

# NDT Contemporary Practice Model™:

Using an ICF Format in Assessment &  
Treatment Planning for Pediatrics

Where do I start???

What are the most important things to work on?

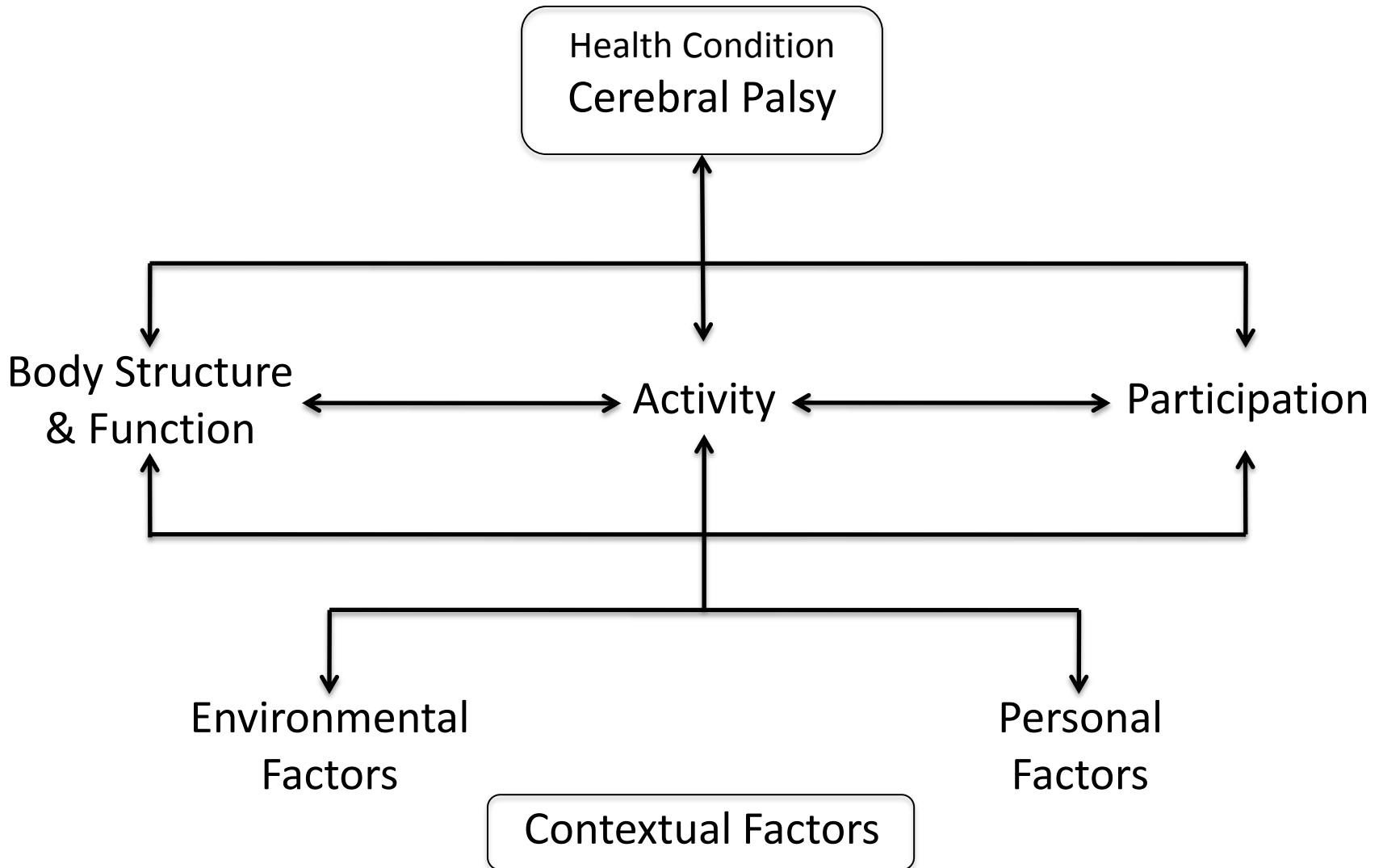


How do I get best carry-over?

How do I assist the child in reaching the goal in the most effective way?

What about children with complex issues?

# ICF Model: Biopsychosocial model



Child's Name:	DOB:	Diagnosis:	DOE:
Therapist's Name:		Discipline:	
Current Participation:			
Current Participation Limitations:			
Current Functional Activities:			
Current Functional Limitations:			
Contextual Factors:			
Place an * next to the items that the family identifies as immediate concerns/desired outcomes.			
Functional/Participation Goal:			
Critical <u>typical</u> components required to perform stated goal:			

Multi-System observations	Related System Impairments
#1	Neuromuscular:  Musculoskeletal:  Sensory/Perceptual:  Respiratory:  Other:
#2	Neuromuscular:  Musculoskeletal:  Sensory/Perceptual:  Respiratory:  Other:

#3

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:

\*Add more boxes so you can list as many Multi-system impairments as is appropriate for the above-mentioned daily task.

What impairment(s) are listed more than once across the P&M/MS behaviors?


List the impairments in *prioritized* order based upon the daily task: (based on your goal, analysis and experience)


What other considerations might there be in developing treatment strategies? (Include individual's dislikes, likes, contextual factors, hobbies, etc.)


Possible treatment session goals: (based on the identified **functional/participation goal**, impairments and expected change)


Treatment session goals should be functional, with a measurable change in outcome.

Treatment session plan based on treatment session goal: \_\_\_\_\_

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Impairment	Possible treatment strategy	Expected change



Child's Name:	DOB:	Diagnosis:	DOE:
Therapist's Name:		Discipline:	
Current Participation:			
Current Participation Limitations:			
Current Functional Activities:			
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Contextual Factors:			
Place an * next to the items that the family identifies as immediate concerns/desired outcomes.			
Functional/Participation Goal:			
Critical <u>typical</u> components required to perform stated goal:			

Child's Name:

DOB:

Diagnosis:

DOE:

# PARTICIPATION

Current Participation:

The extent to which an individual participates within life situations typical for their age. (Includes community, family, work, school, etc.)

Participation- can eat at dinner table with family, can play with siblings on floor at home, can walk to lunchroom with classmates, can participate in school play

Participation restriction- unable to carry books at school, unable to communicate needs to babysitter, unable to participate at friend's birthday party, unable to attend Sunday school

Child's Name:	DOB:	Diagnosis:	DOE:
Therapist's Name:		Discipline:	
Current Participation:			
<b>FUNCTION/ACTIVITY</b>			
Current Functional Activities:			
<p><b>Directly observable milestones or tasks child can do or not do</b></p> <p>Functional activity- can roll, can crawl, can palmar grasp, can eat pureed food, can say word approximations</p> <p>Functional limitation- cannot sit alone, cannot get into quadruped, cannot release object in space, cannot bite solid food, cannot say words</p>			

Child's Name:	DOB:	Diagnosis:	DOE:
Therapist's Name:		Discipline:	
Current Participation:			
Current Participation Limitations:			
Current Functional Activities:			

# CONTEXTUAL FACTORS

Contextual Factors:

Those things in the individual's environment, including physical, social and attitudinal that impact on the individual's life; can either help or hinder

Contextual facilitators- family has financial means to pursue needed services and equipment, parents are advocates, school is modified/adapted

Contextual barriers- society does not have the patience to wait for awkward speech, toilet seat is too high for child in public handicapped bathroom, house is 2 stories

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# MULTI-SYSTEM IMPAIRMENTS/INTEGRITIES: POSTURE & MOVEMENT STRATEGIES

Directly observable parts of a whole function; result of the interaction of many body systems, the task, and the environment.

“What do you see?” “How?”

Includes balance, weight shifting, head control, dissociation, synergies, compensatory strategies

Examples: head and neck hyperextension, total extension synergy of the legs, falls to side, posterior pelvic tilt

State what you do see, not what you don't see

# MULTI-SYSTEM IMPAIRMENTS/INTEGRITIES: POSTURE & MOVEMENT STRATEGIES

“HOW does the child look when attempting the task?”

- Head/neck
- Spine/trunk
- Upper extremities
- Pelvis
- Lower extremities
- Alignment
- Symmetry/Asymmetry
- Postural control
- BOS
- Planes of movement, weight shifts
- Compensatory strategies

# SINGLE SYSTEMS IMPAIRMENTS/INTEGRITIES

Testable and includes all of the bodily systems

“Why?”

Requires special training to examine

Body Systems include:

Neuromuscular

Cardiovascular

Musculoskeletal

Gastrointestinal

Sensory-perceptual

Cognitive

Respiratory

and more....



# SINGLE SYSTEMS IMPAIRMENTS/INTEGRITIES

For example

System integrities- full ROM, normal strength, good vision, tongue lateralization

System impairments- decreased co-activation of abdominals and gluteals, excessive stiffness, flared rib cage, hearing impaired

Other:

#3

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:

\*Add more boxes so you can list as many Multi-system impairments as is appropriate for the above-mentioned daily task.

What impairment(s) are listed more than once across the P&M/MS behaviors?


List the impairments in *prioritized* order based upon the daily task: (based on your goal, analysis and experience)


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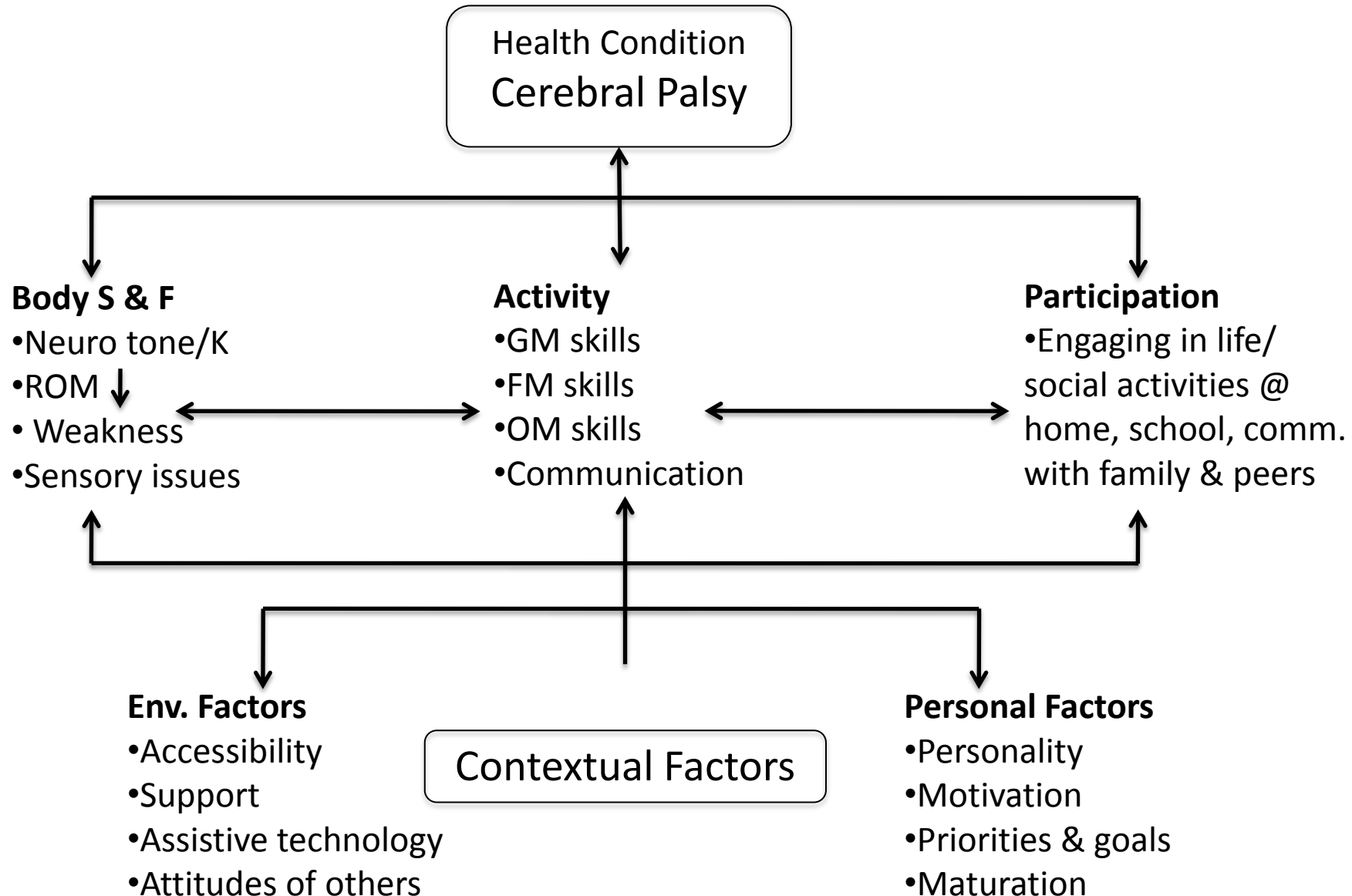
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Impairment	Possible treatment strategy	Expected change

# TREATMENT PLAN

- For each impairment being addressed develop possible treatment strategies.
- Develop a treatment plan that:
  - Adequately addresses impairments affecting functional goal
  - Has a logical sequence
  - Challenges child
  - Allows for reasonable practice
  - Modifies treatment based on child's response

# ICF Model: Cerebral Palsy Example



# Clinical example





3 years old (partial exam)

**Current Participation:** goes to typical preschool with peers part-time, goes to special needs preschool with peers part-time, goes on family outings, enjoys visiting grandparents; participates with family and community in temple

**Current Participation Limitations:** unable to have a conversation with peers, family, caretakers, etc; reduced mobility to play and keep up with peers and siblings; unable to fully participate in family mealtime due to inability to self-feed

**Current Functional Activities:** roll on mat with assistance (describe assistance); attempts to reach and inconsistently gross grasp a toy with R hand while in supported sitting; interacts non-verbally with adults; stands with UL support; takes steps with assistance at her trunk (R >L); sits on bench with light support through crown of head; identifies a few objects and colors; appears to have age appropriate receptive language; can visually engage & explore in a variety of positions

**Current Functional Limitations:** can't roll from supine to prone or prone to supine without assistance; limited verbal communication (unable to speak intelligibly); unable to sit independently; dependent for ADL's; cannot consistently grasp or release objects with either hand (L more difficult than R, no attempt w L observed); cannot stand without assistance; cannot transition between positions; cannot play with objects on floor; no form of I mobility (belly crawling, creeping on hands and knees, cruising, walking)

## Contextual Factors:

**Facilitators**= both preschools are accessible; both grandparents are very supportive of the child and her family; family has the financial means to pay for services and equipment; mother understands about 25 words of child's; child is a positive, persistent, motivated and social little girl; temple is accessible

**Barriers**= playground in community has sand base so not accessible; some children at school stare when drools; difficulty with accessibility at most of friends' homes so parents carry her; adults look to parent or caregiver for communication instead of talking directly to child

**Functional/Participation Goal:** Child will greet her teacher & classmates each morning by activating a single press switch placed on her tray, using her R hand while sitting in her wheelchair with posterior and lateral trunk supported seating, head rest, pelvic belt and chest harness with switch located on the right side of her tray 3/5 days by 2 months

**Critical typical components required to perform goal:**

- elbow extension
- shoulder stability with forward flexion
- head control
- motivation

**Multi-System observations  
Impairments**

**Related System**

#1 Head & neck hyperextension  
with frequent collapse into flexion  
followed by phasic lift of head  
again with hyperextension

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:

<b>Multi-System observations Impairments</b>	<b>Related System</b>
<p>#2 Flexion synergy of both UEs with limited movement with attempt to reach, accompanied by L head turning, elevated shoulders</p>	<p>Neuromuscular:</p> <p>Musculoskeletal:</p> <p>Sensory/Perceptual:</p> <p>Respiratory:</p> <p>Other:</p>

Multi-System observations  
Impairments

Related System

#3 Thoracic spine flexion with  
lateral flexion to L for reach

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:

Multi-System observations  
Impairments

Related System

#4 Slight PPT with weight more often to L

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:



**Multi-System observations  
Impairments**

**Related System**

#5 Hip internal rotation-adduction,  
L > R with narrow BOS at hips,  
knees in slight extension such that  
feet do not form the BOS

Neuromuscular:

Musculoskeletal:

Sensory/Perceptual:

Respiratory:

Other:

## #1 Related System Impairments

**Neuromuscular:** initiates with phasic/superficial head neck muscles; reduced ability to sustain and decreased co-contraction of postural flexors and extensors of cervical spine, trunk (T extensors, scapular stabilizers, abs); flexor synergy in UEs and anterior trunk which is exacerbated when she reaches; eyes appear to not dissociate from her head (?); decreased postural stiffness in head, neck and trunk with excessive dynamic stiffness generated in upper and lower limbs especially with effort; decreased co-contraction of glutes, abs, thoracic extensors

## #1 Related System Impairments

**Musculoskeletal:** C spine flexors= 2/5; C extensors 2+/5; reduced strength in abs; thoracic extensors= 2/5; tightness in upper traps, lats and pecs; decreased endurance in head and neck postural muscles, especially deep capital and cervical flexors; decreased mobility of the rib cage and spine

**Sensory-perc:** uses vision to initiate movement from flexion and extension

**Respiration:** shallow belly breathing with accessory muscle use

## #2 Related System Impairments

**Neuromuscular:** with movement has increased tension [over-recruitment] at shoulders (deltoids, upper traps, pecs, lats) and in biceps; decreased intralimb dissociation; flexor synergy LUE > RUE- upper traps-biceps-pronators-finger flexors; decreased dissociation of her RUE from her trunk; decreased co-contraction of glutes, abs, thoracic extensors; generates high levels (or excessive) dynamic stiffness in upper limb via movement muscles

## #2 Related System Impairments

**Musculoskeletal:** reduced strength in abs; thoracic extensors= 2/5; decreased AROM in UEs; tightness in upper traps, lats and pecs; decreased strength in rhomboids & lower traps; decreased endurance in head and neck postural muscles, especially deep cervical and cervical flexors; decreased mobility of the rib cage and spine

**Sensory-perc:** decreased ability to generate proprioception in UE's appropriate for task

**Respiration:** shallow belly breathing with accessory muscle use

## #3 Related System Impairments

**Neuromuscular:** initiates extension of thoracic spine with phasic bursts; reduced ability to sustain and decreased co-contraction of glutes, abs, postural thoracic extensors; flexor synergy in UEs and anterior trunk which is exacerbated when she reaches; decreased postural stiffness in head, neck and trunk with excessive dynamic stiffness generated in upper and lower limbs especially with effort; decreased co-contraction of glutes, abs, thoracic extensors over-recruitment of lats; decreased dissociation of her RUE from her trunk;

## #3 Related System Impairments

**Musculoskeletal:** reduced strength in abs; thoracic extensors= 2/5; decreased AROM in UEs, especially R; tightness in upper traps, lats and pecs; decreased endurance in thoracic postural muscles; decreased mobility of the rib cage and spine

**Sensory-perc:** decreased ability to generate proprioception in postural muscles of trunk appropriate for task

**Respiration:** shallow belly breathing with accessory muscle use

What impairment(s) are listed more than once across the P&M/MS behaviors? (in no particular order)

flexor synergy in UEs and anterior trunk which is exacerbated when she reaches; decreased postural stiffness in head, neck and trunk; excessive dynamic stiffness generated in upper and lower limbs especially with effort; decreased co-contraction of glutes, abs, thoracic extensors over-recruitment of lats; decreased dissociation of her RUL from her trunk; reduced strength in abs; thoracic extensors= 2/5; tightness in upper traps, lats and pecs; decreased mobility of the rib cage and spine



List the impairments in *prioritized* order based upon the daily task: (based on your goal, analysis and experience)

1. decreased co-contraction of glutes, abs, thoracic extensors
2. decreased ability to sustain postural muscles, especially abs & thoracic spine
3. decreased mobility of the rib cage and spine
4. tight lats & pecs (decreased ROM)
5. reduced ability to sustain and decreased co-contraction of postural flexors and extensors of cervical spine
6. decreased dissociation of RUE from trunk
7. reduced strength in postural muscles, especially abs, glutes
8. flexor synergy in UEs and anterior trunk which is exacerbated when she reaches

What other considerations might there be in developing treatment strategies? (Include individual's dislikes, likes, contextual factors, hobbies, etc.)

Enjoys social interaction; likes to use her cognition & vocalizations; have someone in front of her; ensure success with toys & switch to keep her engaged; give choices to keep her motivated; incorporate mother, siblings in session

## Possible treatment session goals: (based on the identified functional/participation goal, impairments and expected change)

1. ... will slide B arms forward on surface to touch a desired object presented at midline at xiphoid level within 6 " while sitting on bench given support anteriorly and posteriorly at chest and thoracic spine for maintaining upright position with alignment of pelvis, 3/5 opportunities.
2. ... will keep her head upright & in midline for 20 seconds (allowing for 1 head drop with immediate recovery) while looking at a chosen book being read to her held 2' away at eye level while seated in her wheelchair with all straps on, 3/5 opportunities.
3. ... will reach her right arm forward to push a car or ball down a ramp, at xiphoid level, during play with sibling, while maintaining upper trunk and head upright, sitting on a bench at 90/90 with support at the mid-thoracic rib cage, 3/5 times.

**Tx session plan based on tx session goal:**... will slide B arms forward on table to touch a desired object presented at midline at xiphoid level within 6 “ while sitting on bench given support anteriorly and posteriorly at chest and thoracic spine for maintaining upright position with alignment of pelvis, 3/5 x.

**Pre-test**

Impairment	Possible treatment strategy	Expected change
Tight pecs	bench sitting behind child, use medium pressure with hands tractioning over pecs waiting for tissue to soften, moving from center up and outward to elongate pecs	Ability for full upper trunk alignment
Rib cage mobility	bench sitting behind child, use medium pressure with hands tractioning to bring rib cage down toward pelvis (lateral, anterior, posterior); incorporate trunk rotation with pt arms over therapist’s when doing posterior	Ability for full upper trunk alignment, active thoracic ext w head control
Reduced ability to sustain and co-contract postural flex and ext of cervical spine	use therapist body to provide boundaries at occiput and forehead in order to work in small range to work on maintaining head in mid-range. work in a variety of positions and ask to hold for brief periods in a variety of planes	co-contraction of capital and cervical flex/ext to maintain head in mid-range

Impairment	Possible treatment strategy	Expected change
Tight lats	transition from bench sitting onto SLing on ball w lower UL starting at 90 shoulder flex, rolling body over stable limb, as tissue softens facil active transition to prone & have pt reach for object held by mom, applying additional traction over lat waiting for tissue to soften, moving from prox to dist	Ability for arms to move away from trunk
Simulation	bench sitting behind child, bolster in front at xiphoid level, with hands tractioning through lats & bringing spine into extension, roll bolster forward as facilitate reach to desired object; add rotation of trunk to increase postural muscle activity	Ability for arms to move away from trunk, active thoracic ext w head control
Practice task	position as per goal, practice task of goal giving additional physical & verbal prompts as needed	Increasing competence toward goal

Post-test