Podo-Pediatrics in Private Practice

Elisabeth Hibbert B.Sc. D.Ch.
November 11, 2016
My background

Private Practice since 1998
Began promoting children’s foot care in 2007
In 2016- 35% of new patients are under the age of 16
Associates that specialize in Pediatrics
I have three children myself
What makes for a successful Pediatric Practice?

Child friendly office
Children friendly staff
Chiropodists experienced with children
and know how to talk to parents
Child friendly office

Waiting room with Children’s chairs
Children activities in waiting room
Foot related books
Patient rewards
Patient Rewards
Working with Parents and Children

A Parent with the correct information is a happy Parent

Children are reacting to their surroundings.

Communicate with both

Ages, Stages of Development and Personality?
Erik Erikson’s Psychosocial Development
Personality Types

Fearful- nervous, anxiety, clingy

Flexible- comfortable, cooperative, compliant

Feisty- curious, energetic, loud

(Lally et al, 1990)
So Far........

Differences

◦ Age
◦ Development- Socio-emotional
◦ Personality

Now we are ready look at the child physiologically...... and then treat..........
Recommended Reading
Common Children concerns

“Walk funny”

“Toes are crooked”

“Flat feet” “Feet turn in”

“Crooked or bent legs”

“Trip and fall lots”

“I can’t find shoes”
What do parents want?

Parents want to know....

“Is this normal?”
“Why is this happening?”

“What can be done to help?”
“What will happen if we do nothing?”

Education and knowledge...lead to relief
What is normal?

Is it........
  ◦ What is most common?
  ◦ The average?
  ◦ Being with out pain?
  ◦ Visual appearance?
  ◦ Ability to wear normal shoes?
Normal - usual or ordinary : not strange

Deformity - a condition in which part of the body does not have the normal or expected shape

It is our job to determine what is expected
Extra Toe Nail
Pediatric History

Ask the right questions when doing the History:
- Pregnancy/ Labour/ Birth
- Milestones?
- Sleep and Sitting position
- Coordination walk / run
- Trip/ Tire easily

Onset, Progression, Prior Tt, Family History
<table>
<thead>
<tr>
<th>Milestone</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot to mouth</td>
<td>3 months</td>
</tr>
<tr>
<td>Sit/ roll over</td>
<td>6 months</td>
</tr>
<tr>
<td>Crawl</td>
<td>8 months</td>
</tr>
<tr>
<td>Stand</td>
<td>10 months</td>
</tr>
<tr>
<td>Walk</td>
<td>12 months</td>
</tr>
<tr>
<td>Heel-Toe Gait</td>
<td>36 months</td>
</tr>
</tbody>
</table>
Look what I found!
Examine the child

Look at child

- Standing
- Sitting
- Non Weight Bearing - Supine / Prone
- Walking
Standing- Weight Bearing Assessment

- Posture
- Base
- Angle of leg/ knee
- RCSP  NCSP
- Arch profile

Jacks Test- Flexible vs Rigid- Windlass?
Supination Resistance Test- Skive?
Sitting

Ask the child to sit and see how they naturally sit on the ground.

W position and Sitting on feet
- internal rotates the Femur and Tibia
Non Weight bearing

Supine
- Hip External/ Internal rotation
- Genu Varum/ Valgum (Patella)
- Malleolar Torsion
- Ankle Dorsiflexion

Prone
- Femoral Anteversion
- Internal/ External Tibia Torsion
- Metatarsus Adductus
Hip/Femur

**Femoral Anteversion**
- Position with Frontal plane
- Birth to adult 60-12 deg.

**Femoral Antetorsion**
- Twist in femur bone shaft
- Birth to adult 30-12 deg.
Examine Hip

**Prone**
ROM Ext- Internal rotation
Position with Greater trochanter Lateral

**Supine**
Check ROM hips flexed and extended
Examine Knee- 3 planes

- Sagittal- Flexion and Extension
- Frontal- Varum and Valgum
- Transverse- Internal and External
Examine knee- Frontal

Frontal plane
  ◦ Patellar position
  ◦ Measure Intra malleolar distance/ Inter condylar distance
Examine Knee-Tibia Transverse plane

Knee ROM
- Check for medial genicular biased

Foot to Thigh angle
- Measures Internal Tibial Torsion
- Normal 0-30 deg. Ext. rotated

Malleolar Position
- Indirectly represents Tibial Torsion

http://www.clinicalgaitanalysis.com/faq/torsion.html
Foot Assessment

Ankle Equinus (AQ)
Range of motion (ROM)
RF- FF relationship
Metatarsus Adductus (MTA)

Feet come in all shapes and sizes
Examine Foot- Metatarsus Adductus

Common at Birth
Resolve by 12 weeks old

Bisection of Heel
Normal – between the 2nd/3rd digits

www.fkchildrensphysio.com/blog/2015/2/26/flat-feet-knock-knees-and-other-anomalies-what-is-normal

Non Wt. Bear Summary so far

*Hip:* Ext>>Int. normal age 0-6 years

*Genu Varum:* normal age 0-2 years

*Genu Valgum:* normal age 3-7 years

*Int. Tibial Torsion:* normal 0-18 months

*MTA:* normal 0-12 weeks
Gait related milestones

- Walk: 12 months
- Run: 18 months
- Jump: 2 years
- Hop: 4 years
- Skip: 6 years
Gait - Walking

<table>
<thead>
<tr>
<th>Look at:</th>
<th>Foot:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head/ Shoulder Position</td>
<td>Calcaneus Position, RF/ FF</td>
</tr>
<tr>
<td>Arm Swing</td>
<td>Arches</td>
</tr>
<tr>
<td>Pelvis Position</td>
<td>Base of Gait</td>
</tr>
<tr>
<td>Knee Rotation</td>
<td>Stride Length</td>
</tr>
<tr>
<td>Patella Position</td>
<td>Ankle ROM</td>
</tr>
<tr>
<td>Tibial Rotation</td>
<td>Foot Progression Angle</td>
</tr>
</tbody>
</table>

Assess: Balance, Stability, Speed, Control, Symmetry
<table>
<thead>
<tr>
<th>Yr</th>
<th>Balance</th>
<th>Stable</th>
<th>Speed</th>
<th>control</th>
<th>Base</th>
<th>Stride</th>
<th>Arm</th>
<th>Knee</th>
<th>Tibia</th>
<th>Ankle</th>
<th>Calc.</th>
<th>MLA</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Un</td>
<td>Un</td>
<td>slow</td>
<td>Low</td>
<td>Wide</td>
<td>short</td>
<td>Bent</td>
<td>Varum Ltd Flex</td>
<td>ITT</td>
<td>No DF</td>
<td>Evert 5-10</td>
<td></td>
<td>Wt. B</td>
</tr>
<tr>
<td></td>
<td>Balance</td>
<td></td>
<td></td>
<td>Control</td>
<td></td>
<td></td>
<td>Elbows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FF Abd.</td>
</tr>
<tr>
<td>2</td>
<td>More</td>
<td>stable</td>
<td>low</td>
<td>Some</td>
<td>Less</td>
<td>Longer</td>
<td>Swing</td>
<td>Some Flex</td>
<td>ST</td>
<td>Ltd DF</td>
<td>Evert</td>
<td></td>
<td>low</td>
</tr>
<tr>
<td></td>
<td>Balance</td>
<td></td>
<td></td>
<td>Control</td>
<td>Wide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prop Start</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control</td>
<td>Narrow</td>
<td></td>
<td>swing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dec Fat</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Balance</td>
<td>Stable</td>
<td>Inc.</td>
<td>Control</td>
<td>Narrow</td>
<td>Short</td>
<td>Inc. Cad</td>
<td>Recip. Swing</td>
<td>ST</td>
<td>ST</td>
<td>Start DF</td>
<td>ST</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RF-FF Align</td>
</tr>
<tr>
<td>8-12</td>
<td>Balance</td>
<td>Stable</td>
<td>Inc.</td>
<td>Increase</td>
<td>Narrow</td>
<td>Increase</td>
<td>Recip.</td>
<td>ST</td>
<td>ST</td>
<td>DF 10-20</td>
<td>ST</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control</td>
<td></td>
<td></td>
<td>Swing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inc. Single Leg</td>
</tr>
</tbody>
</table>
Gait Analysis
In the Private Practice

Now Let’s see what comes into our Office
Recommended Reading
Common Children Concerns

Curly toes
Metatarsus Adductus
Flat Feet
Genu Varum/ Valgum
In toe Gait
Out toe/ Toe walker
Pains

Common Children concerns

“Walk funny”
“Toes are crooked
“Flat feet”
“Crooked or bent legs”
“Trip and fall lots”
“I can’t find shoes”
Curly Toes

“My child has crooked toes”

Claw/ Curly Toes:
most common

Etiology : Development, Shoe, Heredity

Treatment:  Mobilize, Stretch, Tape, Silicone, Shoes


Michener chiropody notes 1997
“Flat Feet” Is it Normal?

Yes! What age?........Up to Age 3 (pre Heel-Toe gait)

Types of Pes Planus: How Flat is it?

Flexible Flat Feet
Flexible or Rigid?
Arch height – fat pad?
Rigid Flat feet
Heel eversion?
Rocker Bottom
Talus Position- rotate?
Navicular Position- bulge?
Forefoot Position- adducted?
Treatment- When?

If Heel-Toe Gait-
Arch lowers, Leg alignment changes and flexible type

Earlier if Pain, Weakness, Unilateral, not Flexible

Treat: Stable Shoes
       OTC Insoles
       Custom Orthotics

What if don’t treat?
OTC Insoles

Kiddy Orthotics - Paris Orthotics

Globotec Insoles - Langer Orthotics
Custom Orthotics
Flexible Pes Planus
Flexible Pes Planus
Ligament Laxity, Hypotonia
Knee- Genu Deformities

Bow Legs
Knock Knees

“Crooked or Bent legs”
Frontal Plane – Angular Deformities
Genu Varum - Bow legs

Commonly Associated with In toe gait
Genu Valgum- Knocked Knees

Commonly Associated with Out toe Gait
In-Toe gait- a symptom

“Trips and Falls a lot”

3 main causes:
- Metatarsus Adductus
- Internal Tibial Torsion
- Femoral Anteversion

https://www.pinterest.com/pin/102386591506775332/
Is In Toe gait normal?

“In toe gait occurs in 1:10 children between the age of 2-5, of those 50% will correct by age 6-8”

Cause - mostly Developmentally, Familiar or Neurological

Need to treat if:
  Delayed development
  Changes Function- trip /limp
  Pain
  Affects Mobility
  Asymmetric
In toe- Metatarsus Adductus (MTA)

A transverse plane deformity
Metatarsal Adduct at the
Tarsal-Metatarsal joints
‘C shaped foot’

Etiology: In utero Position, Genetics, Muscular tightness
Occurrence 1:1000 births, 4 Types of MTA
Assoc. with Internal Tibial torsion, In toe gait
Treatment MTA

Ideal to treat between 3-8 months

- Passive stretches and massage
- Manipulations,
- Serial casting, Splints
- Straight last Shoes,
- Orthotics
- Surgery- Osteotomy
Splints

Splints instead of serial cast, if mild and flexible
Denis Browne, Telescoping, Bebax, Wheaton Brace

http://www.orthoseek.com/articles/img/club2.gif
Alimed.com

http://www.wheatonbrace.com
Straight last Shoes
Serial Casting Materials
Serial Casting
Case study MTA
MTA
In Toe- Internal Tibial Torsion (ITT)

Tibial bone is medially rotated
Thigh Foot angle < 0
Normal 0-18 months
Gait: In toe
Trip

Etiology- in utero position, Familiar, Developmental delay

How to treat for ITT

Usually treated after 15 months

Mobilizations

Bracing
  ◦ Dennis Browne
  ◦ Telescoping brace (single)

Orthoses
Gait Plates
Gait Plates!

Effective or not?

Research varies.
• Do not generally improve the Progression angle of gait,
• Decrease tripping and parents see a benefits

www.strideorthotics.com/prefab2p.html
In Toe Gait

Normal:
Mild Anteversion

Abnormal:
Genu Varum
Internal Tibial Torsion
Metatarsus Adductus
Internal Tibial Torsion

Flexible Pediatric Pes Planus
In Toe- Femoral Anteversion

Femur twisted inward
Medial Patella Position
Gait: In toe
  Knee squint

Anteversion- Int. rotation > Ext. rotation
  (> 70 degrees)

www.clinicalgaitanalysis.com/faq/torsion.html

Treatment

Sit cross legged
encourage rotation resolution

W sitting position
promotes internal rotation
of the Femur and Tibia
In toe Gait

Corrected
  Internal Tibial torsion
  Metatarsus Adductus

Left with
  mild Fem. Anteversion
  Rearfoot Varus
  Forefoot Varus
In toe Gait- Assessment Summary

MTA Heel bisection to Digits (Lateral to 3rd digit = MTA)
ITT Thigh- foot angle (<0 = ITT)
Fem AV Craig’s Test (Int. >> Ext. = Anteversion)
Treatment Summary - In Toe gait

**Metatarsus Adductus:**
- Mobilizations
- Serial casting
- Braces: Wheaton, Bebax, Straight last shoes
- Orthoses

**Internal Tibial Torsion:**
- Mobilizations,
- Serial Casting
- Denis Browne splint
- Orthoses
- Gait plates

**Anteversion** - Do not treat, Surgery later
- Change sit and sleep pattern
Out Toe Gait

Less common

Etiology:
Calcaneal Valgus
External Tibial Torsion
Ext Hip Rotation

External Tibial Torsion
Shoes
Injury to Bones in child

Deform with: Strain/ Force
Quick growth

Diaphysis- Torsional Skeletal deformities
Metaphysis- Frontal Skeletal deformities
Force or Mechanical disorder
Epiphysis- Apophysitis occurs here

Apophysis- Pain

Apophysis- a secondary ossification centre where tendon inserts
Apophysitis- inflammation of the apophysis,

Etiology- Overuse injury in young growing athletes

Iselin Dz., Sever’s Dz., Osgoode Schlatter’s Dz
Sever’s Dz- Calcaneal Apophysitis

Heel pain on Medial-Lateral Palpation
  Common age 8-15 years old,
  No injury or disorder

S/S- Pain, inflammation

Etiology- Overuse, Growth, Footwear, Sports, poor training
Treatment- Reduce activity 50%, Ice, Stretch, Tape, Heel lifts, BMA
Calcaneal Apophysitis

https://www.pinterest.com/pin/210261876326051888/
Growing pains......ok?

Pain that is intermittent, in the muscles
Bilateral, Usually in afternoon and evening

Diagnose- ?

Etiology- Rapid bone growth, Fatigue, Overuse, Family history 70%
Treatment- Medications, Massage, Stretch, Vitamins
Podo-Pediatrics in Private Practice

Know what to Expect........Treat what is not Normal and you will have happy Children (and Parents)

Thank You