Children's of Alabama

TOE WALKING

Evaluation and Treatment in Early Intervention

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What is Toe Walking?

- Walking on toes or balls of feet
- It can be high: on balls of feet
- It can be low: most of their foot touches the ground but heel never touches
- It can be inconsistent

Why be Concerned with Toe Walking?

- It can lead to decreased passive or active ROM
- It can lead to decreased strength, or point to the fact there is decreased strength
- It can cause decreased balance
- It can lead to delayed gross motor skills

Evaluation:

What does a PT assess when a child is walking on his toes?

- **Range of Motion**
  - ankle dorsiflexion with knee flexed (Achilles' Tendon tightness) and knee extended (Gastrocs/calf muscles)
- **Alignment-** equal leg length
- **Muscle Tone**
- **Position of feet** in sitting, standing and walking; barefoot vs in shoes
- **Functional Skills**
  - Motor skills-focus on standing, cruising, walking, stairs, coming to stand from floor
  - What is play environment and what pieces of baby equipment are being used
- **Balance**:
  - Can he stand still?
  - Does she fall a lot?
  - Is there a difference between level and unlevel surfaces?
- **Sensory Integration Issues**:
  - Picky eater, does not tolerate touching feet, does not like tags, bothered by loud noises, difficulty transitioning between activities
- Muscle strength- decreased strength or imbalanced strength

QUESTIONS TO INCLUDE IN HISTORY

- Birth history including developmental milestones
- Early Hand preference
- Concerns with balance or gross motor skills
- Sensory questionnaire
- Any family members that are toe walkers or have any issues with their feet or walking
- Any bowel or bladder issues{ due to tethered cord concerns if late toe walker}
- Pain
- % of time they toe walk- can they walk with heel down when you remind them
- Age of onset of toe walking

Additional things for Evaluation

- These items can be used to screen for need for referral for further evaluation from physician
  - Other Concerning Behaviors
  - Other diagnoses like Clubfoot ,congenital tight heelcord, DDH, myopathy, tethered cord, neuromotor concerns
  - Has there been a surgical intervention?
  - Leg length discrepancy
  - Toe walking in the presence of decreased strength in dorsiflexion

Points of Concern

- Normal walking Under 3:
  - Some amount of Toe walking can be normal under 3
  - Some kids might walk on their toes when the furniture for them to hold is high
  - Normal toe walking is intermittent (less than 50% of the time)
  - Initially toe walk on different surfaces
  - Early walkers hold their arms up in the air in “high guard”
  - Early walkers have a wide base of support
- There is concern if progression in balance resulting in decreased base of support, arms down and improved ability to walk on different surfaces is not evident within six months of independent walking
- There is concern if toe walking is increasing as opposed to decreasing
- There is concern if the child becomes unable to stand with flat feet

When to contact pediatrician for referral to Orthopedics, Rehab Medicine, or outpatient PT

- Toe walking more than 50% of the time
- Toe walking on 1 foot
  - Many times in kids with mild hemiplegia, there will be more recognition of asymmetry as child begins walking
- Stand on toes, and is never able to stand flat
- Toe walking affects balance and limits progression of walking skills
- High guard and wide base of support persist longer than 6 months after initiation of walking
- Toes walking with additional concerning behaviors or global developmental delay
- If screening questions in evaluation might point to global cause of toe walking

TOE WALKING

Type One

- Mild
- Has good ROM
- can get heels down with verbal prompt
- leans forward when walking
- tends to walk fast

Type Two

- Occasionally heel will touch floor
- Early heel rise
- Bouncy walk
- Foot rolls in

Type Three

- Limited ROM
- Heel never touches the ground (toe-toe walking)
- Walks with toes pointed out
- Walks with pelvis in anterior tilt
- Has increased knee extension while walking
- Forefoot tends to spread at metatarsal heads (wide front of foot)

INTERVENTIONS

- Shoes- high top tennis shoes- Memo shoes, hard bottom shoes, carbon fiber insert in shoe
- PT and OT
- Kensiotape
- AFO’s
- Night splinting
- Serial casting
- Botox
- Surgical lengthening

AFO's

CASCADE 3.5

Cascade Kangaroo

KENSIOTAPE

FRC night splint

Carbon fiber insert

- Stiffens the sole of shoe
- Dampens sensory input for walking on toes

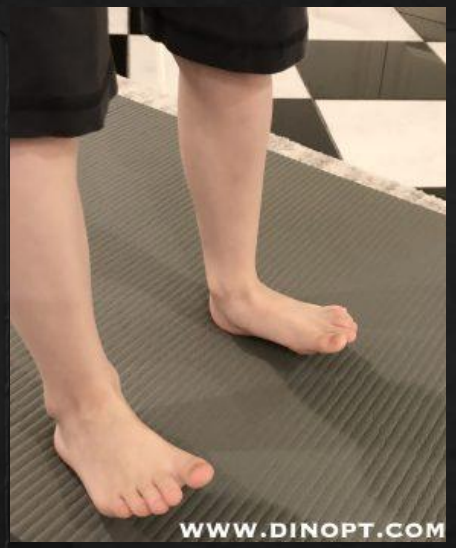
Passive Stretching

- Stretching after a bath
- Squat to play
- Wall push over
- Standing on incline
- Stair –stop and drop

VIDEOS OF STRETCHING

DYNAMIC STRETCHING

- Animal walks- penguin walk, bear walk
- Heel walking
- Walking backwards, can pull a toy with string or wagon
- Walking up and down hills
- Stairs- drop heel and then raise on toes



ACTIVIES FOR DYNAMIC STRETCHING OF SOLEUS

- Stretching Soleus muscles to move tibia (shank) over foot
- PLAY IN SQUAT- begin with heels on small stack of books and have child squat- if can maintain for 10 seconds- progressively lower book level until you find level that heels cannot stay on floor- this addresses shank progression in walking
- Stand facing wall- make sure toes are facing wall in staggered stance- one hand width from wall- have child bend their knee to touch the wall- can do activity in half kneel and standing

Addressing Sensory Issues

- Sensory bins for feet- beans, rice, water beads
- Brushing- wash cloth, soft brush
- Joint Compressions through heels

STRENGTHENING ACTIVITIES

- Sitting on bench- have child pop bubble with toes
- Sitting on bench- put leg in your lap extended- have child flex toes up- resist thru ROM for concentric strengthening and then resist at endrange for eccentric strengthening of dorsiflexion- can do same into plantarflexion and inversion and eversion
- Sitting on bench toe tapping-increases in difficulty as feet get closer to bench- make sure ball of feet clear the floor
- Standing with back on wall- toe tapping- the closer you get to wall with your feet- the more difficult it is, - do with single foot tap and both feet tapping- make sure they are raising ball of foot off floor and not just toes- single foot tap easier that double foot tap
- Standing in middle of the room and toe tapping- can objectively measure progress with number of taps in 30 seconds

STRENGTHENING ACTIVITIES

- ROCKER BOARD
- Great way to strengthen intrinsics- ask child to rock full forward and back- vary difficulty with how far they rock board- how close feet are together- you can change speed of reactions with rocker board speed and remember to change foot position to challenge foot reactions in different ways
- Standing on varying surface to play a game- pillows, foam block, trampoline, bosu ball, bolster
- Standing – use large and small cones and tap toe on top of cones- can do free standing, back against wall or hands held depending on balance skills

STRENGTHENING ACTIVITIES

- Stepping into and out of containers- different size boxes, laundry basket, ect
- Bean bag play in standing- pick up bean bag with toes and put in a bucket- this can be done in sitting progressing to stand at wall and then free standing- can also put bean bag on top of foot and have drop in bucket- encourages dorsiflexion with hip and kee flexion to dump in bucket
- In sitting- pick up marbles with toes and put in a bucket
- Towel slides- child in in sitting with heel of foot on a towel- toe curl to pull towel near them- could put a toy they like at end of towel to make a game

STRENGTHENING ACTIVITIES

- FLOOR SKATING –use towels or paper plates under feet and “skate” around the room to a song
- Obstacle course- - can play ”floor is lava” with stepping on different object like balance board, stepping stones, pillows ect- can make child skill level game
- Obstacle course- have squatting, animal walks, jumping and kicking balls in course
- Free standing- stand on one foot or may have one foot on a step- stack cups, throw ball, hit balloon,
- Ring toss while standing on bosu ball

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