



## **Baby Power: A Guide For Families For Using Assistive Technology With Their Infants and Toddlers**

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### **Chapter 3: Positioning and Mobility**

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#### **Description of chapter:**

The author discusses ways to maximize positioning and mobility for an infant or toddler. Different positions and different ways of indicating responses are discussed, as well as assistive devices to promote mobility. Included are specific strategies to try and sample Individualized Family Service Plan (IFSP) goals.

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## Positioning

### Introduction

Any use of assistive technology requires using some type of body action. We want to make it as easy as possible for the child to carry out the action. There are two questions to ask:

1. What position will the child be in?
2. What movement will the child use?

The answers to these questions will depend on:

- the characteristics of the child (age, weight, physical abilities)
- the task to be accomplished (eating, playing, turning a page in a book)
- the context in which the task will be accomplished (at home, in bed, in a special chair).

Take the example of a 2 year old boy with spastic quadriplegic Cerebral Palsy who is learning to understand the names of objects and pictures. His mother wants to provide as many labeling experiences as possible during the day. She also wants to try many different ways for her son to show that he understands her. When relaxing on the couch and looking at a book, the child can use a movement of an entire arm to point to a picture. When he is being carried in the house or outside, he may simply look at objects being pointed out to him. In a more structured activity, he may wear a headpointer (a light or pointing stick attached to a band and worn on the head) and point to pictures on a computer screen.

### Nuts and Bolts

Discovery of the best ways of indicating responses is accomplished through systematically trying different combinations of possibilities. This is done by:

1. Deciding what the task is.  
We may be looking for a way for the child to choose a preferred food, ask for a game to be played, or activate a toy.
2. Working with the task in several positions.  
The most frequently used positions are:
  - Lying on Back. This is a position which many children prefer, since they can see their surroundings. The support of the floor can make it easier for them to use their arms. There

can be drawbacks, though, if the child becomes stiffer or arms and legs always move together.

Backlying can be done:

- on the floor
- in a caregiver's lap
- in a crib

- Semi-reclining. Here you will obtain the benefits of good support and helping the child to see his world. This position can also help muscles which tend to be stiff to be relaxed.

Semi-reclining can be done:

- in a caregiver's lap
- leaning back on bent legs,
- facing caregivers in a baby recliner

- Sitting Up. Sitting is a natural position to use and has many advantages. A child looks more mature in sitting than when lying down. Other people will tend to talk to the child more. Many children are more alert in sitting. Also, if materials are placed on the child's lap, gravity will assist in arm movements. There are also some potential drawbacks to sitting. In a sitting position the demand for head and trunk control increases. If we ask a child to use more muscle power to sit, and at the same time him to use his arms, he may quickly get tired. The rule of thumb is that trunk support should be increased in sitting.

Sitting can be done:

- on the floor
- in your lap
- on a low bench
- in a low child's chair
- in an adapted chair
- in a wheelchair

- Sidelying. In sidelying it is often easier to keep a stiff child relaxed by bending the legs and slowly rocking the trunk. It is also easier to keep attention focused on the activity, since the child's view is more restricted than it is in backlying. If one arm is easier to use, place the child with that arm on top.

Sidelying can be done:

- on the floor
- in your lap
- in a crib
- in a sidelyer

- Lying on Stomach. This is generally not a good position to use, since the demands on the head and trunk muscles are even higher than they are in sitting. Most children with motor impairments will not be able to either hold up their heads or use their arms freely. If they can do this without becoming tired, the position is good, since it promotes strength in the neck and back. Caregivers may choose to put babies on their stomachs for only brief periods of time.

Lying on stomach can be done:

- on the floor
- in a crib
- on your lap
- Deciding which body action will be used.

The possibilities for body action are:

- Eye gazing. The child who can use neither arms nor legs reliably can indicate choices by looking at the desired object.
- Reaching with an arm. This is a natural way to indicate a choice or activate a switch.
- Pointing with one finger. The addition of a pointer finger allows for more precise reading of the child's signals and needs. If a picture board is being used, more pictures can be used if the child can point.
- Using a leg movement. This is the least preferred movement because generally allows for less precision. It can be tried as a last resort if no other movement is available.

As families and professionals try the various combinations of movement in a position for a particular task, they should ask themselves the following questions, which are presented in order of their importance:

1. How clear is the child's response? Do I know for sure what the intention is?
2. How efficient is the response? Does it consume a reasonable amount of energy?
3. How fast is the response? Can it be carried out in a reasonable amount of time so that the flow of the activity can be maintained?

By going through this process parents will be able to select the combinations which work best for them and their child. There is often more than one way to do a given activity.

### **Strategies to Try**

To make it easier to use an arm:

- Increase the amount of trunk support.
- Physically assist the child by holding between elbow and shoulder, guiding the movement.
- If the child is in an upright position, move to semi-reclining or sidelying.

To provide more support to the child's trunk:

- Hold the child close against you, with the child on your lap facing out.
- If the child is in a chair, tuck rolled up towels behind and on either side of the child. Make sure the child's feet have a firm support.
- In sidelying, place the child's back against the wall. A small rolled up towel between the legs may also help.

### **Sample Individualized Family Service Plan (IFSP) Goals**

1. While positioned in a Feederseat, looking at a picture book adapted with voice chips, Joey will use his thumbs to activate the chips to request interaction with his mother.

2. While positioned on her left side in a sidelyer, Nikki will use her right arm to activate switch toys, taking turns with her brother.
3. When provided with a fabric posture support, Crystal will sit upright in a shopping cart for a 30 minute trip to the grocery store.

### Next Steps (Transition Issues)

As the child becomes more efficient in arm use in a given position, start to increase postural demands. This could mean decreasing the amount of support given to the trunk, placing the child in a more upright position, or extending the time the child does the activity.

If the child has a problem making small movements, give some practice doing this by moving toys around, keeping the toys close to his body.

## MOBILITY

### Introduction

One very important way in which babies learn about the world is by moving around in their environment. This gives them opportunities for seeing things from different perspectives, discovering the effect of their actions, and achieving a sense of independence. A baby who cannot move independently needs special assistance in (1) developing the ability to move and (2) being provided with assistive mobility devices. It is often difficult to predict how much independent mobility an infant will ultimately have, but it is not likely that providing assistive mobility will inhibit the development of walking.

### Nuts and Bolts

Every child with a motor impairment should be provided with many opportunities to learn to move from place to place without assistance. In general, the same sequence of activities seen in typically developing babies can be seen in babies with motor impairments, but at a slower rate. Rolling is often the first means of mobility seen, followed by pulling forward on the belly and creeping on all fours. The child will then pull to standing at a support, stand alone, then walk. The severity of a child's motor problem will influence how much of this sequence will be attained. Physical Therapists are trained to help assist children with special needs in obtaining the most independent mobility possible, and will give families individualized suggestions.

For the child who is slow in developing independent mobility, there are several choices. Most parents simply carry the child until he or she becomes too heavy, then purchase a stroller. A standard commercial stroller is frequently a good choice. Some children need more support and can use a soft insert which keeps them in position. Other children need more extensive support, and in this case an adapted stroller can be obtained; this should be done with the assistance of a Physical Therapist.

If it appears that walking will be very delayed, very energy-consuming, or not likely to occur, there are a variety of assistive devices your child can use:

- Adapted Walkers are commercially available, and there are several which are appropriate for very young children. Some require that the baby can use his hands and some do not.
- Wheelchairs are available for very young children as well, and there are three basic types.

1. Self-propelled chairs have standard large wheels which the child pushes independently. These chairs can also be pushed by an attendant.
2. Attendant-propelled chairs are used for children who cannot use their arms well. These frequently have more seating support built into them.
3. Battery-powered chairs are operated by the child, who must control a switch of some kind. Children as young as 15 months old may be able to operate such a chair. The child must have good arm control, adequate cognitive ability, and enough good judgment to avoid running into other people.

When selecting a mobility device, consider:

- the needs and characteristics of the child,
- the environments in which the device will be used,
- the cost of the device,
- any custom adaptations your child will need, and
- how much upkeep the device requires.

There are many products available, and new ones appear regularly. Parents will probably be most satisfied when working with a Physical Therapist or knowledgeable equipment dealer who can help sort through the options.

### Strategies to Try

Regardless of a child's current mobility skills, there are several activities family members can do at home which will help achieve the most independent mobility possible:

Try to strengthen a child's back muscles. Some good ways to do this are:

- encouraging play in tummy-lying position from the very beginning.
- carrying your baby facing away from you at least part of the time.
- keeping your baby's back as straight as possible during sitting.

When picking up your baby or changing positions, move slowly and give the baby time to participate as much as possible in the movement.

Keep your baby's arms and legs flexible. Your Physical Therapist will show you the correct exercises.

When your baby is learning to pull himself forward on his tummy, it will be easier on a hard floor, and if he is wearing smooth clothing.

When your baby is learning to stand at a support like a couch, place toys on the couch to motivate him.

When your baby is learning to move in while standing, pushing a chair or cardboard box may be helpful. (Standard baby walkers are not recommended for any babies, since they are not safe.)

If your child is old enough to want to get into and out of bed alone, consider placing a mattress on the floor.

## Sample Individualized Family Service Plan (IFSP) Goals

1. When provided with a posterior walker, Joey will walk from the kitchen to the family room with light physical support at the shoulders.
2. When placed in a toddler wheelchair, Nikki will propel herself for five minutes at a time at the shopping mall.
3. Billy will "walk" from the couch to the dining room table while pushing a cardboard box containing a five-pound bag of sugar for support.

## Next Steps (Transition Issues)

The transition to a different form of mobility (crawling to walking, for example) will depend on the child's overall progress. Most of the principles of positioning also apply to mobility devices. Over time you would like to decrease the amount of support given, and build up distance and speed. To increase the child's mobility options, move onto more difficult surfaces such as carpet, grass and gravel.

## Resources for Information and Equipment for Positioning and Mobility

### Books and Manuals

Trefler, E. (1992). Positioning, access, and mobility module. Technology in the classroom. In: Applications and Strategies for the Education of Children with Severe Disabilities. Nancy Harlan and Deborah Bruskin, (Eds.) Rockville, MD: American Speech and Hearing Association.

Bergen, A. and Colangelo C. (1982). Positioning the client with central nervous system deficits: The wheelchair and other adapted equipment. Valhalla, NY: Valhalla Rehabilitation Publications, Ltd.

## Supplies, Toys and Equipment

Flaghouse: Special Populations  
150 North MacQuesten Parkway, Mount Vernon, NY 10550  
800-793-7900

Preston: Achieving Basic Concepts  
J.A. Preston Corp.  
P.O. Box 89, Jackson, MI 49204-0089  
800-631-7277

Rifton/Community Playthings  
Rte. 213, Rifton, NY 12471  
914-658-3141

Kaye Products, Inc.  
535 Dimmocks Mill Road  
Hillsborough, NC 27278

The Right Start Catalog

Right Start Plaza  
5334 Sterling Center Drive  
Westlake Village, CA 91361  
800-548-8531

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