

PEDIATRIC SEATING

Michelle L. Lange, OTR/L, ABDA, ATP/SMS
Access to Independence



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Pediatric Seating

- So, what's different vs. Adult Seating?
- Growth
- Accommodating other changes
 - tone management
 - progressive conditions
 - range limitations and orthopedic changes that occur with growth
- Based greatly on mobility base
 - strollers
 - wheelchair



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Pediatric Specifics

- Size
 - Very small through adult size
- Available growth
 - In seating system
 - In mobility base



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Pediatric Specifics

- Flexibility to accommodate changes in medical condition
 - Progressive weakness
 - Surgeries
 - Orthopedic
 - G-tubes
 - Tone management
 - Orthopedic changes



Bactrofen Pump

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Pediatric Specifics

- Flexibility to accommodate changes in environment
 - Home based
 - Day care and Preschool
 - Elementary and beyond
 - Community needs



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Seating varies with the mobility base

- Dependent mobility
 - Dependent mobility base (aka adaptive strollers)
 - Manual wheelchair
- Independent mobility
 - Manual wheelchair
 - Power wheelchair



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Adaptive Strollers

- Pros:
 - Works well for very young, very small children
 - Often lots of features for the young, medically involved child: tilt, recline, child can face caregiver, oxygen and vent support
 - Families often accept this more easily
 - Often lightweight and easy to fold



Kid Kart Xpress, rear facing

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Adaptive Strollers

- Cons:
 - Often minimal seating options
 - Often fixed posterior tilt
 - Dependent mobility
 - Hard to mount SGD to frame
 - Some have little growth
 - Some have little frame adjustment



Kid Kart Mighty Lite

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Adaptive Strollers

- Seating
 - Sling seating
 - Common
 - Little support
 - Seat depth often too short for the back height
 - Makes folding easier



Convoid Cruiser

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Adaptive Strollers

- Seating
 - Other seating options
 - Various supports,
 - not very aggressive or adjustable
 - Solid seating surfaces
 - Has to be removed for folding

Convoid Mountee Seating System on Safari Tilt base



Convoid Cuddle Bug



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Adaptive Strollers

- Seating
 - Adding on after market seating
 - Linear
 - Hardware attachment can be difficult
 - Contoured
 - Sometimes placed on top of the sling

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Frame Considerations

- Seat to back angle adjustment
 - Fixed
 - By tool
 - Easily adjustable, i.e. knob
 - For positioning purposes


Karman Healthcare Buggy




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Frame Considerations

- Tilt adjustment
 - For fatigue
 - For postural control
 - For feeding
 - For medical reasons
 - i.e. post seizure



Stealth Lightning
Fixed posterior tilt




Kid Kart Xpress
Adjustable tilt

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Frame Considerations

- Recline adjustment
 - For fatigue
 - For postural control
 - For feeding
 - For medical reasons
 - i.e. post seizure
 - May lose positioning upon return to upright





Convaid Cuddle
Bug Recline

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Frame Considerations

- Transportation
 - Folding
 - Often no accessible vehicle yet
 - Perhaps not yet in school
 - Young child safer in car seat
 - Tie downs
 - Future use
 - School bus

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Frame Considerations

- Growth
 - Very young children grow a tremendous amount
 - Dependent Mobility Bases often offer less growth than manual wheelchairs
 - Easy to outgrow in a short time


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Frame Considerations

- Medical
 - Particularly pertinent for the newborn/infant with medical issues
 - Vent trays
 - Oxygen holders
 - IV poles
 - Child can face caregiver



Kid Kart O2 holder and
vent tray




Kimba O2
holder


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Frame considerations

- Other



Hi Low Base



Ottobock Tandem

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Adaptive Strollers

- Examples:
 - Convoid
 - Ottobock
 - Snug Seat
 - Stealth
 - Sunrise Kid Kart

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Manual Wheelchairs, dependent

- Seating
 - Sling seating
 - Other seating options
 - Linear
 - Contoured
 - Cushions



Zippie Iris

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Manual Wheelchairs, dependent

- Seating
 - Sling seating
 - Poor support
 - Not often used in Pediatrics



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Manual Wheelchairs, dependent

- Seating
 - Other seating options




cushions Linear Contoured

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Frame Considerations

- Seat to back angle adjustments
 - Important for positioning
 - Not as critical for one piece seating systems
 - i.e. contoured
 - But these still need to be mounted



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Frame Considerations

- Tilt adjustments
 - For positioning
 - Head and trunk control
 - For fatigue
 - To manage medical issues
 - For function
 - Feeding
 - vision



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Frame Considerations

- Recline adjustments
 - Same as tilt reasons
- Also:
 - Client/caregiver preference
 - Transfers
 - Diaper change/cath
- Often in conjunction with elevating legrests
- Not common in Pediatrics except for post-surgical use



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Frame Considerations

- Knee angle
 - Young children often placed at 90 degrees
 - Short legs = no caster interference on most frames
 - Tight hamstrings



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Frame Considerations

- Folding
 - For transportation in non-accessible vehicles
 - Frame may still be quite heavy
 - Seat may have to be removed
 - Child may not be riding in wheelchair

Quickie Folding Iris



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Frame Considerations

- Stroller handles
 - Pediatric frames are short
 - Eases pushing by caregiver
 - Even more critical if chair is pushed while tilted or reclined
 - Some are angle adjustable
 - Some are removable for folding



Quickie Iris

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Frame Considerations

- Transportation
 - Crash tested
 - Tie downs
 - For the client who rides in the chair at any time, including school bus



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Frame Considerations

- Growth
 - Most pediatric manual wheelchairs have lots of growth built-in
 - Many children have far more linear growth than growth in width



Quickie GS

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Frame considerations

- Dynamic Seating
 - Dynamic backs
 - Dynamic footrest hangers
 - Dynamic headrests



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Frame Considerations

- Other
 - Medical related features
 - Vent trays
 - Oxygen holders
 - Seat to Floor height
 - Some children who do not self-propel may still be working on transfers



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Manual Wheelchairs, dependent

- Examples:
 - Invacare
 - Freedom Designs
 - Quickie

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Independent Mobility: Manual Wheelchair

- Pros:
 - Many options available:
 - Frame adjustment
 - Growth
 - Seating options
 - Tilt, recline, elevating leg rests, standing
 - Some are crash tested



Invacare MVP Jr.

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Independent Mobility: Manual Wheelchair

- Cons:
 - Some are not crash tested
 - Ultra Lightweight chairs are harder to fund
 - Caster/footplate interference
 - Repetitive stress injuries
 - Can be fatiguing and time consuming for long distances, varied terrain

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Manual Wheelchairs, self-propulsion

- Seating
 - Sling seating
 - Other seating options
 - Linear
 - Contoured
 - Cushions



Quickie Kidz



Quickie GS

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Manual Wheelchairs, self-propulsion

- Seating
 - Sling seating
 - Not a lot of support
 - More common on folding chairs



Invacare MVP Jr.

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Manual Wheelchairs, self-propulsion

- Seating
 - Other seating options
 - Linear
 - Contoured
 - Cushions
 - Similar to Manual Wheelchairs, dependent



Zippie 2

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Manual Wheelchairs, self-propulsion

- Seating: So what's different?
 - Seating angles may change for a self-propeller, as this is a different task, to optimize mobility and stability
 - Dump, increased knee flexion
 - Back height may be lower to allow more upper extremity, including scapular, movement
 - I or T back may be used to get lateral chest pad hardware a little more out of the way
 - If the frames is very lightweight, the seat needs to be lightweight, too (or you may as well get a heavier, less expensive chair!)



Zippie X'cape

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Frame Considerations

- Seat to back angle adjustments
 - Important, as always, to optimal positioning
 - Now also important to support self-propulsion
 - Generally a more closed seat to back angle than in a dependent mobility base

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Frame Considerations

- Tilt and recline adjustments
 - Not common in chairs designed for self-propulsion as the tilt or recline moves the client away from an optimal or even possible position from which to propel
 - Some exceptions:
 - PDG Stellar



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Frame Considerations

- Knee angle
 - Most pediatric chairs offer 90 degree hangers
 - Short legs reduce caster interference
 - Helps with tight hamstrings



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Frame Considerations

- Folding vs. rigid
 - Rigid is more efficient, as more of the force leads to motion of the chair, rather than motion in the frame
 - Rigid may mean less growth
 - Rigid may be harder for families to transport
 - Kids are less likely to have accessible vehicles

Zippie 2



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Frame Considerations

- Stroller handles
 - Adds to weight for self-propellers
 - Many kids fatigue with long distances and are pushed by caregivers, stroller handle helps out

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Frame Considerations

- Transportation
 - Crash tested?
 - Tie down attachment points?
 - Does the seat affect safety during crash?

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Frame Considerations

- Growth
 - Frames vary tremendously in growth
 - Most kids need more linear growth than width
 - Little chairs have low seat to floor height for transfers, but less growth

Freedom 2 Kids



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Frame Considerations

- Other
 - Adjustable axle
 - For optimal wheel placement for self-propulsion
 - Wheel configuration
 - Kid specific
 - Seat to Floor height
 - Transfers
 - Work surface clearance



Quickie GS

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Manual Wheelchairs, self-propulsion

- Examples:
 - Freedom Designs
 - Invacare
 - Kushall
 - Quickie
 - TiLite

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Manual Wheelchairs, Performance

- Frame considerations
 - Seat to back angle adjustments
 - Often more closed to place the child in a position to optimize self-propulsion
 - Requires more trunk control



Quickie GT

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Manual Wheelchairs, Performance

- Frame considerations
 - Tilt and recline adjustments
 - Not an option on performance chairs
 - Client needs another means of shifting weight and another means of dealing with postural fatigue



Zippie Zone

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Manual Wheelchairs, Performance

- Frame considerations
 - Knee angle
 - Sometimes feet are placed behind the knees
 - To place the child in a position to optimize self-propulsion
 - To prevent caster interference
 - 90 degree knee angle
 - Still optimizes self-propulsion compared to more extended positions
 - Less risk of flexion contractures
 - Little caster interference in short children

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Manual Wheelchairs, Performance

- Frame considerations
 - Folding vs. rigid
 - Rigid is more efficient, as more of the force leads to motion of the chair, rather than motion in the frame
 - Rigid may mean less growth
 - Rigid may be harder for families to
 - transport
 - Kids are less likely to have accessible
 - vehicles and are more likely to have
 - siblings/friends taking up space in the
 - vehicle



TiLite Twist

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Manual Wheelchairs, Performance

- Frame considerations
 - Transportation
 - Less of these frames are crash tested
 - Less of these frames have tie down attachment points, as these add to the weight of the frame
 - Assumption that this client is more functional and able to transfer out of the chair and sit in a standard vehicle seat

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Manual Wheelchairs, Performance

- Frame considerations
 - Growth
 - Generally not as much growth as dependent and self-propelling manual wheelchairs
 - Providing growth in the frame usually adds weight
 - Often the entire frame has to be replaced
 - Not as many pediatric performance chairs

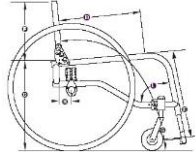


TiLite YG growable frame

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Manual Wheelchairs, Performance

- Frame considerations
 - Other
 - Dump
 - Camber
 - Center of Gravity adjustments
 - Other options to reduce weight
 - Wheel style



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Manual Wheelchairs, Performance

- Examples
 - Invacare
 - Kuschall
 - Quickie
 - TiLite

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Independent Mobility: Power Wheelchair

- Seating
 - Sling seating generally not accommodated
 - Cushions, LSS and molded
 - Seat to back angle usually adjustable
 - Power tilt and recline typically available



Otto Bock Skippi

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Pediatric Take Home Message:

- Seating needs to be flexible to accommodate change
- Children are not just small adults
- Family goals are very important, not just the client



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Questions?

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Thanks!

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Contact Information:

- Michelle Lange
- MichelleLange@msn.com
- www.atilange.com