



Complex Child E-Magazine

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Achieving Independent Mobility Regardless of Disability by Susan Agrawal

It is impossible to underestimate the power of moving from one location to another by yourself. Almost all children strive to have this kind of control over themselves and their environment. This is especially true for children who have physical disabilities that dramatically limit their ability to move. How can we get these kids moving independently, even if they can barely move an arm or a leg by themselves?

Becoming independently mobile is important for many reasons, including developing physical skills, asserting independence, separating from a parent or caregiver, exploring the environment, and learning to make choices. Children who are not able to move cannot make choices about what they want to do, where they want to go, or who they want to meet. They are not able to explore all the interesting things around them, including sidewalks, toys, trees, and everything else a child finds intriguing. Some children become frustrated and develop “learned helplessness” as a result of their mobility impairments. For these children, getting them moving can not only lift their spirits, but it can also help motivate them to break out of their shells and learn about the world around them.

As we all know, walking is not the only way to move. For children with milder physical disabilities, other options may include rolling, crawling, scooting on the rear end, or knee walking. Many children develop unique systems to allow their bodies to move, despite physical limitations.

For some children, the only way to move will be by employing a mobility device. These devices range from simple handmade scooters to extremely complex powered wheelchairs complete with infrared sensors. The following is an assortment of different mobility devices that may help your child to begin exploring her environment:

Crawlers

Some children, particularly young ones, may benefit from using a crawler. There are many brands available, and you can even build your own out of PVC pipe or other materials. Most crawlers consist of a frame and a harness. The harness helps to support the child’s weight so that he or she is able to move with minimal or no assistance. Some less expensive models are wheeled platforms that help propel the child in a crawling position.

Don Caston's book *Easy to Make Aids for Your Handicapped Child* includes instructions for making two crawlers. While this book appears to be out of print, many used copies are available through online merchants.

Commercially available crawlers:

- Creepster Crawler <http://www.redbarn-enter.com/newcreepster.htm>
- Maddacrawler
http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=924770
- Height Adjustable Crawler
http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=8192
- Adjustable Crawl Trainer
<http://www.flaghouse.com/completeDescription.asp?T1=4800>
- Mobility Crawler
<http://www.baileymfg.com/products/positioningequip/index.htm>

Scooter Boards

Scooters are another option for a child who may have difficulty ambulating. Scooters can either be self-propelled or motorized. They are widely available and usually pretty inexpensive since most are not marketed as special needs products. It is also very easy to make your own scooter with a simple platform and four casters.

Some scooters include additional adaptations to help children with special needs. These include backrests, full body support, or operation using a switch. Switch-operated scooters, while very expensive, can be used by almost any child who understands cause and effect and can depress a simple switch with a hand, foot, chin, or other body part.

Special Needs Scooter Boards:

- Adjustable Scooter with Backrest
<http://www.southpawenterprises.com/store/adjustable-scooter-board-w-backrest/Product.asp>
- Jettmobile http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=4768C
- Ready Racer
http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=4770R
- Developmental Scooter
<http://www.flaghouse.com/completeDescription.asp?T1=1470>
- Multi-Directional Motorized Scooter (sitting or prone available)
<http://enablingdevices.com/catalog/mobility/scooter-boards/multi-directional-scooter-board>
- Switch Operated Scooter
<http://www.flaghouse.com/completeDescription.asp?T1=31249>
- The Boss Power Scooter <http://mobility4kids.com/main/newboss.html>

Gait Trainers and Walkers

Any child who is unable to walk by himself will likely benefit from a gait trainer or walker. For children who just need help with balance, simple walkers, such as those made by Kaye, will help them to walk around home, school, or the community. For

children with greater physical impairments, a gait trainer with additional supports may be necessary.

The most versatile gait trainer is the Rifton Pacer, which can be set up to accommodate almost any child. Children without head or trunk control may need a support collar and trunk vest or TLSO in order to use a gait trainer. The Mulholland Walkabout also provides additional supports in the trunk and neck regions for more impaired children. For children who can only partially weight bear or need their trunks suspended, the add-on suspension frame for Kaye walkers and the Litegait Walkable provide this additional form of support.

A gait trainer may still be useful for children who are unable to take steps, since it provides another opportunity to bear weight on the legs. In addition, most gait trainers set the child at the same height as her peers, allowing interaction that might not otherwise be possible.

Gait Trainers and Walkers:

- Rifton Pacer
<http://www.rifton.com/products/mobility/pacergaittrainers/index.html>
- Pony and Bronco <http://www.snugseat.com/Default.aspx?ID=5874>
- Snugseat Walkers (Crocodile, Salsa, Gator)
<http://www.snugseat.com/Default.aspx?ID=5873>
- Wenzelite Walkers and Gait Trainers (Safety Rollers, Comet, Star)
<http://www.wenzelite.com/index.html>
- Ormesa Walkers and Gait Trainers (Dynamico, Grillo)
<http://www.ormesa.com/en/>
- Alvema Hopla/Cricket <http://www.rvseurovema.se/>
- Pacific Rehab Meywalk and Miniwalk
<http://www.pacificrehabinc.com/?pt=category&cid=1>
- Leckey Atlas, Discovery, Explorer Walkers and Gait Trainers
<http://www.leckey.com/template.asp?pid=67>
- Mulholland Walkabout and Gait Master
<http://www.mulhollandinc.com/GaitTrainer.asp>
- Kaye Walkers <http://www.kayeproducts.com/balanceaids.html>
- Kaye Suspension Walkers <http://www.kayeproducts.com/suswalkers.html>
- Litegait Walkable <http://www.litegait.com/>
- Otto Bock Nurmi Neo
http://www.ottobockus.com/products/pediatric_mobility/nurmi_neo.asp
- Prime Engineering Lift Walker
<http://www.primeengineering.com/index.php?n=38&id=32>
- Prime Engineering KidWalk <http://www.primeengineering.com/files/kidwlk.pdf>

Adapted Tricycles and Bicycles

Children with better head and trunk control and more active movements may enjoy riding an adapted tricycle or bicycle. A wide variety of different styles are available, including

more typical tricycles fitted with extra supports, handcycles that are pedaled with the arms, and even a prone bicycle.

Tricycles and bicycles are excellent devices for strengthening a child's arms and legs, as well as allowing a child to explore her environment. For more information about adapted bicycles, see: <http://rileychildrenshospital.com/parents-and-patients/wellness-center/commed/adapted-bikes.jsp>

Adapted Tricycles and Bicycles:

- Reha Partner Challenger Trikes and Bikes http://www.reha-partner.com/produkte/e_produkte.html
- Freedom Concepts <http://www.freedomconcepts.com/> including a wide variety of tricycles and a tandem
- Journey Prone Recumbent Bike <http://www.freedomconcepts.com/products/journey/>
- ToniCross Tricycles <http://www.kayeproducts.com/tonicross.html>
- AmTryke Tricycles http://www.ambucs.com/amtryke/what_is_amtryke.aspx including handcycles
- TriAid Bikes <http://www.triaid.com/index.html> including handcycles and bikes for short stature
- Gullworks Tricycle <http://www.gullworksmfg.com/products.html>
- Rifton Tricycles <http://www.rifton.com/products/mobility/adaptivetricycles/index.html>

Sitting Walkers/Wheelers

Children who have decent upper body control may enjoy a sitting walker or wheeler. These include the Ormesa Birillo, a seated walker that allows a child to scoot with his feet, the Whirl-a-wheel, a self-propelled mobility device in a long-sitting position, and the powered Go Kart by Mobility 4 Kids, a highly adaptable, low to the ground buggy.

Sitting Walkers/Wheelers:

- Ormesa Birillo <http://www.ormesa.com/en/>
- Whirl-a-wheel http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=4753
- Go Kart Powered Cart <http://mobility4kids.com/main/newgokart.html>

Dynamic, Mobile, Power and Robotic Standers

Most children love being in an upright position, especially if they spend many of their hours in wheelchairs. It is also important to be upright to promote proper bone development and strengthen the body. Most standers, however, do not allow a child to explore his environment or be nose-to-nose with his peers. Several companies have developed mobile standers and power standers to help children remain in an upright position while also being mobile.

Most mobile standers, like the Rifton dynamic stander or the Snugseat Rabbit, use large wheels like those found on a wheelchair to allow a child to self-propel them. These

standers are excellent for placing a child at the same height as her peers. The Ablegaitor actually allows the child to walk while in the standing frame. The Easystand Magician series has a mobile option, allowing a child to move from sitting to standing up in the device and then wheeling around while in the standing position.

Several companies have developed power standers, allowing a child who is unable to self-propel move around using switches or joysticks. The KidsterDani is a unique product that allows a child to use the same electric base for either sitting or standing, creating both a power chair and a power stander in one. A similar product, the Sit to Stand by Mobility 4 Kids, uses power to move the child from a sitting to a standing position, and can be used to move around in either position. Finally, the Go-bot, a robotic base for either sitting or standing, allows any seating or standing system to be attached to the base, and works with either a switch or joystick. Even children who lack head and trunk control can use the Go-bot if it is outfitted with a slightly supine stander and a switch.

Dynamic, Mobile Standers, and Power Standers:

- Rifton Dynamic Standers
<http://www.rifton.com/products/mobility/dynamicstanders/index.html>
- Prone Mobile Stander
http://www.sammonspreston.com/Supply/Product.asp?Leaf_Id=4616
- Snugseat Rabbit Mobile Stander <http://www.snugseat.com/Default.aspx?ID=8628>
- Prime Engineering Wheelie
<http://www.primeengineering.com/index.php?n=38&id=36>
- Ablegaitor Walking Stander <http://www.ablegaitor.com/index.html>
- Mulholland Wheelabout <http://www.mulhollandinc.com/Wheelabout.asp>
- Easystand Magician (with mobile option) <http://www.easystand.com/magician-comfy/index.cfm>
- Standing Dani (and KidsterDani and Sprout) – includes power standers
<http://www.standingdani.com/products.shtm>
- Mobility 4 Kids Sit to Stand (powered stander)
<http://mobility4kids.com/main/sts.html>
- Innovative Products Go-bot <http://www.iphope.com/mobilitydevices/gobot.html>

Self-Propelled Wheelchairs

Children with good upper body strength and control may be able to self-propel a manual wheelchair using their hands. A wide variety of wheelchairs are available, and a few of the top brands are listed below.

Self-Propelled Wheelchairs:

- Colours in Motion <http://www.colourswheelchair.com/>
- Freedom Designs <http://www.freedomdesigns.com/>
- Invacare http://www.invacare.com/cgi-bin/imhqprd/inv_catalog/prod_cat.jsp?s=0&catOID=-536887815
- Quickie/Zippie
http://www.sunrisemedical.com/products/product_list.jsp?brandNameFlag=Quick

- ie&FOLDER%3C%3Efolder_id=2534374302128429&ASSORTMENT%3C%3E
ast_id=1408474395285139&bmUID=1205264542210
- Snugseat <http://www.snugseat.com/Default.aspx?ID=8457>
- Otto Bock http://www.ottobock.com/cps/rde/xchg/ob_com_en/hs.xsl/1276.html
- Kuschall Kids
<http://www.kuschallna.com/index.php?option=content&task=view&id=53&Itemid=81>
- Kabal <http://www.kabal.cl/english/sillas/sillas.htm>

Power Chairs

Children who are able to sit up with support may be able to use a power wheelchair. These chairs have come a long way, and now have all sorts of interesting features, including sit-to-stand, seats that raise up to standing height, all-terrain styling, and sensors that prevent crashing. The Wizzybug is designed for very young children, and includes adorable styling. The Cyberbug, which can accept different seating options, is an all-terrain base suitable for multiple outdoor environments.

For more impaired children, the CALL Smart Wheelchair can be driven with one or more switches, auditory scanning, or a joystick, and features “bump guards” that detect collisions and respond appropriately. In addition, the chair is able to follow infrared tape, helping a visually impaired or more disabled child to negotiate a home or classroom.

Power Chairs:

- Alvema Miniflex, Flexmobil, Cobra <http://www.rvseurovema.se/>
- KidsterDani <http://www.standingdani.com/kidsterdani.shtm>
- Permobil Power Chairs <http://www.permobil.com/templates/Page.aspx?id=180>
- Zippie Z-bop and Quickie Z-500
http://www.sunrisemedical.com/products/product_list.jsp?FOLDER%3C%3Efolder_id=2534374302128429&ASSORTMENT%3C%3EEast_id=1408474395285139&bmUID=1205262477436&theFolderID=2534374302128429
- Quantum Rehab <http://www.quantumrehab.com/>
- Invacare Power Chairs http://www.invacare.com/cgi-bin/imhqprd/inv_catalog/prod_cat.jsp?s=0&catOID=-536887494
- Dragonmobility Chairs <http://www.dragonmobility.com/more.php>
- Bime Wizzybug <http://www.wizzybug.org.uk/>
- Cyberbug <http://www.1stbydesign.co.uk/>
- CALL Smart Wheelchair
http://callcentre.education.ed.ac.uk/Smart_WheelCh/Features_SWA/features_swa.html
- Otto Bock Skippi
http://www.ottobock.com/cps/rde/xchg/ob_com_en/hs.xsl/1275.html

Almost any child can be mobile, whether mobility is obtained by using a power scooter driven with a switch, or a power stander with a joystick. As technology improves, more

and more options are becoming available for even the most physically and cognitively impaired children, allowing them to explore their environments and interact with their peers. Scientists are experimenting with developing robotic wheelchairs and standers that allow children with visual and cognitive impairments to be mobile despite their limitations. Other researchers are creating mobility devices that can be controlled by thought, using electrodes on the head or implanted in the brain or nerves. These devices may allow children with even the most severe physical disabilities to become independently mobile.

Giving the gift of mobility to a child with physical disabilities is one of the greatest gifts that can ever be given. Do not give up hope even if your child is severely impaired. Almost all children will be able to use one of the devices listed above to at least experience the feeling of moving independently.