

# **PEDIATRIC EQUIPMENT SCHOOL AGED CHILDREN**

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# LEARNING OBJECTIVES

1. Clinicians/students will...
  - a. Be able to use clinical reasoning skills and knowledge of pediatric equipment to determine appropriate equipment given a patient case/example.
  - b. Have a general understanding of types of popular pediatric equipment, their intended/appropriate patient population(s), and customizable features/accessories to meet individual needs of patients.
  - c. Be able to generate justifiable reasons to provide to payers on why a certain piece of equipment is needed for a patient to include within a letter of medical necessity.
  - d. Feel comfortable identifying pediatric equipment and their components in preparation for hands on/in-person experience in equipment management.

# OVERVIEW

**Standers:** Supine, Prone, Dynamic

**Walkers**

**Gait Trainers**

**Wheel Chairs:** Manual, Dependent,  
Adaptive Strollers

**LMNs**

**Local Vendors**

**Set Up:**

**General Equipment**

- Who is appropriate
- Considerations
- Popular brands

**Specific Brands/Models (in notes)**

- Overview
- Features
- Accessories
- Sizing

# IMPORTANCE OF STANDING<sup>1,2,3</sup>

- Improved bone density (↓ risk osteoporosis, fractures)
- Prevents contractures (provides stretch)
- Pressure Relief
- Improves respiration and circulation
- Improved voice control
- Aids in digestion and bowel/bladder management
- Eye-to-eye interactions
- Aids proper acetabular formation
- Improved head/neck control (against gravity)

# STANDERS<sup>4,5</sup>

## Common Brands/Models

- Rifton
- EasyStand
- Leckey

## Factors to Consider

- Size of equipment/space available
- Weight of patient
- Height of patient
- Contracture severity

## Who is appropriate?

- Children not participating in regular weight bearing activities or need prolonged stretching
  - Common diagnoses in children who may benefit from a standing frame:
    - Cerebral Palsy
    - Spina Bifida
    - Developmental Delay
    - Muscular Dystrophy
    - Acquired injuries

# STANDERS<sup>7</sup>

## Rifton Stander Options

Mobile/Dynamic Stander



Prone Stander



Supine Stander



# STANDERS<sup>8</sup>

## Features & Accessories

### Example - Rifton

### Mobile/Dynamic Stander

Most equipment is customizable to meet each patient's specific needs. Each feature/accessory needs to be justified in the LMN.



# STANDERS<sup>4,6</sup>

Bantam

Evolv

**EasyStand:**

**Bantam (small)  
& Evolv (large)**



# WALKERS<sup>9,10</sup>

## Common Brands/Models

- Kaye
  - Posture control (posterior)
  - Anterior support
- R82 - Crocodile

## Factors to Consider

- Transportability (car, stairs, bus)
- Appropriateness
- Anthropometrics
- Support needed



Kaye Posterior

## Who is appropriate?

- Children able to walk to who require extra support but have appropriate control to use a walker safely
  - Common diagnoses in children:
    - Cerebral Palsy
    - Spina Bifida

# WALKERS<sup>9,23</sup> R82 Crocodile



# GAIT TRAINERS / PACERS<sup>11-18</sup>

## Common Brands/Models

- Rifton: Pacer
- R82: Mustang, Pony
- Grillo
- KidWalk

## Factors to Consider

- Takes up space, cumbersome
- Ability to take steps or attempt to take steps
- Anthropometrics
- Spasticity /Contracture
- Supports needed

## Who is appropriate?

- Children who require high levels of assistance to walk, usually highly involved individuals
  - Common diagnoses in children:
    - Cerebral Palsy
    - Spina Bifida
    - Developmental delays

# GAIT TRAINERS / PACERS II

## Rifton Pacer Gait Trainer



# GAIT TRAINERS / PACERS

Grillo<sup>12, 13,14</sup>



KidWalk<sup>15</sup>



R82 Mustang<sup>16,17</sup>



R82 Pony<sup>18</sup>



# WHEEL CHAIRS<sup>19</sup>

Manual Light  
Weight



Power



Dependent  
(Tilt)



Adaptive  
Stroller



# WHEELCHAIRS - LIGHTWEIGHT MANUAL<sup>20,21, 24</sup>

Materials: Lightweight aluminum, carbon fiber

Folding or rigid (lighter)

Appropriateness: if the child spends most of their time in a w/c and is more active, has long term need for w/c, and can mostly self-propel



Sunrise Medical Zippie GS



Permobil TiLite - Twist

# WHEELCHAIRS - POWER<sup>22,25,26,36</sup>

- Alternative drive controls
- Multitude of positioning options
- Front, mid, rear wheel drive options
- Positioning: tilt, recline, seat elevation, leg and foot platform, full standing
- Advanced programming
- Common Diagnoses:
  - SCI
  - Muscular Dystrophy
  - CP
  - Typically children with more severe physical involvement but cognitively intact
- Accessibility - car, home, doorways



Child's cognitive capabilities & maturity to handle a several hundred lb piece of equipment

# WHEELCHAIRS - DEPENDENT / TILT<sup>27</sup>

Children who need help to shift their weight or self propel. Generally more severe involvement.

Benefits:

- Prevents pressure injuries
- Maintains alignment and ROM
- Supports digestive health
- Encourages blood flow - alleviate postural hypotension, upright position if autonomic dysreflexia
- Helps lung function and preventing respiratory



# WHEELCHAIRS - ADAPTIVE STROLLERS<sup>28-32</sup>

How do they differ than a traditional stroller?

- Support/ Positioning, Adjustments for growth, Tie downs

Why might a family consider an adaptive stroller?

- Easy of use
- Transportability
- Often a complimentary device to their w/c for special occasions (travel, outside)
- Younger children waiting to purchase/apply for w/c (until child is older, larger, develops)
- Family choice



Leggero Trak

Convaid Cruiser



Special Tomato EIO Push Chair



# LETTER OF MEDICAL NECESSITY

Many equipment manufacturers offer recommendations for writing LMNs.

Rifton<sup>33</sup>:

- A Sample LMN: School-based Therapy with Adolescents - 7 pg guide
- Rifton Prone Stander A Sample LMN - 5 pg guide
- Can break down by which product you are writing an LMN, and accessories
- Also offers educational/clinical articles for various products.

All of the accessories listed do not come standard with any piece of equipment, you must justify every individual accessories medical/therapeutic need for the patient. Use product manuals as a guide.

# Permobil Power Wheelchair (F5 Corpus VS) LMN

- F5 Base Corpus VS - F5 MPO K0884: Power Wheelchair Stander Base to accommodate a larger seating system than L has now, and to allow for continued independent mobility.
- VS Power Adjustable Seat Height - 14" Travel E2300: Seat height adjustment to allow L to reach items in her home off counter, in cabinets, from closet, from shelves. Also allows L to adjust to optimal height at tables at home, school, and community in order to feed herself.
- Batteries, Grp 24 E2363 EA 2: Needed for chair to operate.
- "Softball" For Joystick Knob E2323: This is the style of joystick that has proven successful for L over the years of her driving a power chair.
- Joystick Mount Left - Swing Away E1028: L is left hand dominant, therefore needs the mount on the left; swing away is needed in order to allow her to get close to tables, counters, etc, for ADLs.
- Adjustable Height Panel Bracket E1028: This allows for maximum adjustability of the wheelchair joystick without affecting the height of the wheelchair armrest. This ultimately helps in L's positioning since armrest height as well as joystick height are both critical for her success driving.
- Expandable Controller - R-net E2377: Needed for chair electronics and joystick controller.
- Harness for Expandable Controller E2313: Required for seating functions to operate together.
- Attendant Control R-net E1399: Attendant control is needed at times when L is in places where it may be unsafe to drive on her own, therefore needing assistance by caregiver. While L typically drives her w/c throughout her day, there are times when she cannot safely do so and this has proven to be immensely beneficial on her present chair during these times.
- Power Tilt & Recline E1007: Power tilt and recline together offer L the ability to shift weight, using a combination of tilt and recline for maximum comfort and weight shift. This also benefits L when she is fatigued as she can comfortably rest without being physically lifted out of her chair by caregiver.
- Power Standing Function - VS Seat E1399: This offers L the ability to independently stand at any time throughout the day, for any amount of time that she desires. This will help her perform activities that she can do more functionally and easily from a standing position, allow her to visually see what is going on more easily, and will allow her to completely shift weight off of her bottom. It will also provide a change of position that will benefit her cardiovascular and GI system.
- Multiple Seat Function Control Kit for R-net E2311: This is the kit that controls all seat functions, which is necessary to allow the chair and all its' functions to operate.
- Mount ICS Switchbox on Backrest E1399: Switchbox to be mounted on backrest as L can use her joystick to operate and access all seat functions.
- Ergo Back Cushion E2620/ Black Mesh Cushion - Corpus Ergo Back A9900: This is a solid back that will offer L the support that she needs, with a breathable ergo cushion, which will help related to L getting hot.
- Ergo Seat Cushion E2605: This is a leather seat cushion that will be waterproof and easily cleaned.
- Chest Support E0960: This is needed for anterior support during standing.
- Chest Support Hardware E1028: Hardware needed to mount chest support to be used during standing.
- Corpus VS Power Legrest Elevation - 180° E1399: Power leg elevation that L can operate independently for weight shift, as well as for back comfort when L is reclined in her chair.

- Stand and Drive Package E1399: This allows L to functionally drive when in a standing position, which is extremely important to be able to make adjustments to direction of wheelchair once up in standing that one may realize from a seated position.
- Abductor W4140: Helps keep LEs abducted and in an optimal position related to hips/knees/feet, and decreases overall extensor muscle tone by abduction of legs.
- Abductor Hardware A9900: To mount above abductor system.
- 2pc Wide Corpus VS Footplates K0040 (2): Large footrest needed to accommodate necessary foot supports, to maintain optimal foot position, keeping feet on footrests.
- Padded Hip Belt - Medium A9900: Needed for pelvic stability, positioning, and safety while in wheelchair. Pelvic positioning is critical for L as trunk and LE positions are impacted by pelvic position.
- Thigh/Hip Supports E0956 (2): Supports needed on each side of pelvis to keep pelvis positioned in midline. This facilitates optimal trunk position. This also keeps pelvis centered in standing, and also facilitates pelvis coming back into midline seated position after she sits down from standing.
- Thigh/Hip Hardware E1028 (2): Hardware needed to mount above thigh supports.
- Push Handles E1399 (2): Needed for when chair needs to be maneuvered by caregiver, when in unsafe or very tight/crowded circumstances.
- Medical Necessities Bag Hooks E1399: L needs personal hygiene items with her at all times, including pads, diapers and a change of clothes. She also needs to always have her seizure medication with her. L also has G tube supplies for administering medication and flushing tube throughout the day. She also has an "emergency kit" for G tube, should it be dislodged.
- Upper Extremity Support W4150: Needed for optimal upright head and trunk position by providing support to both arms under elbows.
- Upper Extremity Hardware A9900: Hardware needed for above upper extremity support.
- Trunk Support - Left E0956: Lateral pad needed for trunk support due to L's inability to sit up straight independently without support.
- Trunk Support - Right E0956: Lateral pad needed for trunk support due to L's inability to sit up straight independently without support.
- Glidewear Cover w/Foam E1399 (2): Cover on lateral supports needed to prevent shearing under L's arm since the lateral support is always against her body.
- Trunk Hardware - Left E1028: Hardware to mount above trunk support.
- Trunk Hardware - Right E1028: Hardware to mount above trunk support.
- Bodilink Lateral Trunk Support Gt2 H/W, Extra Link A9900 (2): This allows the trunk support to be moved very close to L's body using this bodilink hardware.
- Trunk Hardware Covers E1399 (2): Needed to prevent L's arms from rubbing against the lateral support hardware and causing pressure/ irritation on the inside of her sensitive upper arms due to the hardware.
- Headrest W4132: Needed for head support when tilted and reclined, as well as for safety when transported in her family van.
- Headrest Hardware A9900: Hardware for above headrest.
- Mounting Block Permobil A A9900: Allows the headrest to be mounted to the backrest.
- Ki Mobility Anterior Chest Support 25 Deg Bend Strap Riser E1399 (2)/ Ki Mobility Trim Shape Comfort Strap Vest E1399: Anterior support provided to prevent L's from leaning forward as she drives chair. This is the "female" trim version so should fit her body shape comfortably. The strap riser allows the straps to fit optimally over her shoulders by holding the straps in place.
- Ki Mobility Foot Support W4143: Shoe holder type foot supports with straps will keep L's feet aligned in both sitting and standing.

# WHEN ORDERING EQUIPMENT

## Considerations

- Growth: does the equipment have the ability to grow with the child
  - Consider sizing up if child near max of smaller size
  - Not only physical growth, but capabilities -Ex. could the child potentially self propel their wheelchair in the near future?
- Transportation, Space, Feasibility
  - Space within the home, classroom
  - Can it be transported home<>school or between locations if needed
  - Are parents, caregivers, teachers going to be able to/have time to use with child
- Coverage
  - If similar item was recently covered by insurance may not be covered

# TAKEAWAYS

- As children get to middle/high school age they may be more appropriate for adult sized equipment - general principles remain the same
- TRY BEFORE YOU BUY when possible
  - Allow the child to try out different models (equipment vendors can bring equipment for the child to trial) to see what brand/model best meets their needs
- Involve all members of the team
  - When considering new equipment, everyone needs to be involved. The child, parents, teachers, community/school PT, other rehab team members, equipment vendor.
- Take the time to determine all the child's needs and specific accessories that will best support their needs.

# LOCAL EQUIPMENT VENDORS

- NuMotion - Apex, NC<sup>34</sup>
  - Adult & Pediatric Manual & Power Wheelchairs. Bathroom Equipment, Lifts, Standing Frames, Sleeping Products, home accessibility
  - Service & Repair
  - Medical Supplies
  - Partnered with Vantage Mobility International (w/c accessible vehicles)
- Stalls Medical Inc. / Adaptive Vans Inc, - Cary, NC<sup>35</sup>
  - Adaptive vans
  - Home modifications
  - Custom manual and power mobility options
  - Custom seat cushions and pressure mapping
  - Adaptive sports equipment

# CASE

Z is a 4 yo boy with Quadriplegic CP that you are seeing in the preschool setting as the school PT. Z exhibits more severe contractures of the L extremities as well as a crouched & ADD standing posture, he wears bilateral AFOs. Z ambulates independently but frequently falls when walking/running due to LE contractures and poor control. You have concerns with his frequent as he continues to grow. Z is very sweet and loves to play with his friends, but easily gets off task. Z struggles with bilateral UE ball skills and bilateral weight bearing. Your sessions involve a stretching program, ball skills, classroom & playground accessibility, general strengthening, and bilateral WB skills.

**What equipment do you think Z would benefit from during the school day (generally)?**

Please submit to the chat!

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