

# Practicing Basic Transitions: Foundations for All Movement Skills

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The world of the infant is in his or her parents' arms. Your child spends many hours every day being lifted and carried by you, and played with while sitting in your lap or on the couch or floor next to you. This world of your arms and lap can be an effective starting place for teaching something very important to your infant or young child who continues to wish to be close to you—movement skills.

An infant who has had a difficult start in his or her development might not be as comfortable holding the body upright against the force of gravity. The trunk muscles might seem weaker (floppy), and the arms and legs sometimes stiffen in response to being held. If a child learns only how to position the arms and legs to hold him- or herself stable against gravity, the balance muscles of the trunk don't get a chance to develop strength. In addition, the child will use arm and leg muscles to keep the body in the sagittal (forward and backward) plane of movement. However, to be successful holding and balancing against gravity, your child must learn to be comfortable with experiencing and moving in a lateral plane (sideward).

How do we help your baby learn appropriate movement skills? Therapists using the Neuro-Developmental Treatment (NDT) approach traditionally have followed developmental sequences in treatment planning. For example, if a child could not lift his or her head when lying on the stomach, gaining control of the head in prone would be the first goal addressed rather than working in a sitting or side-lying position. Although therapists use their knowledge and understanding of normal development to help them with their observation skills, current research provides new information about how individuals learn and control movement. Therefore, therapists consider many additional factors, particularly kinesiology and mechanics of movement, when planning treatment.

## Sagittal and Lateral Planes of Movement

It is important to understand the difference between sagittal and lateral planes of movement (Figure 1). Infants and young children with weaker trunk muscles easily learn to use their stronger back muscles (in the upper parts of their bodies) and their stronger hip muscles and behind-knee muscles (in the lower part of their bodies) to help hold themselves stable against gravity. They use these muscles to hold still in certain positions and to move backward and

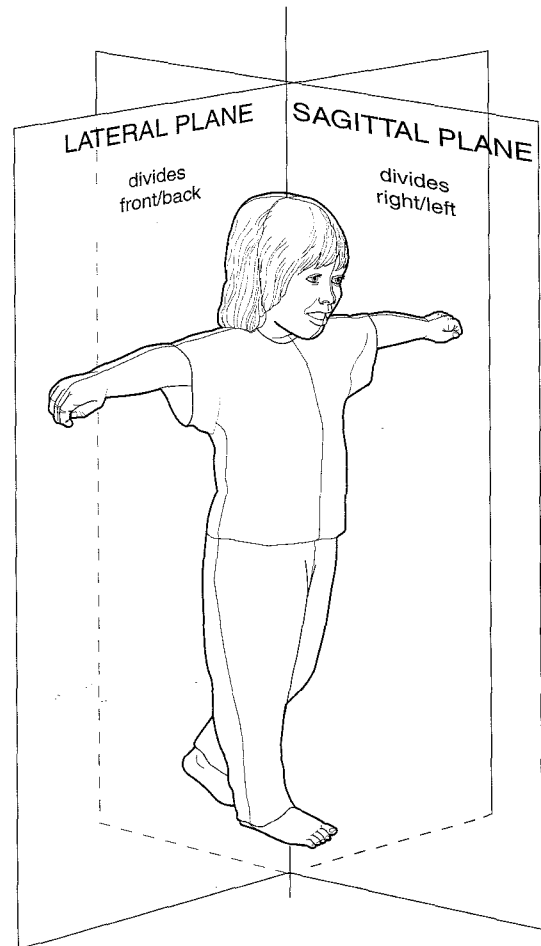


Figure 1. Planes of the body.

forward. Place yourself in sitting, and rock backward and forward. You use hip and knee muscles to help you bend forward and upper back muscles to help you move backward. These muscles keep you balanced without a lot of effort. This is movement in the sagittal (forward-backward) plane.

Now, in sitting again, move from side to side. You will notice that your head tilts one way and your body or trunk curves so that you do not fall over. This is movement in the lateral (side-to-side) plane. It requires more muscle work of the trunk, more effort, and, most importantly, balance.

Now try this side-to-side movement while keeping your head and body very straight. Sit toward one side and notice how this becomes harder. If sideward movement causes



Figure 2. Sitting and moving in the lateral plane.

your child to fall over, he or she will make every effort to try not to go sideward! The child might move the legs wide apart so that the head and trunk are able to move only forward and backward (Figure 2). Because movement in the lateral plane is harder to control, your child will need your help to develop it. (Movement in the forward-backward sagittal plane will develop with or without your help.) Movement side-to-side in the lateral plane is important because it helps prepare for balance in crawling and walking by assisting development of the muscles around the shoulder, trunk, and hips.

### Development of Control in the Lateral Plane

How does control in this lateral plane usually develop, and how can you help your child learn this control? Infants first experience lateral movement when rolling. The first roll often is accidental. The child pushes up on straight arms, loses balance sideward, and falls over to the back. This often is a surprise to the child, who then will experiment with this new movement by pushing up again, taking just enough weight on one arm and adjusting the head and trunk toward the opposite side in order to stay balanced in the tummy position. The child who doesn't like to be on the tummy won't experiment with pushing up high enough on the arms to be in a position to fall over, and thus, won't have the opportunity to experiment with balance in this position. Try to place your child on his or her stomach often.

#### Side-lying lift

To help your child experience this lateral movement, you can roll him to the side each time you lift him up to carry him (Figures 3, 4, and 5). This experience in side lying will give him an opportunity to practice lifting his head and



Figure 3. Side-lying lift: Hold in center of body.



Figure 4. Side-lying lift: Roll onto side.



Figure 5. Side-lying lift: Lift in air while child is on side.



Figure 6. Side-lying carry position.

body sideward as you start to move him into space. These are the same head and trunk movements that a child without disabilities would be practicing in order to stay balanced on the tummy. Now you can carry your child in this side-lying position (Figure 6).

### Side-lying carry

Your child also can experience these head and trunk movements in the lateral plane by the way that you hold him and carry him around. Hold the child on his side with his back against your chest, first toward your right side. Place your right arm under his shoulder and your left arm between his legs. Tilt him so that you feel him want to move his head sideward as he tries to move his head and body into a straighter position against you. Again, the child is using these head and trunk movements to balance and adjust his body against gravity, using the supportive base of your body and arms. Try to give only enough support so that he can do most of it himself and still be successful. Be sure to try this also on the opposite side.

### Side-lying setdown

The third component of this series of movements is called the setdown, which is the reverse of the lift. Hold your child again on his side while placing him slowly back down on the floor. As you near the floor, allow time for the child to adjust to this new position. Watch and wait to see if he will move one arm out or tilt his head and body away from the floor. As the child comes in contact with the floor, lower him slowly so that he can choose either to roll to the tummy or to the back from this side-lying position (Figure 7).



Figure 7. Setdown.

### From side lying to side sitting and more

Advance this entire series in stages as your child becomes stronger in adjusting the head and body, and anticipates and becomes familiar with the routine. Eventually, you will be able to lift your child up to a side sit, carry in side sit, and set down in side-sit positions. This allows the child's shoulders to become strong and stable. The shoulder muscles will help support the head and ribs and allow the muscles around the lower trunk to work effectively. You also can advance this series of lifts, carries, and setdowns to include the all-fours and standing positions as the child adjusts to being higher up against gravity.

The side-lying lift, carry, and setdown series forms a basis for a routine of movements you can practice first by going through the day, step by step. Start by mimicking wake-up time in the morning. Go to your child's crib and lift by rolling her to the side. Move her into the carry position and set her down on her side on the changing table, bed, or floor, wherever you usually change and dress her.

After dressing, roll your child to the side and lift and carry her into the kitchen for breakfast. Place your child into her chair. (As your child gains more skill, you can modify this setdown into the chair.) Then lift her out of the chair, move into a side-lying carry, and go into the living room to place her on the floor in a side-lying position for play. Depending on her skill level, you can leave your child on her side with towel rolls behind her or place her more toward her tummy with a towel roll in front. You also could place her on a firm pillow or wedge to have her body in side lying, but more at an angle so that she can see more easily (and practice lifting her head sideward). Adjust this position often, depending on

the child's play interests and movement skill/tolerance in side lying. The eventual goal, of course, is to incorporate these routines into everyday life.

## **Summary**

Routines form the basis for children to experience and learn about movement. They learn what their bodies are able to do, the limits of their bodies in relationship to the world, and choices about movements that they are able to make even when they have very few movements of their own.

The lift, carry, and setdown routine is the basic building block of movement routines and can help your child develop stability by increasing control of movement in the lateral plane. Movement in the lateral plane prepares the neck, shoulder, and trunk muscles for work in balancing the body against gravity. Balance of the body against gravity allows for more movement options, choices, and experimentation. You are the primary vehicle for your child to experience this movement control through the world of your arms.

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Figure 1 adapted and reprinted with permission from *Spatial, Temporal, and Physical Analysis of Motor Control* by Diane Berg McCormack and Kathy Riske Perrin, published by Therapy Skill Builders, a division of The Psychological Corporation, 1-800-228-0752, ISBN 0761643788.

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Roll from supine to sidelying



Support at hip with downward pressure as you . . .



Support movement up to sidesit