Paediatric Physiotherapy

HOW WE CAN HELP

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- **Paediatric Specific Musculoskeletal Disorders**
  - Children are not mini adults

What Do We Do?

The Paediatric Physio

- Hospital Based Specialists – Acute Care

- Community Team

- Independent Therapists

Hospital Based Specialists

- **Respiratory**
  - PICU / CF / Asthma / Acute Respiratory / PCD / Breathing disorders / Home Ventilation / Outpatient clinics
- **Neuro**
  - Head Injuries / Stroke / Transverse Myelitis / Encephalopathy / Oncology / Guillan Barre Syndrome /Regional Neuromuscular Clinics/ Botox Clinic/ Complex Tone Clinic
- **Neonates**
  - NICU / Torticollis / Erbs Palsy/ Arthrogryposis / Neuro Developmental Therapy / Follow up Clinics
- **Orthopaedics**
  - Surgical Rehab / Scoliosis / Ilizarov Frames
- **Rheumatology**
  - JCA / JDM / Hypermobility Syndrome

Community Paediatric Physiotherapists

- Chronic Disability - Cerebral Palsy/ Neuro Muscular Conditions / Chromosome Abnormalities / Head Injuries
- Gross Motor Delay
- Home Visits
- School Liaison – Programmes / EHCP reports / MDT meetings
- Therapeutic Equipment / Orthotic provision

Independent Paediatric Physiotherapists

- Independent Paediatric Therapy Centres – MDT
- Neuro Rehabilitation Centres – CP/ SDR Rehab / ABI
- Case management / Personal Health Budget / Paediatric Musculoskeletal / Developmental Co-ordination Difficulties / Hemiplegia / Learning Difficulties / ASD
- Perform – Unique Rehabilitation Environment

Perform

- The Perform Centre is a state of the art sports science and rehabilitation facility.
- Unique setting for paediatric neuro rehab
- Sports / Fitness / Medical MDT
- Motivating
- Training sessions
- Teenage friendly

Common Referrals

- Hypermobility Syndrome
- Co-ordination Difficulties
- Cardio Vascular Conditioning
- Sports Injuries
- Neuro Rehab
- Developmental Gait Abnormalities
- Postural Advice

CP FITNESS

What is CP Fitness?

- CP Fitness is a gym based group exercise class for children aged 7-17 years who would benefit from physiotherapy led exercise/rehabilitation within a group setting.

- This class is not exclusive to children with cerebral palsy (CP) however it is focussed on neuro/developmental rehabilitation rather than musculoskeletal / sports injuries.

CP Fitness aims to provide:

- Accessibility to fitness for children with physical disabilities / reduced mobility

- Supported rehabilitation following
  - Orthopaedic surgery
  - Clinical Intervention
  - Illness

Why CP Fitness?

Exercise Guidelines for 7- 17 olds

- 60 minutes per day required to stay healthy Department of Health 2010
- Activity should include **aerobic exercise**; playground games, cycling, running, dancing and **strengthening exercises**; gymnastics, jumping, ball sports, martial arts.

For a child with a physical disability?

- Reduced Activity Levels
- Poor Cardio Vascular Conditioning
- Compromised Physical Functioning

Secondary Health Issues as a Result of Reduced Activity

- Weight gain
- Joint contracture
- Muscle weakness
- Respiratory Infection
- Fatigue
- Loss of motor skills
- Loss of Self-esteem / Reduced Confidence / Depression

CP Fitness aims to provide a safe, motivating, meaningful environment where children who are experiencing reduced activity levels due to physical limitations can come to improve their fitness and strength with the ultimate outcome of improving their future health and function .

Who We Can Help

- Cerebral Palsy (GMFC , I, II and III)
- High functioning neuro rehab
- Developmental Co-ordination Difficulties
- Hypermobility Syndrome
- Respiratory Disease
- Obesity
- Oncology Rehab

Other Services

- 1:1 Physiotherapy Sessions
- Assessment and Advice
- Under 3's Outpatient Service
  - Developmental Assessment

Developmental Gait Abnormalities

- Flat feet
- Intoeing
- Out toeing
- Varus knees
- Valgus knees
- Toe walkers

- apcp.csp.org.uk/publications

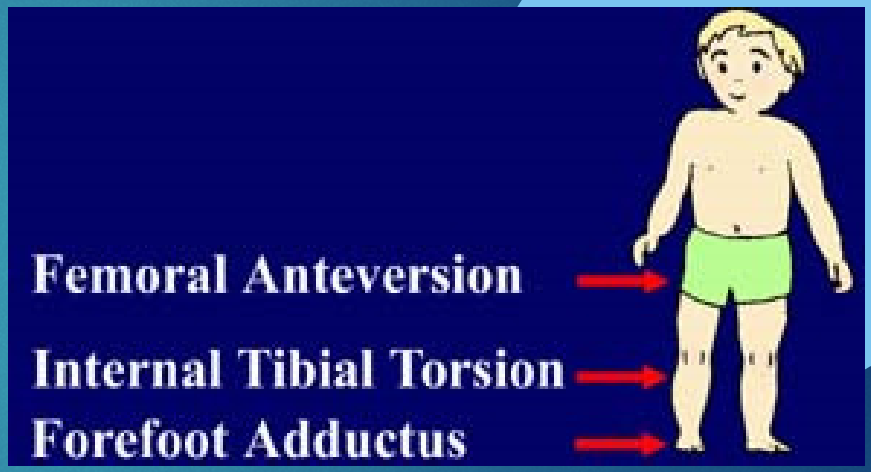
Flat Feet

- Normal up to 3yrs of age
- Usually corrects by 6-7yrs
- Jack's test (Windlass effect)

When to refer a flat foot

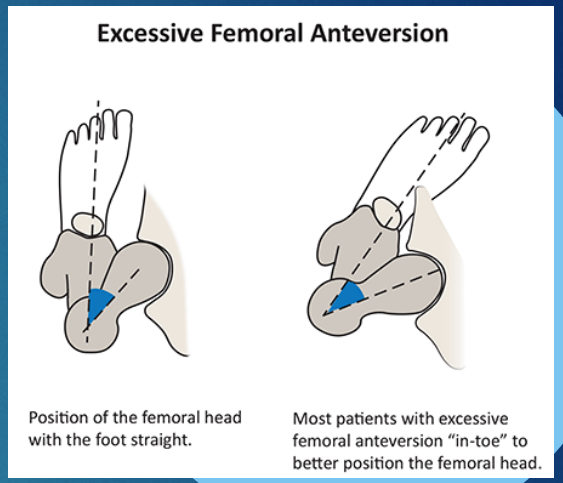
- If pain, functional problems or pressure areas refer to physio
- Physio will assess and identify cause of problem i.e.
  - Hypermobility
  - Tightness
  - Flexible vs rigid foot
    - Rigid due to tarsal coalition
- Exercises
- Stretches
- Orthotics

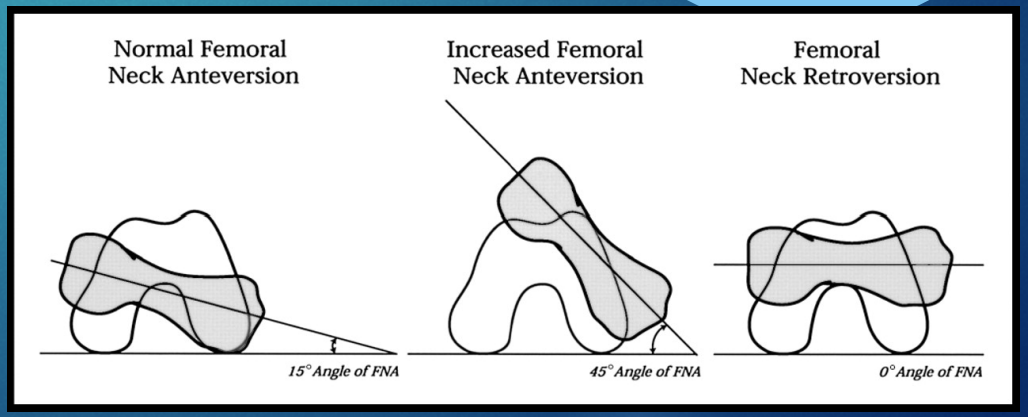
Intoeing


Femoral Anteversion
Internal Tibial Torsion
Forefoot Adductus

Femoral Anteversion

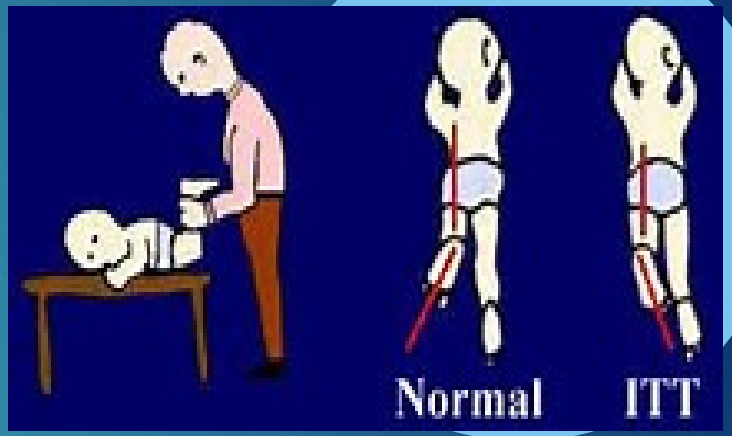
- Normal between 3-8 years
- Twice as common in girls than boys
- Neck of femur more anteriorly angled
- Patients intoe to better position femoral head
- Craig's Test
- At birth femoral anteversion is between 30-40 degrees
- Adult Femoral anteversion is approximately 15 degrees





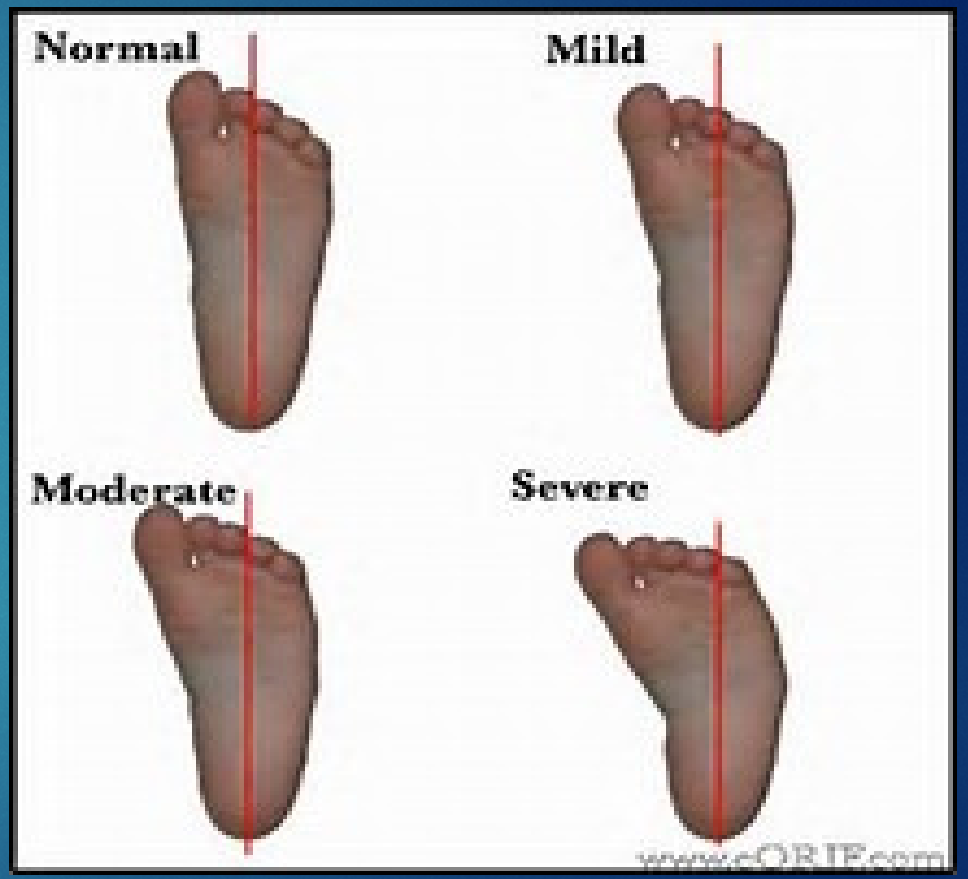
Internal Tibial Torsion

- Normal variant between 1-3 years
- Measure by placing child in prone therefore eliminating hip rotation and flexing knee to measure foot progression angle.
- Normal range is 0-20 degrees



Metatarsus Adductus

- Adduction of the forefoot on the rear foot
- Best seen viewing sole of foot
- Line through heel should pass between 2nd and 3rd toes
- If severe adduction line passes through 4th and 5th
- Resolved by 7 years



When to refer an intoeing child

- If no symptoms and no functional difficulties reassure child and parents that correction can occur up to 8 years of age
- Advice

- If pain or functional difficulty refer to paediatric physiotherapist

- We will assess
  - Biomechanics
  - Strength
  - Flexibility
  - Function throughout lower limb and trunk.

Out toeing

- Usually morphological
- Femoral retroversion
- SUFE

Varus knees

- Normal up to 18 months
- Babies born with varus alignment
- Asymmetrical, progressive or painful refer to orthopaedics
- Possible causes Rickets, metabolic disorders, skeletal dysplasia, blouts disease

Valgus knees

- Normal up to 7/8 years
- Usually developmental femoral ante version which remodels with stresses on femoral neck
- No referral unless pain or functional limitation
- Physiotherapy will assess
  - Strength
  - Joint range/muscle length
  - Biomechanics

Toe Walking

- Bilateral
  - Can be a variant of normal in early gait
  - As gait matures 18-20 months should reduce
- Unilateral
  - Consider neurological involvement
  - Leg length discrepancy
- Toe walking after 2 years exclude diagnosis of
  - DMD, check gowers and hypertrophy of gastrocnemius
  - Often associated with sensory disorders such as ASD
  - Cerebral Palsy

Treatment

- If no clinical concerns and child able to
  - Walk with heelstrike when requested
  - Has full passive range of dorsiflexion
- Advice to
  - Wear stiff ankle boots
  - Discourage excessive planterflexion in stance
- If toe walking persists or becomes problematic refer on to paediatric physiotherapy

Physiotherapy Treatment Options for Toe Walking

- Stretching
- Strengthening
- Taping
- Splinting/casting
- Gait re education

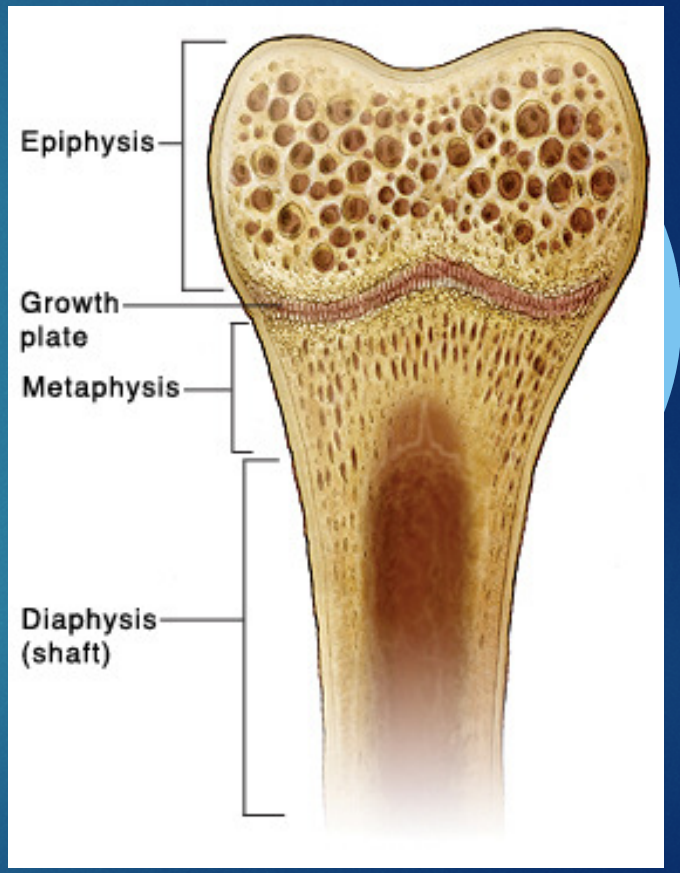
Paediatric Specific Musculoskeletal Pathology

Children are not mini adults

- Pathology different in adults and children particularly during growth spurts that herald the onset of adolescence
- Symptoms of musculoskeletal pain in the developing child are usually directly related to area of growth within the developing skeleton, the injuries and affectations of which largely make up the field of paediatric orthopaedics.
- If problems not picked up injury can lead serious consequences

Musculoskeletal Pain in Children

- Conditions affecting the articular surface of joints, the growth plate or around sites of secondary ossification within epiphyses
- Non-infective derangements of bony growth seen at times of greatest skeletal development
- **Osteochondroses**
  - Categorized according to location



Classification of Osteochondroses

- Articular epiphyseal lesions/osteochondritis dissecans (pressure epiphyses)
  - Perthes/Scheuermann's
- Physeal lesions – growth plate lesion
  - SUFE/Salter Harris Fractures
- Apophyseal lesions/non articular (traction epiphyses)
  - Osgood-Slatters/Severs

Articular Epiphyseal Lesions

- Disruption to vascular supply to epiphysis or trauma
- Necrosis of sub chondral bone/malformation/weakness
- Seen most commonly in hip, knee, ankle, foot elbow
- Swelling, altered weight bearing, pain on joint line
- Treatment is NWB/PWB surgery if not settled in 1 year

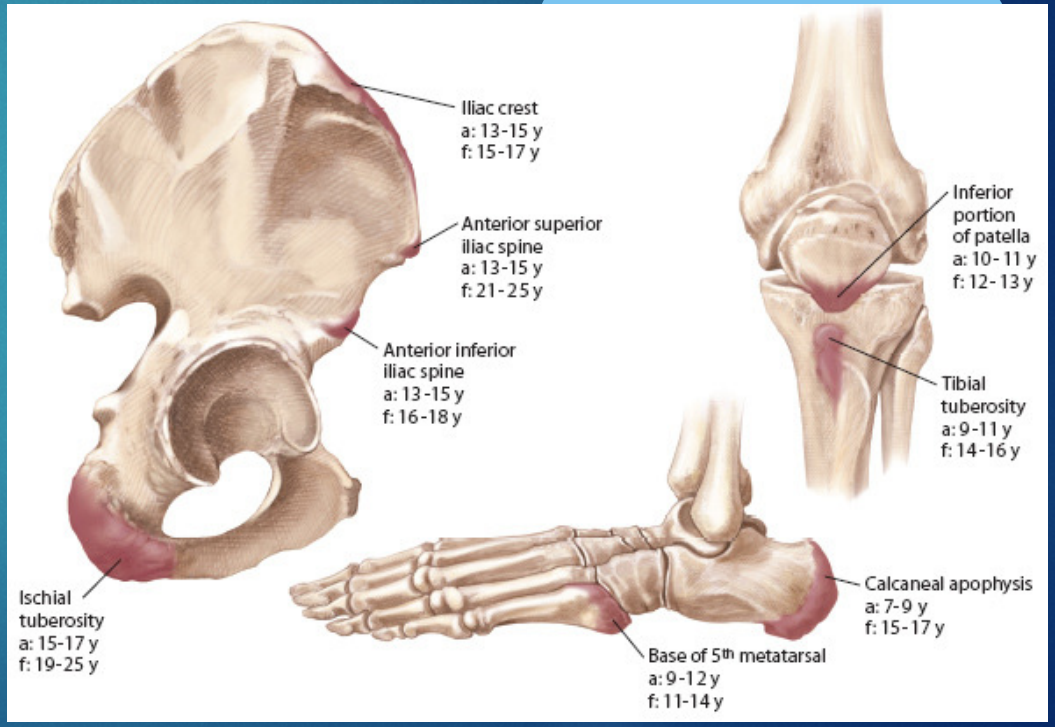
Physeal Lesions

- Growth plate lesions
  - ? Due to trauma, repeated micro trauma, alteration of blood flow
  - High risk during a growth spurt
  - Twice as likely in boys peak at 12 years, girls 11 years
  - Common sites are hip, radius, ulna, humerus, tibia, fibular and fingers
  - Watch for tenderness over growth plate in sporty, or overweight children
  - Worth a physio referral to check biomechanics, flexibility, conditioning/fitness

Apophyseal Lesions

- A Traction epiphysis/apophysis is an area of skeletal tissue under a tendon insertion
- Injuries to this area are either
  - Apophysitis
  - Avulsion

These injuries occur due to the extreme vulnerability of the epiphysis in these areas.



To Summarise

- Beware of musculoskeletal pain in adolescents
- Pathology likely to be related to growth and associated skeletal vulnerability
- If not settling refer to a paediatric physio for advice or directly to orthopaedics if you feel x-rays are required

How to Refer to Paediatric Physiotherapy

- Contact Perform

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Any Questions?