Identifying MSK Foot Issues in School Age Children

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# Leeds Community Healthcare



### Children's Podiatry Special Advisory Group

Private group · 3.1K members



## Learning Outcomes

- 1. Understand the prevalence and types of MSK foot issues in school-age children.
- 2. Recognise the importance of early identification and intervention.
- 3. Apply public health principles to foot care in children.
- 4. Develop practical skills for assessing and managing MSK foot issues.

## Why is this important?

- 1 in 4 children experience MSK pain
- Foot pain is the most common MSK problem in ages **10-13 years**
- Heel pain accounts for **30%** of visits to sport medicine clinics
- Persistent MSK pain can lead to **chronic pain** in childhood and adulthood
- The annual mean costs are estimated to be **£8,000** per adolescent experiencing chronic pain
- MSK pain limits activity levels in a quarter of patients leading to an increase in **weight**.
- Type 2 **diabetes** is increasing in children and adolescents with considerable long-term health consequences.







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## The Incredible Journey

From birth to school age

- Genes expressing themselves
- Systems developing together
- Growth
- The foot yields to these changes
  - Neuromuscular
  - Structural
- Age 5: mainly on a growth trajectory



## By School Age

- Typically, developmental concerns have been identified
  - Orthopaedic: e.g. 'Club foot', dysplasia.
  - Genetics/ syndromes: e.g. Syndactyl, dysmorphia
  - Neurological: e.g. Dysraphism, dystrophies
- Some are still in management
- Some may not have been identified
- Some will not have happened





## Question...

### What might not have been picked up?

- Be careful, there is subtlety
- Be mindful, when concerns keep being raised
- Anything that is not typical needs a work-up and or specialist opinion
  - How depends on local pathways
  - Follow NICE guidance

What should I look out for at this age?

## Consistency

Because things change (quickly or slowly) you need a good baseline and follow-up. Because they could see anyone, consistency is needed.

- Genes are still **expressing** themselves e.g. Charcot Marie Tooth, Marfan's.
- Bodies **spontaneously** do things e.g. juvenile arthritis, avascular necrosis, diabetes, fracture, leukaemia.
- Some things become apparent with time and **environment** e.g. coalitions, neuromuscular, injury, less active, different hobbies, different to peers, trauma.



### The Essentials

- Red Flags: NICE, PMM
- For screening use: pGALS or pGALS+
- For assessment use: GALLOP
- For history OLD CARTS

## NICE Guidance

NICE National Institute for Health and Care Excellence auideline Suspected neurological conditions: recognition and referral NICE guideline Published: 1 May 2019 Last updated: 2 October 2023 www.nice.org.uk/guidance/ng127

https://www.nice.org.uk/guidance/ng 127/chapter/recommendations-forchildren-aged-under-16

### **Examples within guidance**

- Refer urgently children with **progressive limb weakness** for neurological assessment
- Refer immediately children with **new-onset gait abnormality** to acute paediatric services
- Refer children who develop **abnormal limb posture** that has no apparent musculoskeletal cause for neurological assessment.
- Refer urgently children who have **tingling accompanied by** other peripheral nervous system symptoms such as weakness, bladder dysfunction or bowel dysfunction for neurological assessment

## Process for managing suspected MSK foot pain

### Stage 1 e.g. Primary Care

- History
- pGALS
- First Line Advice
- Refer

### Stage 2

- Further history
- pGALS
- GALLOP
- Advice
- Intervention
- MSK pain should improve within 6-8 weeks

### Stage 3

- Review
- pGALS
- GALLOP

If no improvement, seek supervision and or refer on

### Does it make you want to cry?



## What could be causing foot pain?

### Rearfoot

- Calcaneal apophysitis
- Tarsal coalition
- Bone (e.g. fracture, tumour)
- Nerve
- Arthritis

#### Midfoot

- Tarsal coalition
- MSK arch pain
- Avascular necrosis navicular (Kohler's)
- Apophysitis styloid process (Iselin's)

#### Forefoot

- Bunion/Bunionette
- Lesser toe deformity
- Avascular necrosis (Freiburgs)

NB: MSK pain presents as mechanical pain.

Non-MSK pain can overlap with mechanical pain.

#### Whole Foot

- This crosses anatomical boundaries
- Consider a systemic condition, nerve, pain syndrome, infection, vascular, proximal rotational

## pGALS



Question 1: Do you (or does your child) have any pain or stiffness in your (their) muscles, joints or back? Rationale: emphasis on common symptoms of a musculoskeletal problem

Question 2: Do you (or does your child) dress yourself (him/herself) completely without any difficulty? Rationale: emphasis on upper limb function

Question 3: Do you (or your child) walk up and down stairs without any difficulty?

Rationale: emphasis on lower limb function

#### The pGALS musculoskeletal screen

#### **Screening questions**

- · Do you (or does your child) have any pain or stiffness in your (their) joints, muscles or back?
- · Do you (or does your child) have any difficulty getting yourself (him/herself) dressed without any help?
- · Do you (or does your child) have any problem going up and down stairs?

FIGURE	SCREENING MANOEUVRES (Note the manoeuvres in bold are additional to those in adult GALS <sup>3</sup> )	WHAT IS BEING ASSESSED?
	Observe the child standing (from front, back and sides)	<ul> <li>Posture and habitus</li> <li>Skin rashes – e.g. psoriasis</li> <li>Deformity – e.g. leg length inequality, leg alignment (valgus, varus at the knee or ankle), scoliosis, joint swelling, muscle wasting, flat feet</li> </ul>
JB J I	Observe the child walking and 'Walk on your heels' and 'Walk on your tiptoes'	<ul> <li>Ankles, subtalar, midtarsal and small joints of feet and toes</li> <li>Foot posture (note if presence of normal longitudinal arches of feet when on tiptoes)</li> </ul>
	'Hold your hands out straight in front of you'	<ul> <li>Forward flexion of shoulders</li> <li>Elbow extension</li> <li>Wrist extension</li> <li>Extension of small joints of fingers</li> </ul>
	'Turn your hands over and make a fist'	<ul> <li>Wrist supination</li> <li>Elbow supination</li> <li>Flexion of small joints of fingers</li> </ul>
	'Pinch your index finger and thumb together'	<ul> <li>Manual dexterity</li> <li>Coordination of small joints of index finger and thumb and functional key grip</li> </ul>





## First Line Advice for MSK Foot Pain

#### Midfoot Rearfoot Forefoot • Accepts a high impact Single leg balance Rigid platform for • Accommodates load at heel strike • propulsion. Calcaneal growth plate • Movement High forces • open 7-9 closed 15-17 Strength Tissue health years old (apophysis) Control • Padding **Rest**/Load **Rest**/Load • Taping management management Footwear EVA heel raise **Footwear/Trainer** • **Footwear/Trainer** Thicker soled Strengthen ٠ Fits at the forefoot Orthoses (OTC) ٠

### Process

### Stage 1

- History
- pGALS
- First Line Advice
- Refer

### Stage 2

- Further history
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#### GALLOP 1 of 2

#### Name\_\_\_\_\_

\_ Date of Birth\_\_\_/\_\_\_ Gender: Male/Female

#### Postnatal History (Complete or circle)

Gestation:weeks	Birth weight:grams	APGAR 1 min5min
Vaginal birth:	Instrumentation at birth	Caesarean: Emergency/Planned
Spontaneous/Induced	Forceps/Ventouse	Reason:
Breech: Yes/No		Other health professionals
Complications		involved at birth or in first 14
		days:

#### Age of skill acquisition (record in months)

Sitting:	Crawling:	Crawl type:
Walking:	Running:	Jumping:

#### History:

Medical/Family	Previous treatment:	Previous Pain:
Footwear:	Sport:	Sensory concerns:
Weight:kg	Height:cm	BMI:

#### Observation of ability to perform the following appropriate to age (Circle)

Squatting: Yes/No/NA	Running: Yes/No/NA	Jumping: Yes/No/N/A
Skipping: Yes/No/NA	Hopping: Yes/No/NA	Single Leg Stance
		Left: Yes/No/N/A
		Right: Yes/No/N/A
Ability to go up/down stairs:	Observation of functional tasks:	Quality of body movement:
Yes/No/NA		

#### Other Observations



#### **Biomechanical Assessments:**

	Left	Right		Left	Right
Hip: Internal ROM			Hip External ROM		
Modified Thomas Test			Hip abduction		
Popliteal angle			Foot thigh angle		
Ankle WBL/NWB Straight			Ankle WBL/NWB Bent		
Foot Posture Index-6			Beighton score/9		

Inter-condylar distance:	Limb Length Discrepancy*:	Other observations of rotation,
cm	Left=Right	limb length:
Inter-malleoli distance:	Left>Rightcm	
cm	Left <rightcm< th=""><th></th></rightcm<>	

#### Neurology:

	Left	Right		Left	Right
Patella Reflex (0-4)			Achilles Reflex (0-4)		
Plantar Reflex (Up/down)			Ankle Catch (Yes/No)		
Ankle Clonus (Yes/No)			Gower's Sign		
Dorsiflexion strength (0-5)			Plantarflexion Strength (0-5)		
Inversion strength (0-5)			Eversion strength (0-5)		
Observation of muscle tone or n	eurologica	I signs:			

#### Gait\*

	Left	Right		Left	Right
Head and neck position			Trunk/torso		
Arm swing			Hip		
Knee			Heel contact		
Midstance			Toe-off		
Angle of gait			Base of gait		
Other gait comments:			_		

Pain

## GALLOP: Physical Assessment

#### Orthopaedic, MSK

- Joint range, muscle length, postural alignment
- Symmetry
- Rotational profile.
- Not to miss: perthes, DDH, masked pain

#### Rheumatology

- Diurnal patterns, swelling, stiffness, inactivity, connective tissue
- Not to miss: JIA, undifferentiated, infections

#### Neurogenic, genetic

- Birth characteristics, milestones, learning and development, speech, language, hearing, coordination, eye contact, head injury, neurocutaneous lesions.
- Not to miss: signs of focal lesion, CMT, developmental delay, DMD

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			Mode	rate	pain	
1	2	3	4	5	6	

Left>Right

		Left	Right				Left	Right
p: Internal ROM	ſ			Hip External RO	м			
odified Thomas Test	1			Hip abduction				
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	Left	Right		Left	Right
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Knee			Heel contact		
Midstance			Toe-off		
Angle of gait			Base of gait		
Other gait comments:				-	

Gait and Lower Limb Observation of Paediatrics - Standardised Recording Template (Addendum)



GALLOP 2 of 2

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### We are one team



## Thank-you for coming...let's make a difference



## Stay Connected



### References

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