

## Limp

### Definition / Supporting Information

Limp may be described as an abnormal gait pattern. Limp is common in children, the most common cause is trauma, but there are many other benign or life-threatening causes.

#### Types of limp

- Antalgic gait
  - Shortened stance time on affected side caused by pain on weight-bearing
  - Shortened swing phase on the contralateral side
- Trendelenburg gait
  - Unilateral
    - Hip girdle drops on the affected side
    - Trunk moves over affected side to maintain balance
  - Bilateral
    - Trunk swings from side to side
- Circumduction (vaulting): straight-legged walking
- *Steppage equinus* gait: foot drop caused by:
  - Peroneal nerve injury
  - Weakness of tibialis anterior muscle
- Toe-walking
- Waddling: wide-based stance

**Keywords / also known as:** abnormal gait pattern, non-weight bearing, transient synovitis, walking difficulties

### Essential History

#### Ask about:

- Duration of limp
  - Acute
  - Chronic (> 6 weeks' duration)
  - Intermittent or persistent
- Trauma
- Associated or preceding symptoms
  - Fever
  - Viral illness

- Rash
- Weight loss
- Swelling
- Joint stiffness, swelling or pain
- Muscle cramps
- Physical activity
  - Changes in exercise patterns (including play, school and sports)
  - Overuse
- History of immunodeficiency
  - Primary
  - Secondary
    - Identify causes, such as use of medications causing immunosuppression (eg, corticosteroids)
- Travel history
- Developmental delay or regression

## ‘Red Flag’ Symptoms and Signs

### Ask about:

- Fever
- Rash
- Weight loss
- Night pain and waking
- Bone pain
- Back pain

### Look for:

- Fever (see Fever in under 5s: assessment and initial management [[NICE clinical guideline CG160, Section 1.2, Table 1](#)])
- Bruising, pallor, lymphadenopathy or hepatomegaly / splenomegaly
- Rash
- Erythema
- Inability to weight-bear
- Pinpoint tenderness
- Pseudo-paralysis of limb
- Pain on passive movement of joint
- Reduced range of movement of joint
- Erythema and / or warmth
- Joint or soft tissue swelling (see Joint Pain)
- Muscle atrophy

- Muscle weakness
- Limb asymmetry
- Referred pain causing limp
  - Knee pain may be due to hip pathology
  - Hip pain may be due to:
    - Back pathology
    - Intra-abdominal pathology
  - Examination of these areas may be needed
- Signs of child maltreatment (see Child maltreatment: when to suspect maltreatment in under 18s [[NICE clinical guideline CG89](#)])

## Differential Diagnosis / Conditions

- Infection
  - Septic arthritis
  - Osteomyelitis
  - Discitis
  - Soft tissue infection
  - Intra-abdominal sepsis
    - Appendicitis
    - Peritonitis
    - Urinary tract infection
- Haematological conditions:
  - Sickle cell disease
  - Haemophilia
  - Leukaemia
- Trauma / orthopaedic
  - Fracture (eg, spiral / toddler's fracture to rule out neurovascular compromise)
  - Hip pathology
    - Perthes' disease
      - Avascular necrosis of femoral head
      - More common in boys than girls
      - Tends to present in school-aged children between 4–8 years of age
      - May present with hip pain, knee pain and / or limp
      - Can occur after an irritable hip
      - May be linked to high-dose glucocorticoid therapy.
      - Patterns of presentation
        - Most common: unilateral
          - Acute

- Acute on chronic presentation
    - Less commonly: Bilateral
- Slipped upper femoral epiphysis (SUFE)
  - Risk factors include:
    - Prepubertal
    - Male
    - Overweight / obesity
    - Hypothyroidism
    - Down's syndrome
  - Can occur in children with rheumatic disease
  - Consider in children with juvenile idiopathic arthritis (JIA) with acute limp
- Developmental dysplasia of hip
  - Can present in toddlers with limp if not detected at birth during screening
  - Presents with asymmetrical skin creases and leg length inequality
- Irritable hip
  - Young children
  - Acute limp often after non-specific viral illness
- Knee pain
  - Osgood–Schlatter disease
  - Meniscal injury
  - Consider referred pain from hip
- Foot and ankle pain
  - Sever's disease (calcaneal apophysitis)
  - Tarsal coalition
- Non-accidental injury
- Malignancy
  - Leukaemia
  - Neuroblastoma
  - Bone tumour
    - Osteosarcoma
      - Most common sites distal thigh / upper tibia
      - Consider if 'red flags' and 'refractory' knee pain
    - Osteoid osteoma
      - Benign and typically presents with night pain
      - Thigh and spine common sites
    - Langerhans cell histiocytosis
  - Spinal cord tumour

- Inflammatory
  - JIA
  - Other inflammatory arthritis
    - Associated with inflammatory bowel disease
    - Systemic lupus erythematosus
  - Reactive arthritis
    - Transient synovitis (eg, irritable hip)
    - Rheumatic fever - consider if:
      - Recent pharyngitis (previous 2–4 weeks)
      - Migrating arthritis
      - Rash
      - Chest discomfort (caused by carditis) (see Chest Pain)
  - Myositis
    - Juvenile dermatomyositis
  - Chronic recurrent multifocal osteomyelitis
- Metabolic
  - Rickets
- Neuromuscular disease
  - Duchenne muscular dystrophy
  - Cerebral palsy

## Investigations

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) Team):

- If history and physical examination suggest an infectious, inflammatory, muscle disease or neoplastic cause
  - Full blood count / blood film
  - Erythrocyte sedimentation rate
  - C-reactive protein level
  - Plain X-ray
  - Creatine kinase and muscle enzymes
- Lyme titres
  - If history of:
    - Erythema migrans
    - Rash
    - Fever and malaise
    - Arthritis
    - Patient has travelled to area where Lyme disease is endemic
- If JIA suspected
  - Antinuclear antibody test

- Rheumatoid factor
  - If positive in JIA; add anti-CCP antibodies
- Ferritin
  - High with systemic JIA
  - Very high with macrophage activation syndrome
- Antistreptolysin O (ASO) titre test if rheumatic fever / streptococcal infection suspected

To be undertaken by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Rheumatology Team(s)):

- Above investigations if not already done
- Blood culture if febrile or unwell
- Hip ultrasound if septic arthritis suspected
- Further imaging as indicated:
  - Magnetic resonance imaging
  - Computed tomography
  - Bone scan

## Treatment Approach

To be undertaken by non-specialist practitioners (eg, GP Team):

Mechanical or musculoskeletal problems

- Unless evaluation suggests fracture or ligament damage, treat with:
  - Rest
  - Ice (eg, in initial 48–72 hours after trauma)
  - Compression
  - Elevation
  - Mild analgesics
- If severe or persistent symptoms, orthopaedic involvement may be indicated
- For transient synovitis
  - Use simple analgesics (paracetamol / ibuprofen)
  - Self-limiting, and full recovery is anticipated, usually within 2 weeks
  - If symptoms persist > 2 weeks child should be seen for a review

To be undertaken by specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Rheumatology Team(s)):

- Septic arthritis and osteomyelitis
  - Broad-spectrum parenteral antibiotics
- Further treatment dependent on suspected cause

## When to Refer

Refer to specialist practitioners (eg, Emergency Department / Paediatric / Paediatric Rheumatology / Paediatric Orthopaedic Team(s)) if:

- High clinical suspicion for septic arthritis, osteomyelitis, or serious febrile illness causing joint pain
  - See Fever in under 5s: assessment and initial management [[NICE clinical guideline CG160, Section 1.2, Table 1](#)]
- Suspected malignancy
- Persistent limp of unclear cause of duration > 2 weeks
- Suspected appendicitis or psoas abscess
- Fracture (suspected or confirmed)
- Child maltreatment (referral should be made according to local safeguarding policy)

Escalate care to Paediatric Orthopaedic Team if:

- A surgical procedure is required for evaluation or definitive treatment
  - Operative repair of fracture
  - Septic arthritis
  - Osteomyelitis
  - SUFE
  - Perthes' disease
  - Developmental dysplasia of hip

Escalate care to Paediatric Rheumatology / Paediatric Oncology Team if:

- JIA or other rheumatological disorder (irrespective of blood test results which may be normal)
- Malignancy
- Abnormal blood results (refer to local protocols for reference ranges)
  - C-reactive protein (CRP)
  - White cell count (WCC)
  - Erythrocyte sedimentation rate (ESR)

## Patient / Carer Information

***\*Please note: whilst these resources have been developed to a high standard they may not be specific to children.***

- [A limp in a child](#) (Web page), the NHS website
- [Irritable hip](#) (Web page), the NHS website
- [Septic arthritis](#) (Web page), the NHS website

- [Osteomyelitis](#) (Web page), the NHS website
- [Heel pain](#) (Web page), the NHS website
- [Perthes' disease](#) (Web page), Patient
- [Slipped capital femoral epiphysis](#) (Web page), Patient

## Resources

### National Clinical Guidance

[Fever in under 5s: assessment and initial management](#) (Web page), NICE clinical guideline CG160, National Institute for Health and Care Excellence

[Child maltreatment: when to suspect maltreatment in under 18s](#) (Web page), NICE clinical guideline CG89, National Institute for Health and Care Excellence

### Medical Decision Support

[Acute childhood limp](#) (Web page), NICE Clinical Knowledge Summary, National Institute for Health and Care Excellence

[Recognition of Physical Abuse](#) (Web page), RCPCH Child Protection Companion

### Suggested Resources

***\*Please note: these resources include links to external websites. These resources may not have national accreditation and therefore PCO UK cannot guarantee the accuracy of the content.***

[Paediatric Musculoskeletal Matters](#) (Web page)

## Acknowledgements

**Content Editor:** Dr Eleanor Augustine

**Clinical Expert Reviewers:** Dr Clarissa Pilkington, Professor Helen E Foster

**GP Reviewer:** Dr Daniel Lang

**AAP Reviewer:** Thomas McInerny, MD, FAAP

**Paediatric Trainee Reviewer:** Dr Emma Parish

**Update Reviewer:** Dr Keya Sahay (trainee paediatrician)

**Paediatric Specialty Group:** [British Society for Paediatric and Adolescent Rheumatology](#)

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