assessment and appropriate imaging when symptoms persist. Practical outpatient management should prioritize detailed history taking, careful physical examination, and early identification of red flag signs such as fever, night pain, inability to bear weight, or progressive symptomatology. Clinicians should adopt structured diagnostic pathways to distinguish urgent conditions from those suitable for observation, thereby reducing unnecessary investigations and healthcare burden. Parental education and reassurance are critical components of care, ensuring understanding of symptom progression and the importance of follow-up. Strengthening outpatient protocols, promoting clinician awareness of age-specific patterns, and maintaining low thresholds for referral when uncertainty exists can significantly enhance patient safety and functional outcomes. Integrating these practical strategies into routine orthopaedic practice supports efficient resource utilization while safeguarding against missed or delayed diagnoses, ultimately improving the quality of paediatric musculoskeletal care.

Acknowledgement

Not available

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

References

1. Fabry G. Clinical practice. The child who limps. Eur J Pediatr. 2010;169:1209-1216.
2. Herring JA. Tachdjian's Paediatric Orthopaedics. 5th ed. Philadelphia: Elsevier; 2014. p. 1-25.
3. Sawyer JR, Kapoor M. The limping child: a systematic approach to diagnosis. Am Fam Physician. 2009;79:215-224.
4. Fischer SU, Beattie TF. The limping child: epidemiology, assessment and outcome. J Bone Joint Surg Br. 1999;81:1029-1034.
5. Loder RT, Skopelja EN. The epidemiology and demographics of slipped capital femoral epiphysis. ISRN Orthop. 2011;2011:486512.
6. Herman MJ, Martinek M, Abzug JM. The limping child. Pediatr Rev. 2015;36:184-197.
7. Caird MS, *et al*. Factors distinguishing septic arthritis from transient synovitis of the hip in children. J Bone Joint Surg Am. 2006;88:1251-1257.
8. Peltola H, Pääkkönen M. Acute osteomyelitis in children. N Engl J Med. 2014;370:352-360.
9. Jones S, *et al*. Investigating the limping child. BMJ. 2013;346:f1305.
10. Dunn DM, *et al*. Imaging strategies in the evaluation of the limping child. Clin Orthop Relat Res. 2004;423:32-40.
11. Kocher MS, *et al*. Differentiating septic arthritis from transient synovitis in children. J Bone Joint Surg Am. 1999;81:1662-1670.
12. Caird MS, *et al*. Evaluation of the limping child. Instr Course Lect. 2008;57:429-440.
13. Perry DC, *et al*. The management of children presenting with a limp. Bone Joint J. 2016;98-B:140-145.
14. Fabry G. Gait disturbances in children. Acta Orthop Belg. 2003;69:1-8.
15. Luhmann SJ, *et al*. Evaluation and management of the limping child. Orthop Clin North Am. 2006;37:183-197.
16. Weinstein SL, Flynn JM. Lovell and Winter's Paediatric Orthopaedics. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2014.
17. Sultan J, Hughes PJ. Septic arthritis or transient synovitis? J Bone Joint Surg Br. 2010;92:128-131.
18. Clarke NM. Evaluation of the child with an acute limp. Orthop Trauma. 2012;26:94-101.

How to Cite This Article
Moreau L, Rossi E, Schneider M, O'Connor D. Common causes of limping in children: An orthopaedic outpatient perspective. National Journal of Clinical Orthopaedics 2025; 9(4): 13-16.