Physical Therapy for Children with Down Syndrome

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What we will cover:

1. Goal of physical therapy
2. Physical factors that impact the development of gross motor skills
3. Compensations for these factors
4. Crucial Components to develop when learning gross motor skills
5. Examples of how physical therapy addresses learning gross motor skills to help develop the crucial components

What is the goal of physical therapy for children with Down syndrome?

What is the Big Picture?

The goal of physical therapy for children with Down syndrome *is not*:

To try to achieve gross motor skills more quickly (to accelerate the rate of gross motor development)

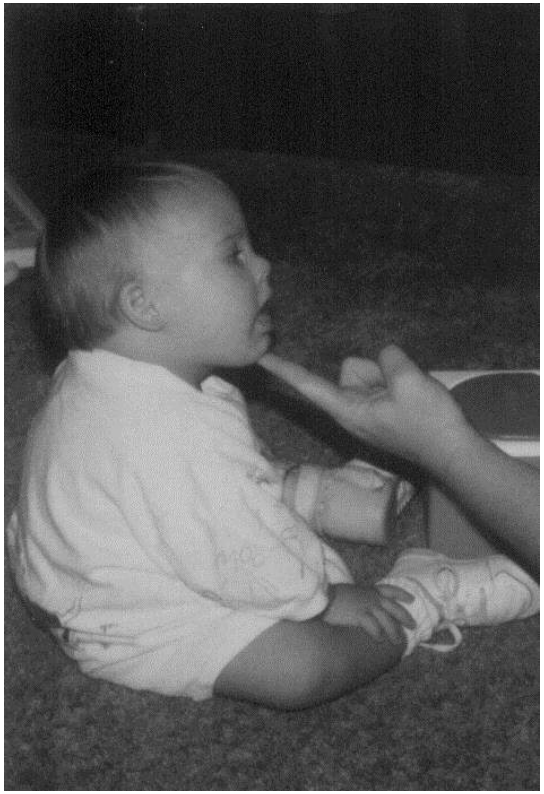
The goal of physical therapy for children with Down syndrome *is*:

- To achieve gross motor skills in a way that the child develops the crucial components
- The goal is to lay the foundation for a functional body so the child can do what he wants to do throughout his life
- To focus on the long term perspective (what is needed as an adolescent and adult)

Physical factors that impact the development of gross motor skills:

- Hypotonia
- Ligamentous laxity
- Decreased strength
- Short arms and legs
- Medical problems

Compensations for the physical factors



Crucial components to develop when learning gross motor skills

1. Upright head and trunk posture
2. Shoulder posture
3. Weight shifting/Balance (later in life)
4. Optimal alignment of hips, knees, and ankles that support standing and walking skills

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The Critical Periods for Physical Therapy

1. The Birth to Walking Period
2. The Post Walking Period

Stage 2

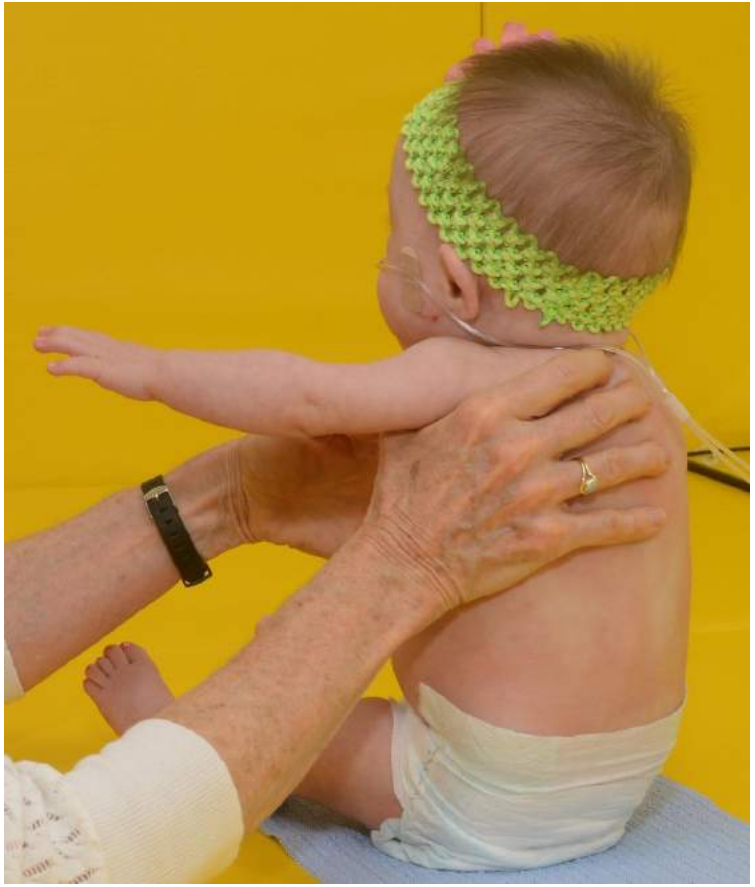
1. Supine
   - Reach, hand to foot play, bridge position
2. Prone
   - Propping on elbows & hands, reaching
3. Pull to sit & Sitting
4. Supported kneeling
5. Rolling

How physical therapy addresses learning gross motor skills to develop the crucial components

We will look at 4 examples:

- Sitting
- Moving into sitting
- Learning to stand with an optimal posture
- Walking

Learning to sit



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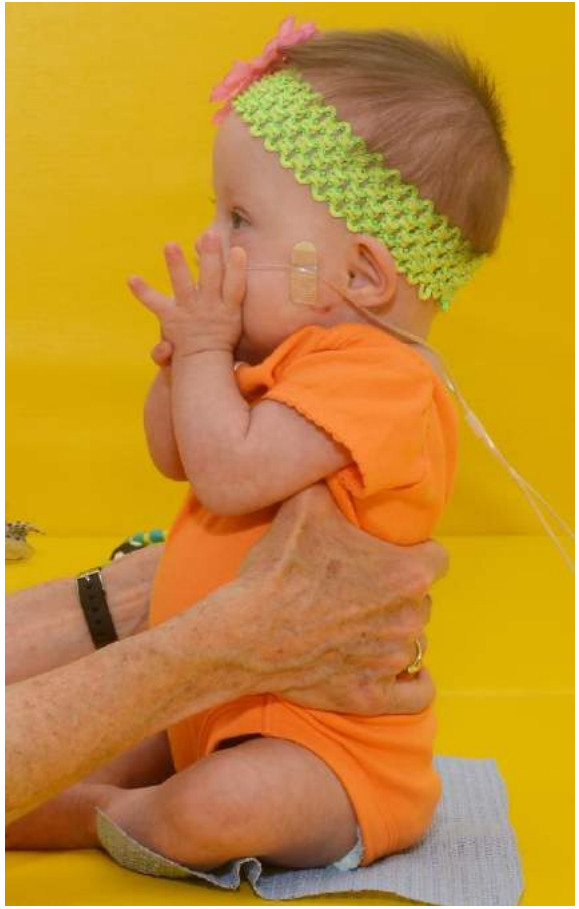

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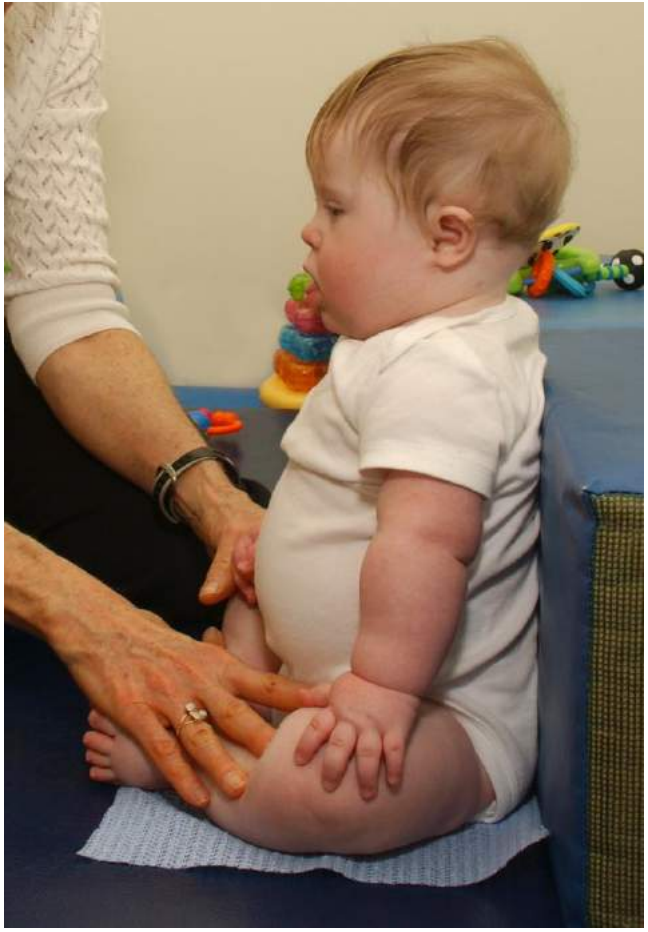

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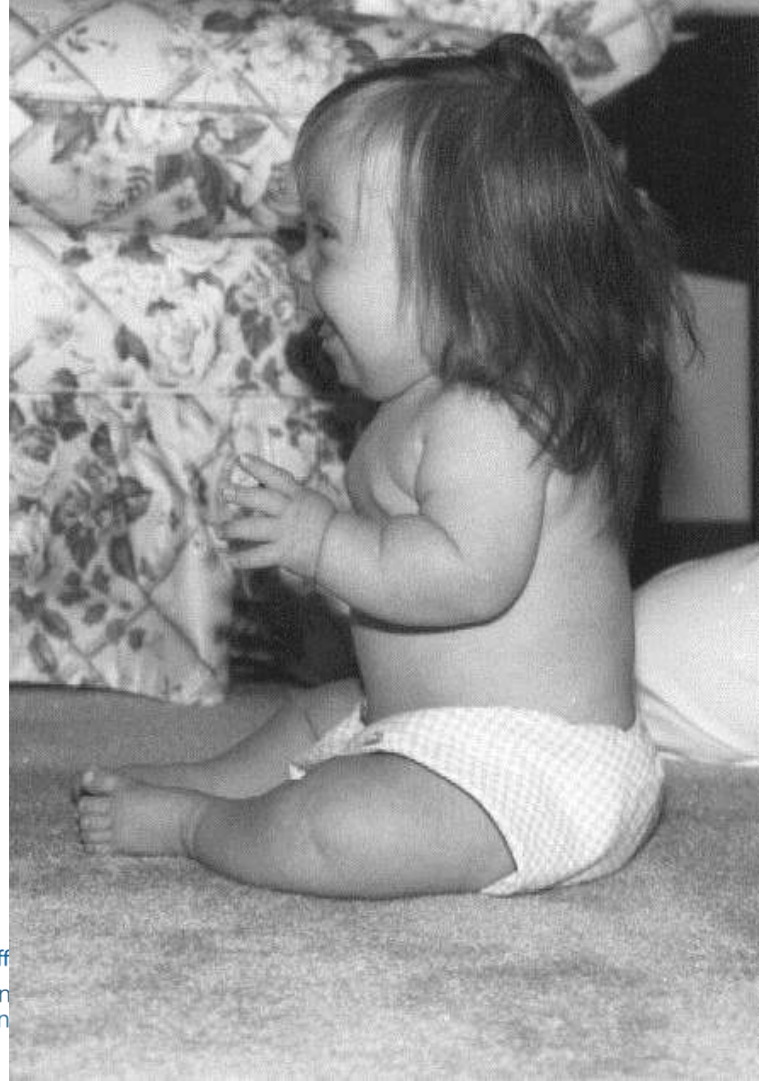

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Moving into sitting

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Learning to stand

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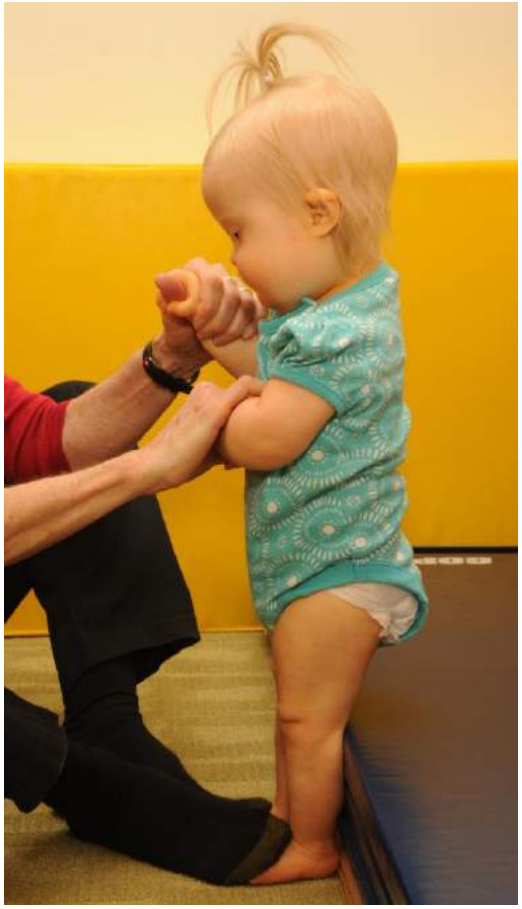

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Optimal standing posture

- Narrow base (feet 2-3 inches apart)
- Feet and knees point straight ahead
- Heels against the bench
- Pelvis over the bench
- Mild knee bending
- Hold my thumbs
- Activate abdominals

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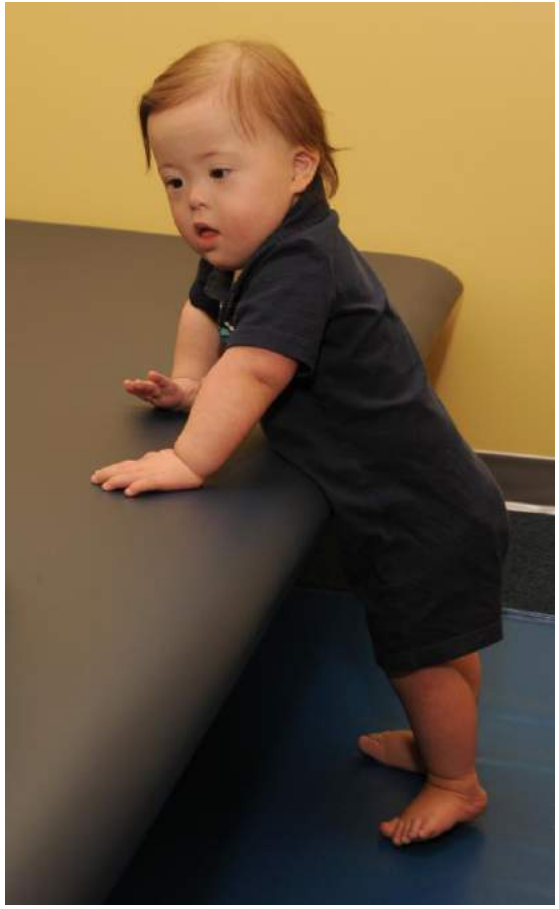
Walking

Initial Walking Pattern

- Wide base
- Toeing-out
- Full sole weight bearing, with weight on the medial borders of the feet
- No pelvic rotation
- Short step length
- Stiff knees
- Inactive ankles
- Arms in high guard



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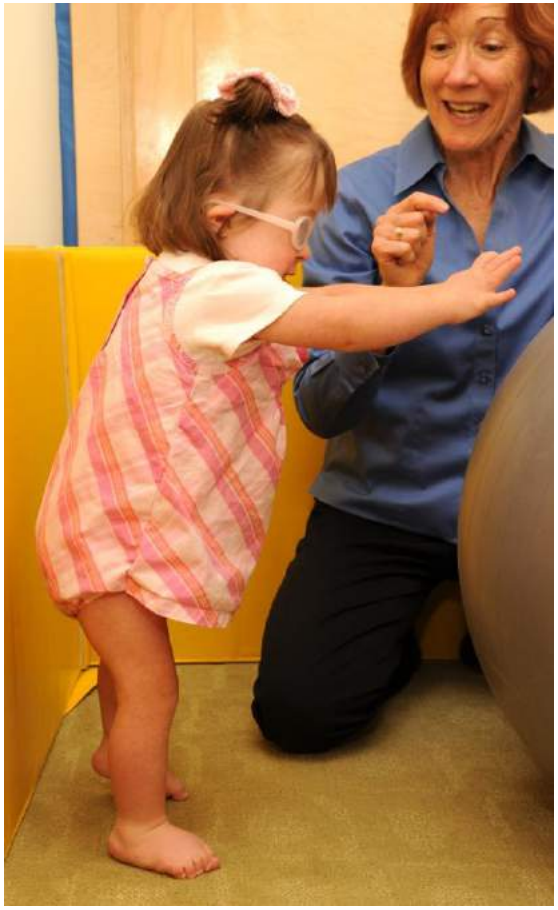

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The Post Walking Period:

The goal is to refine the walking pattern

- Narrow base
- Knees and feet point straight ahead
- Rotation of pelvis
- Long step length
- Mild knee bending
- Optimal foot alignment
- Heel-toe pattern, weight shifting from heels to balls of feet
- Hip hyperextension
- Speed and endurance

Optimizing the walking pattern is accomplished by:

- Practicing post walking skills to improve specific movement patterns (especially running)
- Foot Management
  - Using an athletic shoe with a flexible sole
  - Providing adequate support in the shoe

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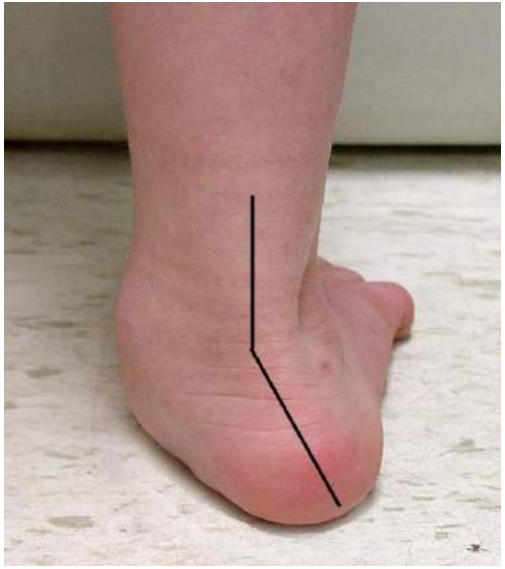
Evaluate the foot posture when standing and walking

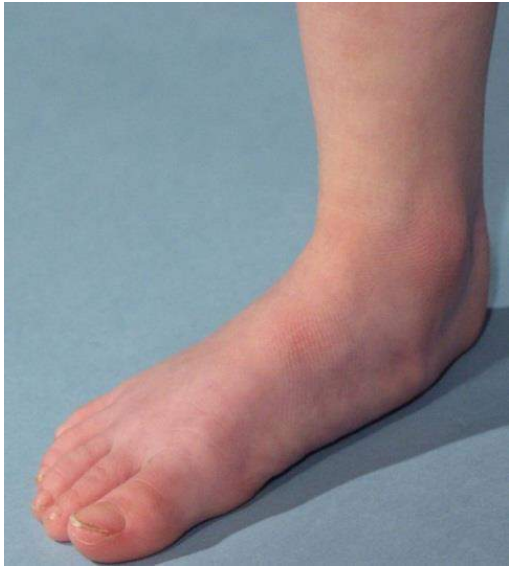
Determine ***if*** support is needed and ***when*** needed

- From the front:
  - Feet point straight or turn out?
- From the back:
  - Narrow base (with heels in line with hips) or wide base?
  - Heels tilted or vertical?
- From the side:
  - Is there an arch or is the arch collapsed and flat?

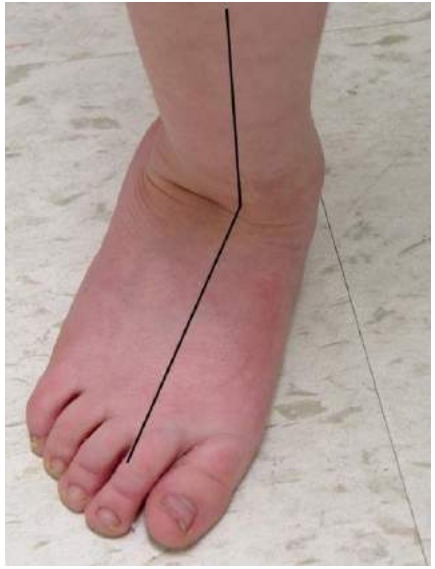
Pronation



Back view
(heel tilt)



Side view
(Flat arch)



Front view
(Toeing-out)

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SureStep Orthoses

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Cascade dafo HotDog Inserts

*add foam filling to arch

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Cascade dafoChipmunk

www.cascadedafo.com

Athletic Shoe

- Very flexible in toe-box area
- Lightweight
- Broad rounded toe box
- Lace closure
- Firm heel counter with extension
- Firm medial counter
- Sole: flared at heel (back view: wider where base contacts ground than under heel)
- Not high top
- Remove insole

Conclusion

The goal is to develop the crucial components, *not* to achieve gross motor skills more quickly.

References

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