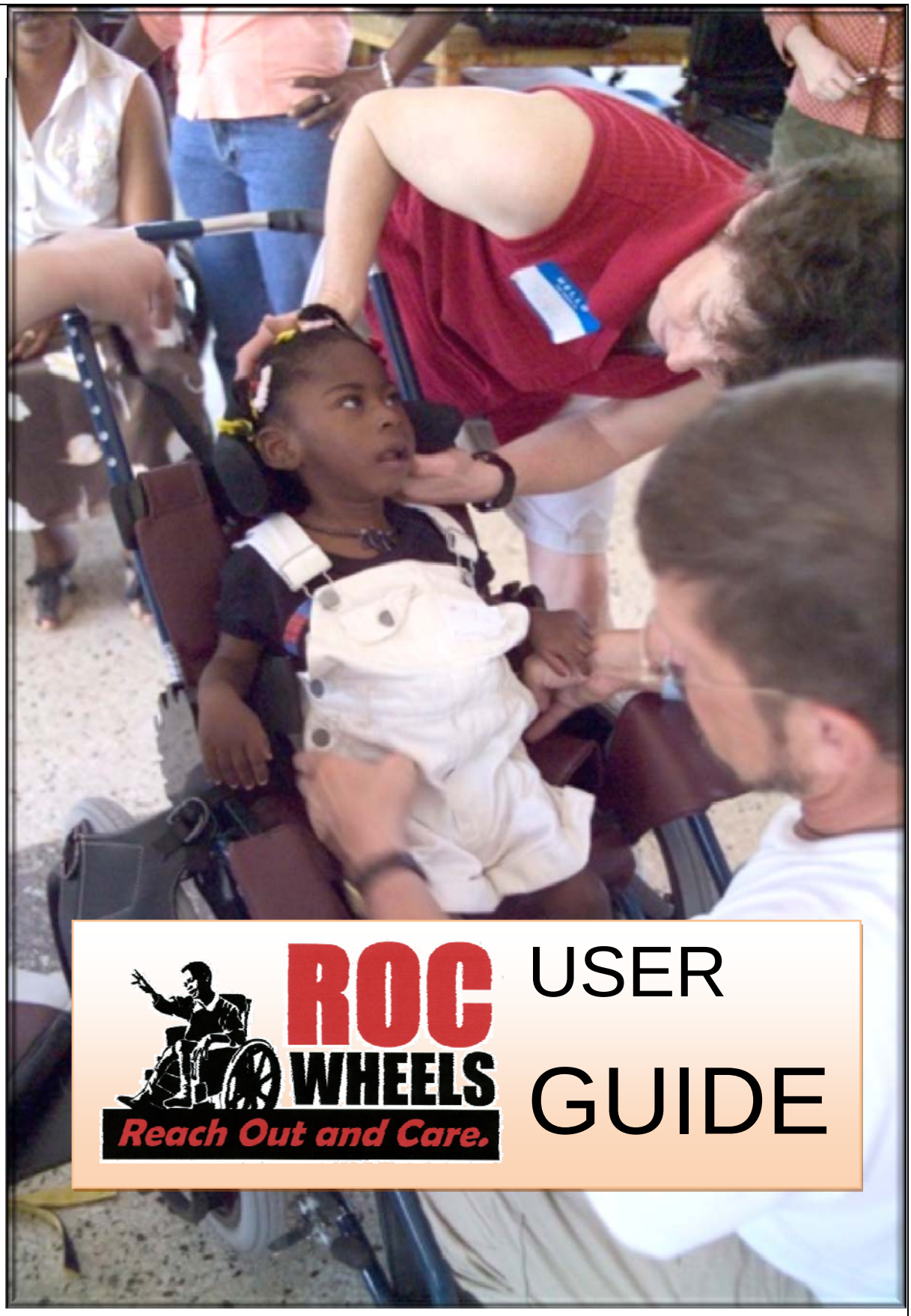


ROC WHEELS

Reach Out and Care.

USER GUIDE

"We want Kids with disabilities to go through the same stages of development as other Kids and have the same opportunities in life, even if they need some form of adaptive equipment to do it."

-Wayne Hanson-

Mission Statement: To provide mobility for people with disabilities in developing countries and to partner together for ministry, youth empowerment, wheelchair distribution, manufacturing and educational development

ROC Wheels is a faith-based 501 (C)(3) non-profit organization.

Providing wheelchairs and other mobility products for people in developing countries without regard to political affiliation, religious beliefs, or ethnic identity

PO Box 11765
Bozeman, Montana, USA, 59719

Info@ROCWheels.org
www.rocwheels.org
V1, February, 2015

ROCKIT Wheelchair

This GUIDE is designed to help you serve the seating and mobility needs of the children who will benefit from the ROCKIT Wheelchair. This is not intended to replace the support and intervention needed from a qualified therapist. Always work together with your therapist to insure that the child is positioned correctly and receiving proper care.

Combining the resources of a variety of specialists, the physical, mental, emotional, and spiritual needs of each person served are addressed by some or all of the following:

- Your **personal physician** is welcome to stay actively involved in your personal care, or will be informed of your progress.
- The **rehabilitation nurse** provides individual nursing care and family teaching, reinforces the skills learned in therapy and assists in discharge planning.
- The **occupational therapist** helps gain independence in self-care skills including feeding, dressing, bathing and homemaking.
- The **physical therapist** helps gain independence in mobility skills including getting in and out of a bed and chair, walking or using a wheelchair, and going up and down stairs.
- The **speech/language pathologist** assists with listening, reading, speaking, writing and thinking skills, and also provides therapy for swallowing disorders.
- The **social worker** helps with community resources, discharge planning and advance directives.
- The **rehabilitation psychologist** cares for emotional needs and assists in coping.
- Additional services are provided by dietitians, vocational counselors, home care coordinators, financial counselors, chaplains and support staff.

Family members are a key part of the caregiving team and are encouraged to participate in the rehab program. Family members often act as coaches to help empower children to function to the best of their ability.

The ROCKIT Wheelchair User

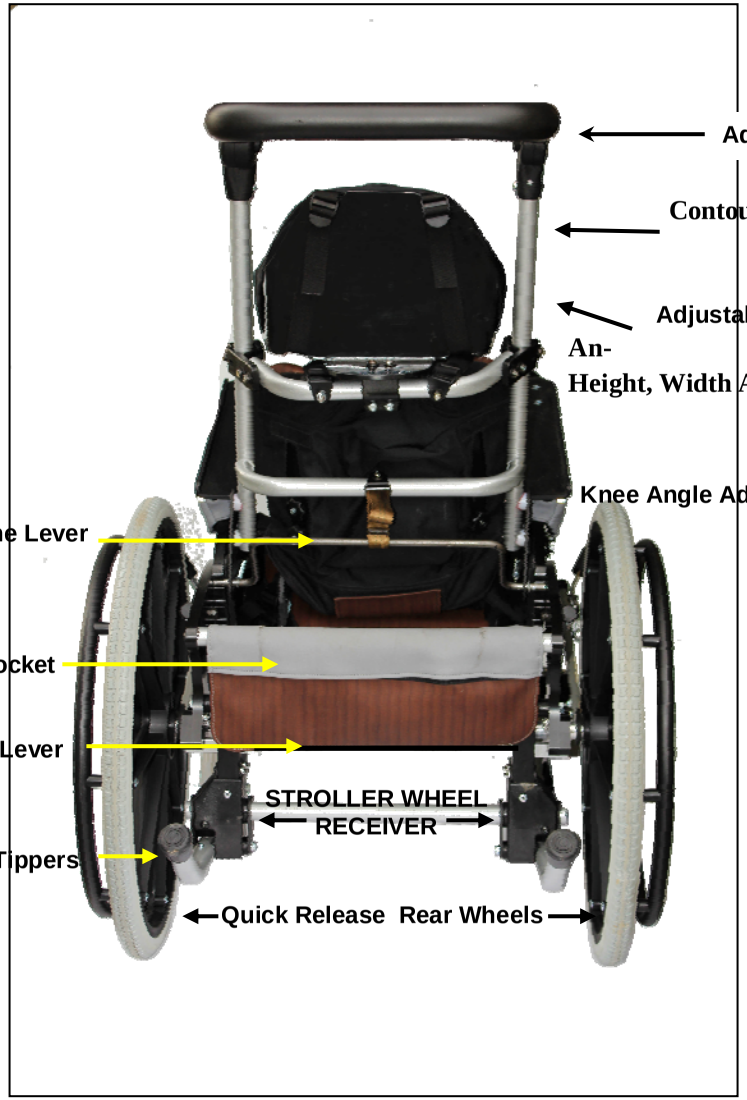
ROC Wheel's pediatric positioning and dependent mobility products are designed primarily for children from birth to 14 years of age who have been diagnosed with mild to profound degrees of involvement. The ROCKIT wheelchair is a multi-adjustable wheelchair that can be configured to accommodate dependent children with severe involvement as well as the child who can self propel. All ROCKIT wheelchairs come with a full spectrum of positioning components, a therapeutic tray, and an adjustable wheel base for the more active self propelling child.

The Importance of Early Intervention

Over the years, it has become more evident that aggressive early intervention for a child from infancy to age 4 is a critical element in the proper development of the child with a disability.

The main reasons for aggressive early intervention are:

Provides freedom through mobility	Encourages positive behavior
Prevents future deformities	Enhances static control and motor control
Development of maturational processes	Helps in the learning process
Increased interaction with the environment	Relieves pain



ROCKIT CHAIR

The ROC Chair wheelchair is designed for children from infancy to age 14 with moderate to severe disabilities. The ROC Wheelchair can be retrofit as a highly functional self propelled wheelchair because of the multi-adjustable wheel base and the ability to equip it with positioning for the higher functioning child.

M E T R I C **Description**	**ROC Chair** **Size 1** **13 Inch Max Hip Width**	**ROC Chair** **Size 2** **15 Inch Max Hip Width**
Hip Angle Positions	90, 81,73, 25 degrees	90, 81,73, 25 degrees
Tilt in Space Positions	5 - 40 degrees	5 - 40 degrees
Seat Back Height Range	29 - 46 cm.	33 - 53 cm.
Seat Depth Range	20—33 cm.	25 1/2 - 38 cm.
Hip Width Range	18 - 33 cm.	23 - 38 cm.
Lower Leg Length	13 - 34 cm.	13 - 36 cm.
Push Handle Adjustability	multi-adjustable	multi-adjustable.
Overall Width (with rear wheels)	59 cm.	64 cm.
Floor to Seat Height	46 cm.	46 cm.
Variable Wheelbase	31 cm—44 cm.	31 cm—44 cm.
Therapeutic Tray	adj. depth,, 19 cm. Height	adj. depth,, 19 cm. Height
Head Support Adjustability	Depth, Height, Angle	Depth, Height, Angle
Storage Bag	Optional	Optional
Medial Knee Block	Optional	Optional
Anti-Tips	Included	Included

I M P E R I A L **Description**	**ROC Chair** **Size 1** **13 Inch Max Hip Width**	**ROC Chair** **Size 2** **15 Inch Max Hip Width**
Hip Angle Positions	90, 81,73, 25 degrees	90, 81,73, 25 degrees
Tilt in Space Positions	5-40 degrees	5-40 degrees
Seat Back Height Range	11 1/2" - 18""	13"-21"
Seat Depth Range	8"-13"	10"-15"
Hip Width Range	7" - 13"	9" - 15"
Lower Leg Length	5" - 13 1/2"	5" - 14 1/2'
Push Handle Adjustability	multi-adjustable	multi-adjustable
Overall Width (with rear wheels)	23"	25"
Floor to Seat Height	18"	18"
Variable Wheelbase	5"12"-17 1/2"	5"12"-17 1/2"
Therapeutic Tray	adj. depth, 7 1/2" ht	adj. depth, 7 1/2" ht
Head Support Adjustability	Depth, Height, Angle	Depth, Height, Angle
Storage Bag	Optional	Optional
Medial Knee Block	Optional	Optional
Anti-Tips	Included	Included

Developmental Milestone Table

Age	Gross Motor	Visual/ Fine Motor	Language	Social
1 month	Prone, lifts head	Hands usually fisted; stares at objects	Soothes to voice	Regards face
3 months	Supports chest in prone position	Grasps placed rattle; follows slow moving objects with eyes	Coos laughs	Smiles easily, spontaneously
6 months	Rolls and sits well, without support	Reaches and grasps, transfers hand to hand	Babbles, plays peek-a-boo	Fear of strangers, smiles at self in mirror
12 months	Walks alone	Plncer grasp of raisin	Says "mama" "dada" + 2 other words	Shy, but plays games, gives affection
18 months	Walks up steps	Stacks 3 blocks manages spoon	Points to named body parts, follows simple command	Helps with simple tasks, imitates
24 months	Alternates feet helps get dressed	Stacks 6 cubes on stairs, kicks ball	50-word turns book pages	Washes/dries larger vocabulary follows 2-steps commands
30 months	Jumps with both feet	Holds pencil in hand, not fist	Uses pronouns I, you, me correctly, says full name	Plays tag, asserts personality
36 months	Balances on 1 foot	Builds block bridge buttons	Recognizes 3 colors	Plays with kids, takes turns

Source: Adapted from Harriet Lane, Manual of Pediatrics, 13th ed., 1993

THE IMPACT OF OPTIMAL POSTURAL ALIGNMENT

When considering the importance of postural alignment and control on oral motor and fine motor skills, attention must first be directed towards developing an understanding of normal postural alignment. If the child is unable to control proximal body parts adequately against gravity, adaptive equipment must be utilized for external support for the child. It then follows that an understanding basic positioning principals utilized with adaptive equipment must also be developed.

The goal of achieving optimal alignment utilizing adaptive equipment is-"to provide the child with enough postural support so all energies can be directed towards activities in any given environment for any given task. The excessive energy used to stay upright or to fight the fear of falling can then be diverted to better attending to visual and auditory input and motor control. The central base of support must be stable so the child is better able to express himself / herself orally and to perform academic and fine motor activities.

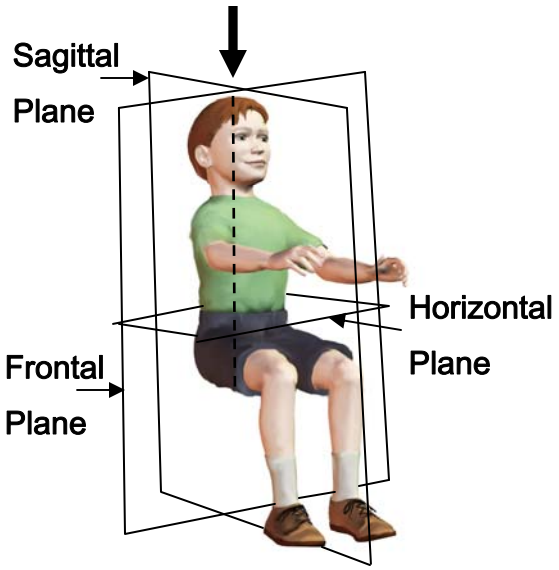
There are several disadvantages to consider when utilizing positioning devices as they limit some types of sensory feedback received by the child. Most of the child's body is held in a relatively static position with little joint mobility with roost of the tactile and kinesthetic activity limited to the face and arms. For example, even though a child is on a mobile scooter board, he cannot roll or wiggle in and out of various places and the de-creased perceptual experiences should not be disregarded.

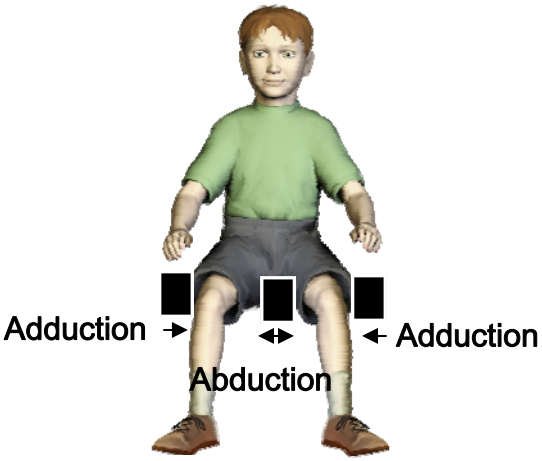
Assessing the postural alignment required in different positions (i.e.: sitting vs. standing) requires an understanding of the optimal alignment and relationship between the trunk, head, shoulders end pelvis. The distal func-tions of the legs, arms, eyes and mouth are dependent on the biomechanical alignment of these proximal parts. To concentrate attention on manipulative or oral motor skills without first providing stable postural alignment will prove to be premature and usually ineffective. Without a stable postural base upon which to operate, visual, oral motor, fine motor and ambulatory skills start from a compromised situation.

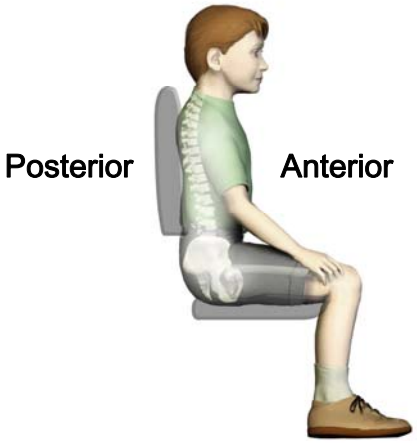
As most functional activities for children and adults occur from a seated position, the most logical place from which to address postural alignment is in sitting. Only after understanding these concepts is it wise to proceed to techniques designed to enhance oral motor or manipulative functions.

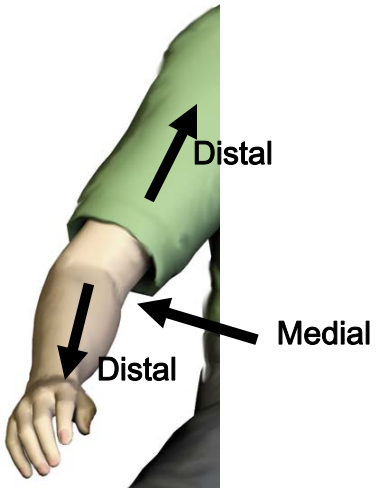
Source: Therapy Works, Tulsa Oklahoma., 1993

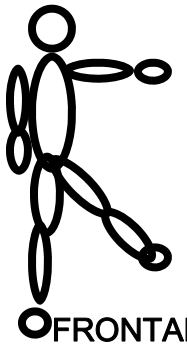
Descriptive Terminology

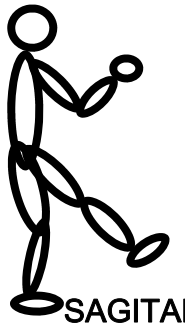








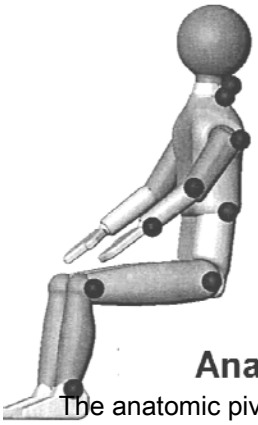

FRONTAL AXIS


SAGITAL AXIS


VERTICAL AXIS

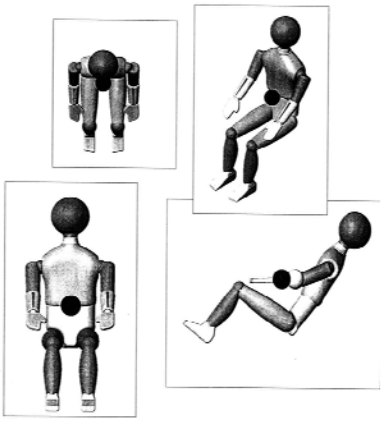
The Axis of the Human Body

Plane	Axis	Joint Motion
Sagital Plane	frontal	Flexion/extension
Frontal	Sagital	Abduction/lateral rotation,radial/ulnar rotation
Transverse	Vertical	Medial/lateral rotation, supination/pronation, Right/left rotation,horizontal/ab/adduction



Anatomic Pivots

The anatomic pivots pictured represent the major pivot points of the human body.



Center of Gravity

The center of gravity is the center of mass is. There is an equal weight distribution on both sides of the center of gravity.

Tilt in Space

When a chair tilts in space, the person's hip and knee angle remain constant as the seat tilts backward or forward.

Hip angle adjustment

When the hip angle is adjusted to a more open or closed position

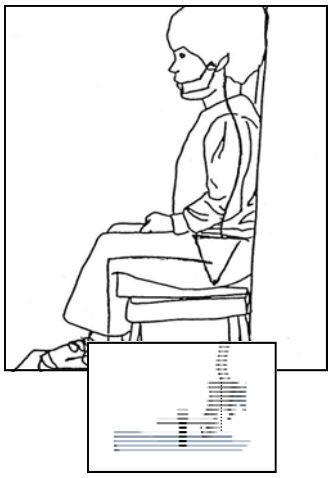
Passive Body Alignment

Active Sitting Position

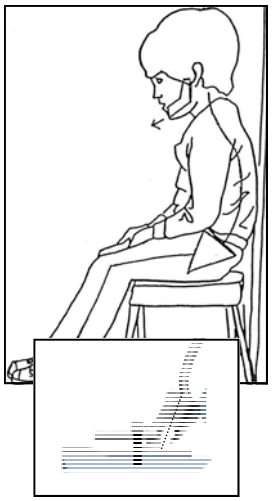
Non-functional Sitting Position

The Pelvis

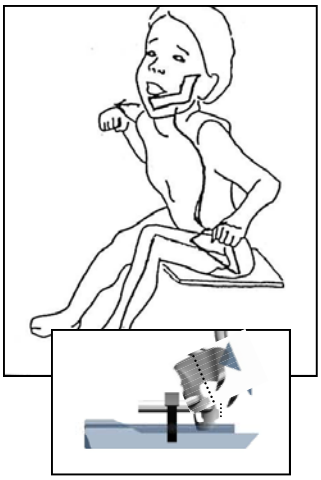
The pelvis influences total body alignment and without a good pelvic foundation, positioning of the legs, trunk or arms becomes undermined.



Neutral Pelvic Position
The upright pelvic enabling balance of the upper extremities and positioning the pelvis to enable the child to move, prevent overcompensation and be prepared for functional activity.



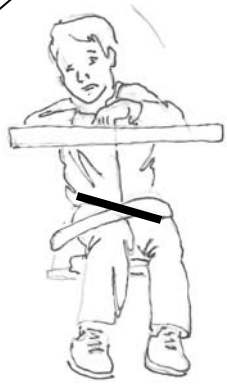
Posterior Pelvic Tilt
When pelvis is tilted back



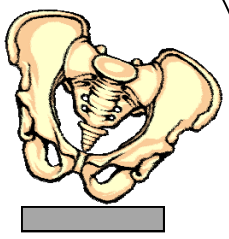
Anterior Pelvic Tilt
When pelvis is tilted forward

Ischial Tuberosity
The pointed bony protrusion on the bottom portion of the pelvis.

Ischial Ledge
A ledge created in a seat cushion to block the ischial tuberosity which can help keep the pelvis back in the neurtal position in the seat.

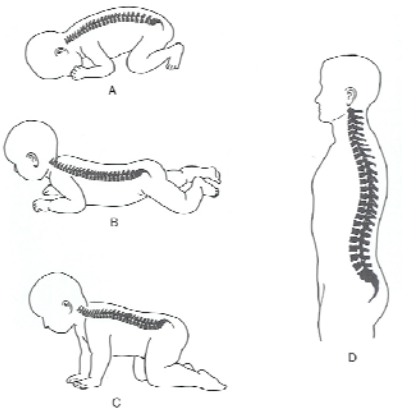


Pelvic Obliquity



When th pelvis is tilted laterally. This normally results in overcompensation by the spine which can result in progressive deformities.

The Spine



A healthy adult spine has four curves when viewed from the side, located in the cervical, thoracic, lumbar and sacral areas. Upon entering the world, a newborn has only two curves in his/her spine: the mid-back and the base of the spine. These two curves are called the primary or *kyphotic* curves. The curves in the neck and low back develop later and are termed secondary or *lordotic* curves. The curve in the cervical spine develops as the child begins to lift his head and the neck muscles are strengthened. The curve in the lumbar spine results as the child starts to crawl.. These four curves — two primary and two secondary — are extremely important in the spine (both adult and child), for this is how the body handles the stress of gravity. If these curves do not exist, the body's center of balance is shifted, causing undue stress on the spinal column and spinal cord.

The sacrum connects to the spine at S1/L5

The sacrum's position dictates the rest of the spine reaction

The head is connected to and balances on top of the spine

The position of the sacrum/pelvis must be considered when evaluating a persons head position and balance

Pelvis hip relationships – huge…

Scoliosis

An abnormal lateral curvature of the spine

Kyphosis An abnormal increase in normal kyphotic (posterior) curvature of the thoracic spine which can result in a noticeable round back deformity.

Lordosis
An abnormal increase in anterior curvature of the thoracic spine which can result in a noticeable convex back deformity.

Muscle movement: Most skeletal muscles work in groups:

- **Agonists - muscles primarily responsible for an action due to their contraction. Antagonists - muscles that relax to smooth the action of the agonists.Directions of movement:**
- **Flexion - brings a body part forward.**
- **Extension - moves a body part to the rear.**
- **Abduction - moves an appendage laterally from the midline.**
- **Adduction - moves an appendage toward the midline.**
- **Circumduction - movement of an appendage in a circle around a joint.**
- **Pronation - rotating the palm of the hand downward.**
- **Supination - rotating the palm of the hand upward.**
- **Inversion - turning the toes of the foot inward.**
  Eversion - turning the toes of the foot outward.

Challenges in Pediatric Seating and Positioning

Lack of Sustainable Resources: It can be extremely difficult for a family to survive in a developing country environment, even without having a child with disabilities. The family often has to rely on their own resources and ingenuity since outside support may be hard to find. Our goal is to provide an opportunity for them to reach out to the community or other organizations in order to improve their ability to function.

Parent's acceptance: By providing positioning and mobility systems that addresses the parent's denial (unacceptance) of their child's medical needs with a system that is both aesthetically pleasing and functional, ,and at the same time, focusing on the child's medical needs by providing proper seating and positioning, leading to parental acceptance and participation.

Diagnosis may be difficult in the first year. With many congenital and acquired disorders, proper diagnosis of the condition, is not always reliable or feasible until age 2 or 3. This makes treatment a trial and error process until an accurate diagnosis is ascertained.

Funding: In many cases, due to the difficulty of a proper diagnosis, many funding agencies won't provide for proper special equipment until the time the child is properly diagnosed. Agencies focus is on the bottom line and not the child's medical needs at the early stages. Also, the level of education at the funding agencies for the people approving funding, on the available products in the markets, is sometimes 2 to 4 years behind.

Child's accelerated rate of growth: In many cases, some of these kids, due to special diets or medical conditions, experience accelerated rates of growth compared to children in their age groups. This complicates the problem twofold, one by having to deal with funding for new equipment sooner than expected, and a challenge for manufacturers to provide equipment that can accommodate this growth.

Child may not be anatomically developed yet.

Activities of daily living issues: The most basics are dealing with feeding, sleeping schedules, peer or sibling interaction and transportation. We need to keep in mind these issues when thinking of the right equipment, since the parents of the child, the therapists and rehab personnel will be dealing with these issues in a day-to-day basis.

Spectrum of Disabilities

We at Reach Out and Care (ROC) Wheels strive to accommodate the seating and positioning needs of a wide range of impairments and disorders affecting children today. Some of them are easily recognizable and some are very rare. This makes having a proper diagnosis considerably difficult at times.

Listed below are some of the impairments and disorders that are seen more frequently. By no means is this list all inclusive, so use resources available to you to help you in those cases where you just don't know.

Cerebral Palsy
Children suffering traumas from harsh environment
Genetic and dysmorphic disorders
Neurologic disorders
Immunologic and metabolic disorders
Spinal cord injury
Traumatic brain injury
Shaken Child Syndrome
Fetal Alcohol Syndrome and "crack" babies

Children with Cerebral Palsy

The most common disability served is Cerebral Palsy. Below is detailed information on cerebral palsy.

CEREBRAL PALSY (Mild to severe)

CEREBRAL PALSY is a collection of motor disorders resulting from damage to the brain that occurs before, during, or after birth. The damage to the child's brain affects the motor system, and as a result the child has poor coordination, poor balance, abnormal movement patterns, or a combination of these characteristics.

Cerebral palsy is a static disorder of the brain, not a progressive disorder. The neuromotor disorders associated with cerebral palsy are not temporary. Therefore, a child who has temporary motor problems, or who has motor problems that get worse over time, does not have Cerebral Palsy. Children with Cerebral Palsy have many other kinds of medical problems. Not all of these problems are related to brain injury, but most of them are neurological in nature, including epilepsy, mental retardation, learning disabilities and attention deficit-hyperactivity disorders.

Congenital Cerebral Palsy (cerebral palsy that exists from birth) is responsible for the largest proportion of cases of cerebral palsy. Injuries sustained during the birthing process (i.e. anoxia) or in early childhood may be considered the cause of cerebral palsy.

Cerebral Palsy is one of the most common congenital problems. Of every 2,000 infants born, five are born with cerebral palsy. Due to advances in obstetrical and pediatric care, what has changed in the last 30 years is the type of cerebral palsy. Thirty years ago, most children with cerebral palsy had athetoid cerebral palsy. Athetoid CP is caused by hyperbilirubinemia and characterized by slow, writhing involuntary movements (no muscle control). Today only five or ten percent of children have this type of CP due to advances in the treatment of hyperbilirubinemia. Spastic cerebral palsy (muscle stiffness and restricted movement) has become more prevalent because of advances in intensive care of premature babies, and newborns have resulted in higher survival rates for children who would have otherwise died at a very young age. Kids with Cerebral Palsy range widely in their degree of involvement from very mild to very severe. The level of seating and positioning, from basic planar seating to fully customized seating and positioning, needed to address the child's medical needs will depend on the child. Treating and providing equipment for a child with diplegia will be very different compared to treating and providing equipment for a child with spastic quadriplegia.

The different types of cerebral palsy may be classified by the type of movement problem (spastic, athetoid, or hypotonic) or by the body parts affected (legs only, one arm and one leg, or all extremities). Motor ability varies greatly from one child to the other; not all statements hold true for all children with cerebral palsy.

Spasticity refers to the inability of a muscle to relax (increased muscle tone). You will find that the child also has restricted range of motion due to the constant muscle rigidity. When the arm or leg is moved, the initial resistance is strong. Sometimes the spasticity will relax, and other times it will not relax. These changes in muscle tone interfere with normal development. Athetosis refers to the inability to control the movement of a muscle. It characterized sometimes by slow, writhing, involuntary movements. It can also be characterized by abrupt, involuntary movement other times. Muscle tone changes from time to time, and because of these tone changes, muscle contractures are less likely to occur in this form of Cerebral Palsy than with spastic Cerebral Palsy. In athetoid Cerebral Palsy, it is difficult to regulate movement and maintain posture. Hypotonia is characterized by flaccidity (no muscle strength). Ataxia refers to balance and coordination problems.

Hemiplegia is cerebral palsy that involves one arm and one leg on the same side of the body Diplegla (also called paraplegia) primarily involves both legs. Tetraplegia (also know as quadriplegia) refers to a pattern involving all four extremities and may include the neck muscles.

The term for the dominant type of muscle movement is often combined with the term describing the part of the body affected. The result is a more specific description of the condition. For example, a child with spastic quadriplegiam has mostly spastic muscle problems affecting most of his body. He or she may also have some form of athetosis or ataxia present.

In summary, we can classify different kids who have Cerebral Palsy by the types of movement the child makes, by the part of the body that is affected, or both.

By type of movement

Spastic	**Rigid**
Athetoid	**Unable to control muscle movement**
Hypotonic	**Floppy child**
Ataxia	**Balance and coordination problems**

By affected body part

Hemiplegia	**Involving one arm and one leg on the same side**
Diplegia	**Involving both legs typically, or both arms rarely**
Tetraplegia	**Involving all four extremities, trunk and neck muscles**

Providing proper seating and positioning for these children is a challenge. It will vary widely depending on the type of Cerebral Palsy and the degree of involvement. Will basic planar suffice, or will the child need more accurate positioning to control the hips and trunk? Will contoured seating be sufficient, or do we need to look at a custom seating system? Do we need to be concerned about pressure sores or skin integrity in the more involved children? Some of these children will present with seizure activity. A large number will have strong extension/thrusting behaviors. How do we manage them?

You will also need to look at what type of mobility these children will need. Do they have the ability to self propel (independent), or will they need someone to push them (dependent)? Will they need special life support equipment? If so, how do we accommodate this equipment on their respective mobility bases?

We will also need to remember activities of daily living (ADLs) and other occupations. ADLs are feeding, dressing, bathing, toileting, grooming, and other self-care activities. Other important occupations that improve overall quality of life include play, community mobility, education, sleep, socialization, and leisure. Will we need to consider four or five different pieces of equipment, or can we find one piece of equipment that can serve two or three of these roles while still providing the seating and positioning needed?

The “high guard” position of the arms is often accompanied by head and neck hyperextension

Hip extension is usually accompanied by lower extremity extensions, adduction and internal rotation

FUNCTIONAL POSITIONING

Position a child so that he or she can function and interact with the rest of the world.

Functioning without support

Functioning with support

Without proper support, children with very low tone may not have the strength or the leverage to function with their upper and lower extremities. They may also have difficulty holding their heads up enough to maintain line of sight. A seating system that is positioned for f unction can stabilize their upper extremities enabling an increased level of function.

Neutral Pelvic Position

The neutral pelvic position allows balance and allows the upper extremities to move and be prepared for functional activity.

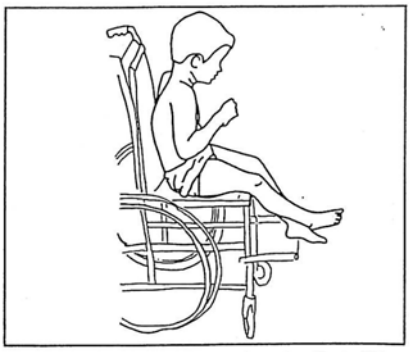
Active Body Position

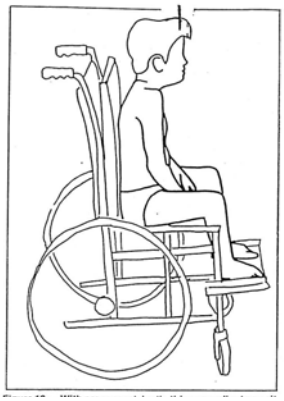
Tilting forward into a ready position for activity. Note how the pelvis is aligned with the spine and the child is tilted slightly forward poised to reach out or engage in a number of activities.

Sacral Sitting Position (Posterior Pelvic Tilt)

This sitting position puts pressure on the sacrum and ischial tuberosities. This position makes functioning of the extremities difficult. Children are continually moving in their seating system and will shift into awkward and non-functional positions. The proper seat system is important to maintain alignment .

A firm seat with the legs fully supported in an upright neutral position is required. The seat depth is the most important measurement: If the seat depth is too long, the pelvis tilts back creating posterior pelvic tilt. If the seat depth is too short, the thighs are not supported as well, and the total base of support is not adequate. Proper foot support is also required.





When the seat is too deep the client will lean back to reach the support surface. This will create posterior pelvic tilt.

With proper seat depth, this same client can sit with a neutrally tilted pelvis and an erect spine.

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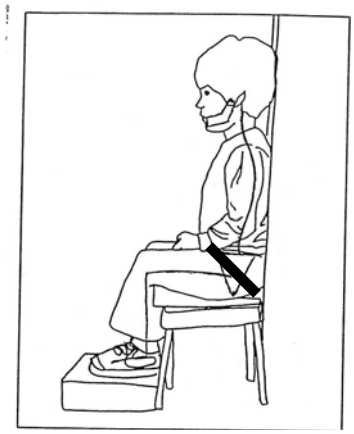


The client sitting in posterior pelvic tilt despite the 90 degree seat/back angle due to lack of lower extremity stability and a seat belt.

A firm foot bed and a seat belt can provide a platform to establish postural alignment neutral pelvic stability.

These illustrations are meant as basic guidelines only. Please work with your therapist to determine how to determine the best mobility and positioning system for the child.

General Considerations

- Provide the wheelchair user with optimal stability using minimal restraint
- Ensure optimal spinal posture and pressure distribution
- Minimize discomfort, fatigue, and energy expenditure

Specific areas of concern

- **Back height**

⇒ Should support thoracic and lumber regions of the back for relaxation
⇒ Should not interfere with are motion for propulsion for function
⇒ Should employ higher back heights with scapular cutaways

- **Seat height**

⇒ Should not limit the users access to the environment
⇒ Should allow for ease of transfers

- **Seat surface**

⇒ Should provide a stable setting base
⇒ Should include a rigid seat insert

- **Armrests**

⇒ Support the upper trunk and contribute to overall sitting stability
⇒ Need to be well padded
⇒ Need to be set with respect to height, angle of inclination, fore-aft position and width between (ideally these parameters would be adjustable)

- **Seat Inclination**

⇒ Helps prevent the user's buttocks from sliding forward which can occur secondary to decreased friction from seating surfaces designed to decrease surface pressure and enhance transfers
⇒ Forces which occur with sudden acceleration or deceleration
⇒ Sliding due to road shock and vibration
⇒ Helps keep the user's back against the backrest and aids in pelvic-sacral support

- **Back Inclination**

⇒ Helps with trunk stabilization
⇒ Facilitates bimanual hand use in the face of severe weakness
⇒ Needs to be 10 to 15 degrees back from vertical
⇒ Needs to be greater with high level paralysis
⇒ Decreases body weight on sitting area

- **Back Cushion**

⇒ Essential to improve the comfort and pressure distribution of the backrest
⇒ Should have firm pelvic-sacral and lower thoracic support
⇒ Should be softer foam in the upper thoracic support
⇒ Solid backs with little padding will push the user's shoulders and trunk forward, encouraging kyphosis
⇒ Solid backs with little foam can decrease lateral trunk stability

Thigh to trunk angle

- **Should be approximately 95 degrees to allow for proper lumbar lordosis**
- **If greater than 100 degrees may cause sliding forward on the seat**

Pelvic-sacral Support

- **Should be made of dual density foam with very firm underlying foam**
- **Will reduce lumbar disc pressure**
- **Will improve cervical spinal alignment**
- **Will improve diaphragmatic breathing**
- **Will assist with forward weight shifts**

Lower thoracic support

- **Should be firm, just below the inferior angle of the scapula**
- **Will promote spinal extension**
- **Will provide stabilization of the thorax**

Leg/footrest position

- **Creates stability for the seating system**
- **Decreases fatigue**
- **Helps maintain pelvis back in chair**
- **Helps keep user in contact with the back support**
- **Helps decrease the circulatory cut-off pressure at the distal posterior thigh which effects cardiac output, fatgue, and discomfort**

Wheelchair Safety

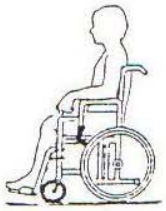
In order to transport a disabled person, you will need to know how to manuever a wheelchair, and how to safely lift and transfer these individuals. Whenever possible it is important that both the wheelchair user and the caregiver be familiar with the safe use of the wheelchair.

THE WHEELCHAIR

1. **Wear** Proper shoes are important when pushing a wheelchair. Low-heeled, closed toe, rubber-soled shoes are best.

2. **Fasten** Be sure to fasten the seat belt.

3. **Lock** Lock the brakes on the wheels whenever the chair will be unattended, or when the wheelchair user is being transferred to or from the chair.



4. **Plan** Carefully plan the route. If possible, avoid obstacles such as curbs, stairs, narrow openings, uneven surfaces, etc.

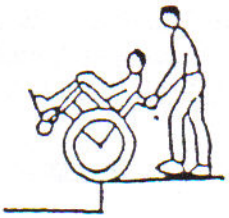
IMPORTANT

DO NOT attempt to manuever a wheelchair unless you are absolutely sure that you can safely handle the weight of the individual and maintain full control.

Folding a Wheelchair

To fold most wheelchairs, first remove the seat cushion. Next pull up on the seat fabric at the center front and back, or on the straps.

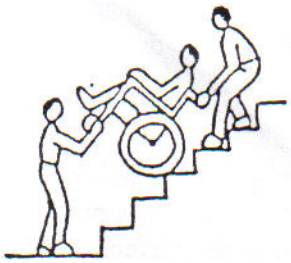
Curbs



When descending a curb, the chair must be tipped back with the tipping lever so that it is balanced on it's back wheels. The pusher controls the descent by bending his legs. The pusher's back should be kept straight. It is important that both rear wheels touch the ground at the same time.

When going up a curb, tip the chair and place the front wheels onto the sidewalk. Then "climb" the curb with the big wheels.

Steps



A minimum of two people should be used when taking a wheelchair **up steps**. Position the chair squarely at the foot of the steps with it's back toward the steps. Place one foot up on the first step, and pull the chair up by straightening your legs. The second person stands in front of the chair and assists by holding the rods to which the foot rests are attached.

When going **down steps**, the chair should be tipped backward and moved to the edge of the step. The pusher controls the descent of the chair by bending his legs. The second person stands in front of the chair and steadies the chair by holding the rods to which the foot rests are attached.

NOTE: The comfort and safety of the wheelchair user must be the primary concern. If the individual wants more than two helpers to take him up or down a flight of stairs, then their desires must be accommodated.

On A Rough Surface

When a chair is being pushed on rough ground, it should be tilted onto the back wheels.

IMPORTANT

WHEN LIFTING A WHEELCHAIR, LIFT BY PERMANENT STRUCTURES OF THE WHEELCHAIR. **DO NOT LIFT THE CHAIR BY THE ARM RESTS OR FOOT RESTS.** THESE ARE NOT PERMANENT STRUCTURES ON THE WHEELCHAIR, AND WILL EASILY DETACH FROM THE CHAIR.

ALSO, NEVER TILT THE CHAIR FORWARD, ALWAYS BACKWARD.

Basic Measuring Guide

This is intended for use as a general guide. Many children require special solutions not illustrated here.

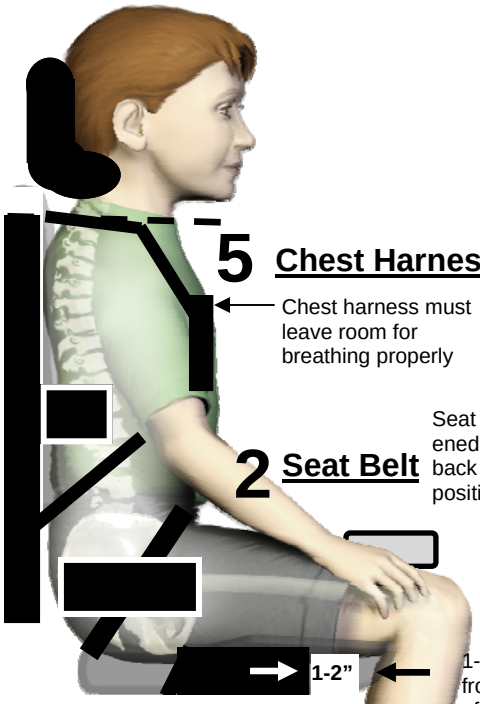
6 Head Support

Head Rest should provide enough support to enable the child to balance, laterally as well as fore and aft, without preventing the child's ability to shift position to engage in functional activities.

4 Seat Back Cushion

Top of seat back cushion and chest harness straps even with top of shoulders

The seat back cushion should provide enough support to maintain proper alignment while not impeding the ability for the child to be actively engaged with his or her environment.



5 Chest Harness

Chest harness must leave room for breathing properly

2 Seat Belt

Seat Belt should be firmly tightened to help position the pelvis back in the seat in a neutral position.

8 Hip Guides

9 Abductor Block

1-2" space between front of seat and back of knees

1 Seat Cushion depth adjustment

Seat Cushion should provide firm support under the pelvis and thighs to encourage a neutral pelvic position.

1 Ankle Supports

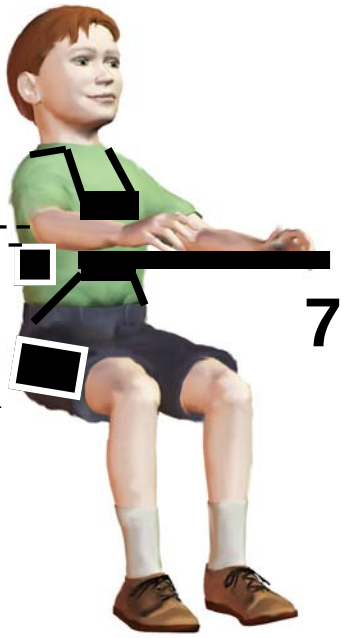
3 Foot Bed

The feet should rest firmly on the footbed to provide support for lower extremities

6 Trunk Supports

1"— 3"

The trunk supports help maintain an erect upper body. A 1-3" space between Trunk supports and arm pits helps prevent the child from hanging on the them.



7 Therapeutic Tray

The therapeutic tray provides upper body support as well as a platform to use for work, play or eating.

ROCKIT Wheelchair Fitting Guide

The following information provides valuable information on the use, adjustment capability and the function for the various ROCKIT Wheelchair features. When completing the Measurement Worksheet, please be as thorough and as accurate as possible. If possible, please include additional pictures if this will help to further illustrate the nature of the child's disability.

Tool Kit

The basic adjustment tools for the ROC Wheelchair are: 7 1/16" nut driver, 5/32 allen wrench, 3/4" wrench for front wheel caster bolt, tape measure, and pen.

Other tools can be used for custom configurations

Adjustable Handle Bar

The ROCKIT Wheelchair handle bar is adjustable by pressing the buttons at the base of the handle.

Folding

Folding –The ROCKIT Wheelchair comes with quick releases rear wheels and a foldable back cane. For the most compact package, make sure the chair is tilted all the way forward and that the positioning components are not in the way.

Please print or type: Application # _____

Applicant's Name _____
Last First Middle

Street Address _____

City _____ State/Province _____ Postal _____ Country _____

Contact Phone # _____ Fax # _____ Email _____

Date of Birth _____ Age _____ Sex _____ Height _____ Weight _____
day/month/year Indicate inches or cm Indicate pounds or kg

Type of mobility requested? _____

Can you sit without support? Y N Can you hold your head without support? Y N

Can you talk to us? Y N Can you self-propel? Y N

Patient's Measurements

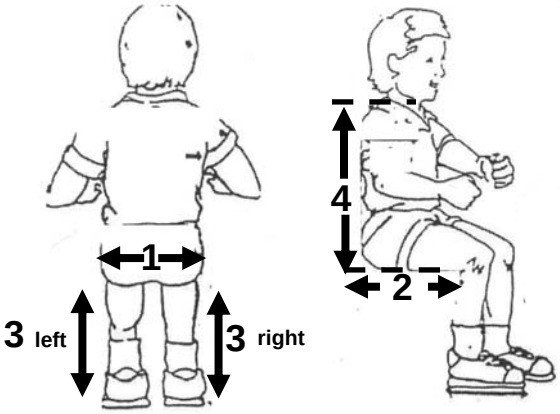
(See Diagram Below) cm___ inch___

1) **Hip Width** _____

2) **Seat Depth** _____

3) **Foot Drop** **left** __ **right**___

4) **Top of Shoulders to Seat** _____



Diagnosis: _____

_____

Special Requests: _____

_____

_____

Additional Information: _____

_____

_____

Before picture

After picture

What type of wheelchair would you suggest?

_____

Person filling out form

_____

Office Info. Only:

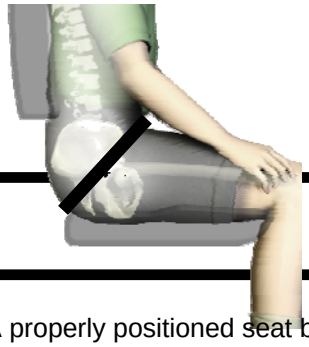
ROC WHEELS
Reach Out and Care.

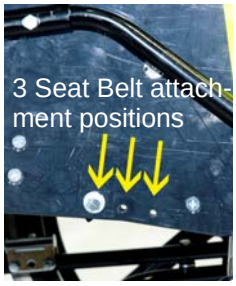
4135 Valley Commons Dr.
Suite D.
Bozeman, Montana, USA
59718

Info.@ROCWheels.org

www.rocwheels.org

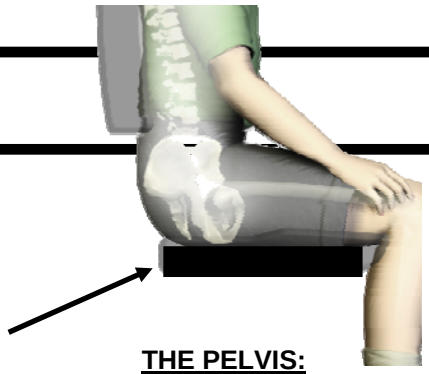
Seat Belt





A properly positioned seat belt holds the pelvis back in the chair enabling the child to sit correctly. An improperly placed belt is worse than no belt. Depending on the disability and direction of forces, the seat belt position may have to be changed to keep the pelvis in the neutral position.

Seat Cushion



THE PELVIS:
The first area to be considered must be the pelvis, with efforts made to obtain a neutral position. The pelvis influences total body alignment and without a good pelvic foundation, positioning of the legs, trunk or arms becomes undermined.

A firm Seat with the legs fully supported in a neutral position is very important. The seat depth is the most important measurement: If it is to long, the pelvis tilts back; if it is to short, the thighs are not supported as well and the total base of support is not as good. Proper foot support is also required.

The abductor wedge can be placed via hook and loop even when the seat is folded over for shorter seat depths.

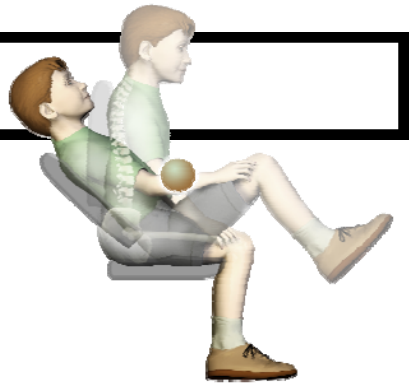
Back Cushion

Seat back is adjusted with 7/16" nut driver. Seat back has 8" of growth.

Optimally, position the firm seat back at 90 degrees to the sitting surface is needed to ensure maintaining a neutral pelvis. A soft back encourages slouching. A reclined back encourages a posterior pelvic tilt.

Back Cushion should support
thoracic and lumber regions
of the back for relaxation
It should not interfere with arm
motion for propulsion or function.

Tilt-in-Space



Tilt-in-space of the entire seat in space will assist the child's muscular trunk control against gravity. If it is too erect, he may slump. If too far back, he may pull forward to become more erect. It is important to position the child as erect as possible to encourage the child to develop the strength and balance necessary to improve. When necessary, tilt the child back for support, but always be ready to enable the child to challenge gravity.

Hip Guides/ Abductor

<u>Symmetrical pelvic alignment</u> must be achieved on the seat. If weight is shifted to one hip, compensation posturing occurs in the spine and extremities. Hip guides or knee straps can be used to assist this.

To install the abductor block, position child correctly. Then poke a hole through the upholster and through the seat base.

Arm Rest

The arm rests provide upper extremity support which can enable the individual to maintain alignment enabling improved function. The arm rests also serve as the support for the therapeutic tray.

Front Caster

Insert information about caster wheel here.

Foot / Ankle Support

Proper positioning of the legs can only be achieved after proper orientation of the pelvis. If the legs extend and adduct a spacer may be needed. If the legs abduct, supports may be needed on the outside of the legs. With tight hamstrings, knees should be flexed to 90 degrees to avoid a posterior pelvic tilt.

Foot positioning is critical and possible only after achieving correct alignment of the pelvis and legs. The foot should be flat with most of the weight carried through the heel. This may require blocks or straps to achieve.

Footbed Adjustability

Trunk Supports

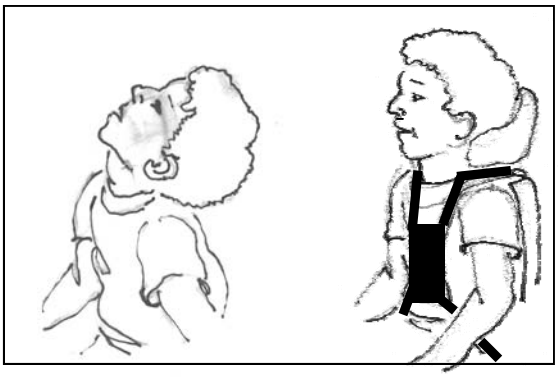
The trunk supports are adjustable in height, width, depth and angle

Use the 7/16" Nut driver to adjust.

After achieving a proper base of support in the pelvis and legs, attention must be turned to obtain neutral trunk alignment. Proper relationships between normal spinal curves and the position of the ribs is desired. This also helps decrease changes of developing spinal deformities. Most distortion of spinal curves comes from low tone, or from reflex activity with increased tone, with resultant inadequate trunk control.

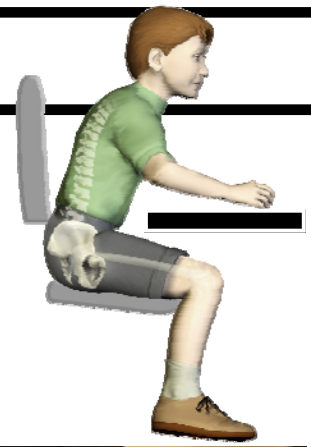
Chest Harness

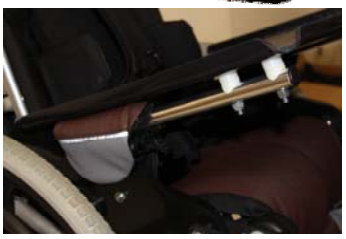
Harnesses or strapping to control forward flexion may be used. If the child hangs on them, backward tilting is necessary. Harnesses will not control side bending and should not be allowed to interfere with arm functions.



A chest Harnesses can be very instrumental in keeping the shoulders aligned uprightly.

Therapeutic Tray





Head Support

Contouring can be customized by pulling off cover and fitting in new foam shapes to help support the child's head.

Adjustable up and down

Adjustable forward and backward

THE HEAD AND SHOULDERS:

After obtaining optimal pelvic, leg and trunk control, efforts are directed to achieving head and shoulder girdle positioning. Any distortion of central control will interfere with head and shoulder alignment and with developing active control of the finer motor skills (the head, oral and eye control, and the hands). The next task is to obtain the best position of the head and shoulder girdle so that the child can better participate in the environment.

"Ideal" head position is often very difficult to achieve as any distortion in the intimate relationship between the head, neck and shoulder girdle produces pathology in the other. Ideally, the head should be righted with the eyes horizontal, and neutrally aligned on the neck. Mobility of the head on the neck should be allowed within the range that the child can control.

Some frequently encountered head problems are from, 1) floppy necks, 2) enlarged occiputs, 3) extensor hypertonus in the neck, 4) sidebending or rotation.

Hip Angle Adjustment

- Helps with trunk stabilization
- Facilitates bimanual hand use in the face of severe weakness
- Needs to be 10 to 15 degrees back from
- vertical
- Needs to be greater with high level paralysis
- Decreases body weight on sitting area

Custom Applications

The ROCKIT wheelchair can easily be adapted to fit the custom positioning needs of the wheelchair recipient. Once the wheelchair specialist determines the unique needs of the child, he or she should first determine if the ROCKIT wheelchair can be adjusted or modified in its standard configuration to fit the child.

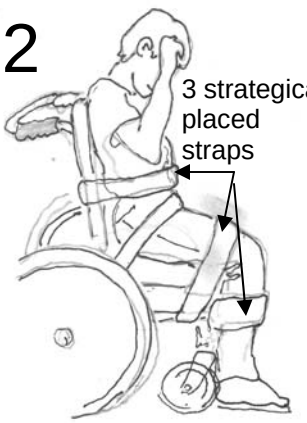
Here we have an illustration of some extra positioning components, including various foams, positioning hardware and various fasteners that enable the ROCKIT wheelchair to provide the maximum therapeutic and functional benefit.

The foam inside the head rest, seat back, and seat bottom covers can be accessed to add foam as necessary to ensure the correct amount of support and contouring.

How many beneficial things can we accomplish with a simple strapping system and the addition of a therapeutic tray?

1

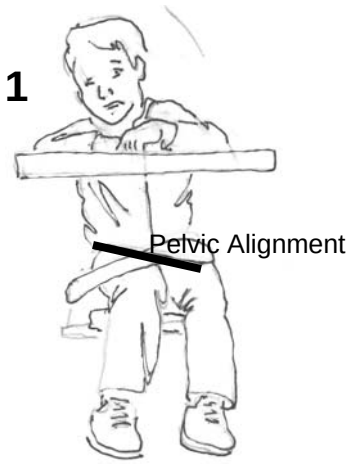
2

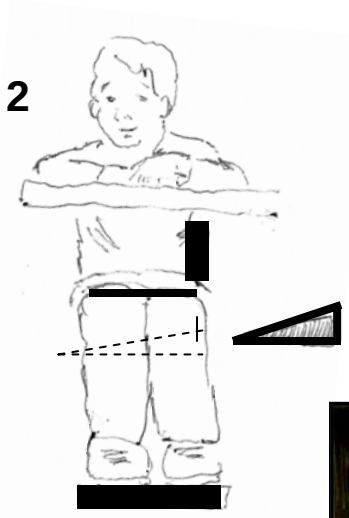


3

Wide padded straps fastened with hook and loop can provide support. They should not be so tight as to restrict functional movement or circulation, but can help in bringing the body into alignment.

The therapeutic tray can provide the necessary support to help maintain postural alignment





The child in figure 1 has pelvic obliquity. The upper and lower extremities are assymetrical to compensate and maintain balance. A trunk support added to the child's left side helps straighten the upper torso while the seating wedge is placed under the pelvis due to the obliquity. The footbed provides support to brace the feet and help to balance the entire body.

SPICA POSITIONING

Special adaptations can be performed for children in a temporary Spica cast system. The back would be positioned at the 90-degree position and the standard handle bar would be used. Once healing is complete and the cast removed, the standard seating system and footrest system can be returned to the wheelchair.

SUPINE POSITIONING

A beneficial adaptation of the ROCKIT wheelchair is that the seat back can recline 90 degrees. This allows supine positioning for children with complex needs. The seat back can be adjusted in special situations to provide a long flat surface. The adjustable footrest can be raised to the seat base to extend the seating platform an additional 9 inches.

The ROCKIT Wheelchair is specially configured to provide the growth, therapeutic support, and anthropometric positioning to accommodate a large segment of the pediatric population with mid through profound deformities. It is also well-suited to custom configuring to fit a child using the child's personal requirements.

Wheelchair Distribution Procedures

PRE-DISTRIBUTION COORDINATION

Establish the location for a distribution based upon requests from potential partners or the need to return to past distribution sites to help more people while following up with past wheelchair recipients.

Establish reliable contacts within the country to do a distribution at least 6 months in advance

- Send measuring worksheets (e-mail version or by mail) and have them begin to record measurements and take a photo of each the recipient.
- Have them contact local associations that serve the disabled, orphanages, physical therapists, government health departments, etc
- Once they've gathered 100 or 200 measuring worksheets have them mail them to ROC Wheels

Review the measuring worksheets and the recommendations for mobility products if included

ROC Wheels and physical therapists review the measuring worksheets and determine the best mobility product for each person

Begin initial fundraising if the partners show the ability to perform a distribution together

Create a budget for the cost of the mobility products based upon review of the measuring worksheets

Request a shipping quote from BKA Logistics (Manisha Lad) based upon the total number of wheelchairs (100 wheelchairs = 20 footer and 200 wheelchairs = 40 footer)

Combine the mobility products cost, shipping costs, and estimated costs associated with performing the distribution in order to determine a final budget

Establish shipping sponsor

Continue fundraising based upon the total budget

Identify the consignee and contact person that will receive the shipment

Coordinate with partners and consignee to determine a location for storage of the mobility products until the distribution team arrives

Coordinate with partners and consignee the distribution sites and necessary logistical support for transporting the mobility products and distribution team (if multiple sites)Coordinate with partners and consignee to arrange the accommodations, transportation, and meals for the distribution team

Continue fundraising until 75% of the budget has been received

Once 75% of budget received then submit a purchase order for the mobility products

Research costs for airfare, accommodations and meals and determine cost per team member.

Work with consignee and perform the necessary tasks in order to receive a Duty Free Exemption Certificate from the countries government or US based consulate

Make arrangements for the shipment through BKA Logistics and ask them to hold the booking at the current quote until the duty free certificate has been received

Determine distribution date and number of team members based upon the expected arrival time of the container and clearance from customs

Find a Physical Therapist to accompany the team, try to get PT sponsorship.

Gather distribution team and begin to educate the volunteers on the distribution procedures, health concerns (vaccines), political and cultural environment, necessary financial support they will need to pay or fundraise, and provide the distribution itinerary

Have a team meeting if possible before leaving to assign responsibilities for each distribution day and ease any concerns or questions.

PRE-DISTRIBUTION IN-COUNTRY

Once in-country give the team time to adjust to time-changes and culture shock

Meet with in-country partners and thank them for all their hard work (give gift or token of gratitude when appropriate)

Unload the shipping container, assemble all mobility devices, and match foot-rests and accessories to each wheelchair

Organize the inventory by the day of the distribution or by distribution site and prepare the load for transport is necessary

If possible match and label each assigned mobility devices to a recipient determined by using the measuring worksheet (if pre-determined)

Organize ROC team into a meeting before the distribution takes place and discus the roles that each individual will perform- whenever possible empower others to take on a leadership role and support them as needed

Explain the challenges that will be faced especially preparing them for challenges that will present themselves

Discus health concerns and proper procedures when serving recipients with potentially contagious illnesses

Detail a course of action to be taken by every team member if they are cut or injured

Field questions and concerns from the team and address the need to have the proper state of mind and remain calm in the face of stress and adversity

Discus interpersonal challenges that may develop and how to deal with them- open dialogue is very important before smaller issues fester and become worse

Visit the distribution site and layout the flow for the distribution. Identify the entry, custom fitting stations, and exit point

Work with the team on a simulated fitting (including translators and physical therapists)

- Begin with the waiting area proceeding to the entry point (finding their measuring worksheet)
- Direct the recipient and caregiver to a custom fitting station and introduce all parties
- Custom fitting team briefly assesses the recipient and compares with the measuring worksheet to determine the necessary mobility device
- Once the mobility device has been determined bring the device to the fitting station and begin the custom fitting *see custom fitting section*
- Work with the physical therapist to determine the necessary adjustments and customizations to the mobility device to best serve the recipient. During this process communicate with the recipient (if possible) and caregiver to educate them on the features of the wheelchairs, medical concerns, and adjustments that can be made over time and the recipients grows.
- Finish the custom fitting and have a physical therapist give their approval
- Help the recipient and caregiver to the exit station and introduce all parties
- The exit station will take the measuring worksheet and assign a code to the measuring worksheet that matches the exit photo
- Record the code, name, and location on the “photo board” and help arrange the recipient and caregivers for a picture (note the direction of light and backdrop)

Take several pictures not just of the “adopt-a-chair” style picture, but close ups and try to capture the emotion of the moment

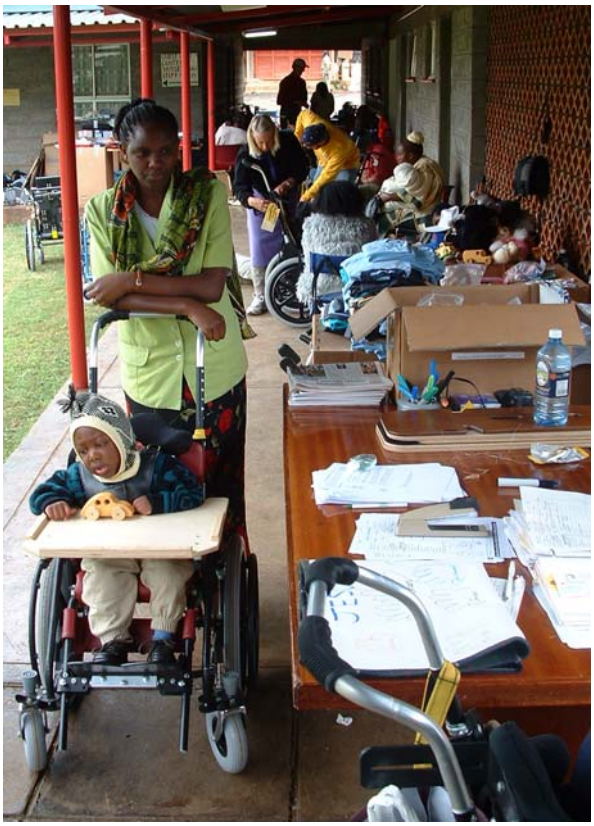
Work with the fitting station teams to determine if they have adequate tools, fasteners, webbing, and foam
If sufficient time loosen all the adjustable features on the wheelchairs to reduce fitting times during the distribution
Ask for further questions from the team

DISTRIBUTION DAY:

Most countries the wheelchair recipients and their families will arrive well before the team does so everyone should be ready to work upon arrival
Work with a translator to speak to all the recipients and thank them for coming and being gracious as they wait for their wheelchair
Explain the distribution to everyone and what they should expect during the distribution:

- Flow throughout the process
- Time involved with custom fittings and how this may effect their wait time

To be attentive and learn as much as they can during the fitting- ask questions
Hand out the measuring worksheets to the caregiver or recipient Begin the distribution



FINISHING THE DISTRIBUTION:

Opportunity to throw a celebration dinner, luncheon, or party for partners and team
Be sure that partners have had sufficient training and tools to follow up with recipients
Leave sufficient measuring worksheets so partners can continue to document children in need of wheelchairs for the return trip

Wheelchair Selection Guide

In order to deliver the proper selection of wheelchairs for an upcoming wheelchair distribution, measuring worksheets are filled in and other valuable information is collected. The wheelchairs shipment is packaged based on this information. The following guide helps you understand the type of mobility devices that can be prescribed, based on the individual needs of the wheelchair recipient.

Pediatric Strollers and Wheelchairs

Who is it for?

Pediatric wheelchairs must allow for growth as well as numerous levels of disability. The adaptive wheelchair is for children with moderate to severe disabilities & provides support for proper positioning as well as enabling self propulsion.

Standard Wheelchair

Who is it for?

The standard wheelchair is suitable for patients who need minimum to moderate assistance in sitting upright . They can be people who can or cannot self propel, but do not need the extra performance of a lighter, more expensive lightweight wheelchair. Patients normally need little adaptive support and chair angle adjustability

A **standard wheelchair** comes with fixed armrests and fixed foot plates. The foot plates can be adjusted up and down to get the right seat height. It comes in different qualities like stainless steel, chrome, aluminum and therefore has different prices. Also the country of origin has an influence on the price.

Lightweight Wheelchair

Lightweight wheelchairs are more sophisticated and more expensive, due to the special types of wheels and optional components available, such as an adjustable wheelbase for high-performance mobility. They often come in many colors. These chairs are often more efficient to self-propel, because of the lighter weight and more refined features .

Who is it for?

The lightweight wheelchair is suitable for patients who are strong in the upper body and can benefit from the lighter weight and higher performance. Paraplegics are often good candidates for a lightweight chair since they are often very strong in the upper body.

Sports Wheelchair

Who is it for?

Sports chairs are high performance wheelchairs that are made to help the user perform in sports such as tennis, basketball, off road travel or other sports activities. These chairs are often very expensive and can limit the users ability to function in normal daily activities because of the specialized features.

Adaptable Wheelchairs with Tilt-in-Space

Who is it for?

Tilt-in-space assists the child's muscular trunk control against gravity. If it is too erect, he may slump, if too far back, he may pull forward to become more erect. It is important to position the child as erect as possible to encourage the child to develop the strength and balance necessary to improve. When necessary, tilt the child back for support, but always be ready to enable the child to challenge gravity.

R

This chair is meant for patients who need a more open hip angle. The reclining wheelchair is appropriate for people with fixed or other non-correctible deformities that prevent them from sitting in a more upright position. Often, people are too weak to sit upright. An elevating leg rest is often needed as is additional specialized seating support to provide proper positioning support and pressure relief.

Power Wheelchair

Who is it for?

The power wheelchair provides the gift of independent mobility for people who cannot self propel and are cognitively able to navigate with the chair. Power chairs can be appropriate for children as young as 2 years old. Power wheelchairs are very expensive and normally demand extensive technical upkeep, making them inappropriate in many developing countries.

Hand Bikes

Who is it for?

Hand bikes provide independent mobility for people who have strong upper body capacity. They often enable mobility on roads and byways, and can provide a vehicle for helping sustain a roadside business, since many bike have a large storage area for carrying goods.

Mobility Aids

Who is it for?

People often can benefit from mobility aids that either do not need a wheelchair or as an additional mobility. Walkers can serve people who have some ambulatory capability. Other aids are available that help with bathing, toileting and other activities of daily living.

Highly Adaptable Wheelchairs

Who is it for?

There are a wide variety of disabilities that cannot be served from without specialized adaptations to the appropriate wheelchair. Some children need special life support equipment, including suction machines, ventilators, IV poles and other critical care items. Some children have developed fixed deformities which creates the necessity of configuring the chair to accommodate the abnormal body position.

Seating Systems and Positioning Components

Who is it for?

There are a wide variety of seating surfaces, including foam, air cell and fluid which can help accommodate assymetrical problems, as well as address pressure sores and other pressure related issues. Structural support, such as trunk supports, head supports, adduction and abduction are also critical an many cases to enable the occupant to function to the best of their ability.

Bath Aids

Who is it for?

In addition to mobility and positioning products, it is important to address activities of daily living.
It is difficult to sustain a healthy environment in many developing countries. The wheelchair distribution team can often bring a variety of bath aids that can support the needs of the wheelchair recipient.









P.O. Box 11765
Bozeman, Montana, USA, 59719

Info@ROCWheels.org
www.rocwheels.org