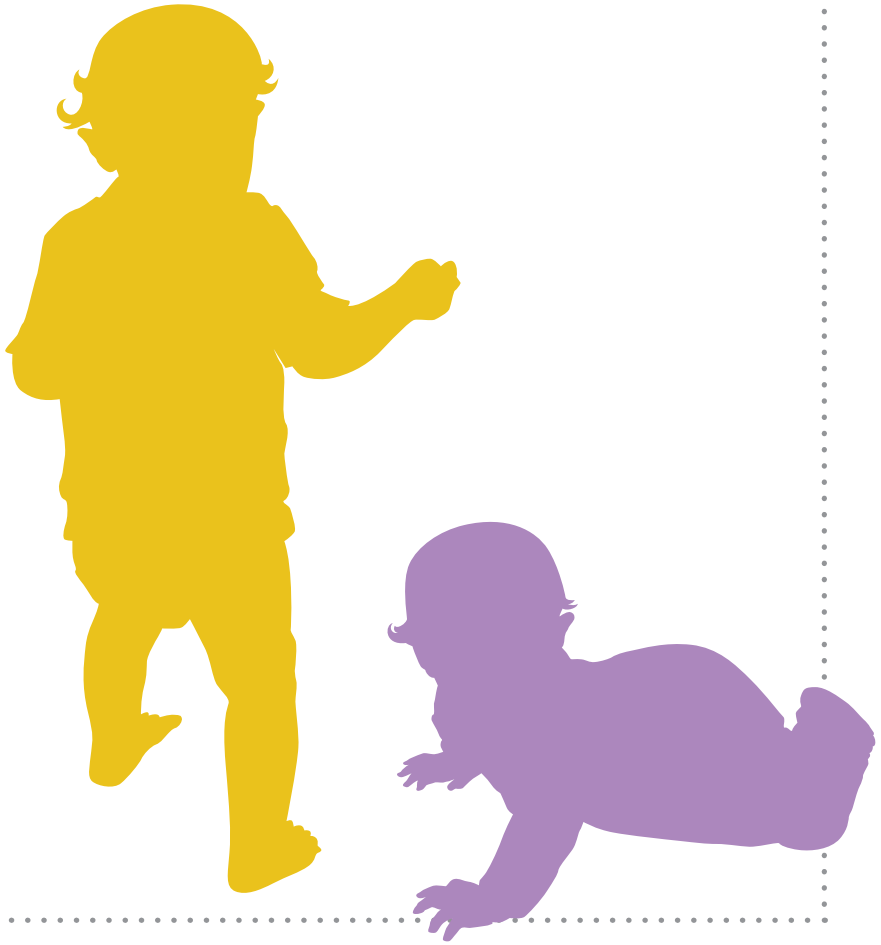
HYPOTONIA WHEEL AND GUIDE

Clinical Recommendations for Infants and Young Children with Hypotonia



Sunny Hill Health Centre for Children

Hypotonia Wheel Guide: Clinical Recommendations for Infants and Young Children with Hypotonia
by Maureen Story, BSR, PT and Lynore McLean BScPT, PT © 2013 Sunny Hill Health Centre for Children

The Hypotonia Wheel was developed by Johanna Darrah, PhD; Maureen O'Donnell, MD, MSc, FRCPC; Joyce Lam, BScOT; Maureen Story, BSR, PT; Diane Wickenheiser, BScPT, PT; Kaishou Xu, PhD; Xiaokun Jin, MD; and Lucy He, MD. The visual representation of the Hypotonia Wheel, as illustrated on Page 8 of this Guide, is © 2013 Johanna Darrah and Maureen Story.

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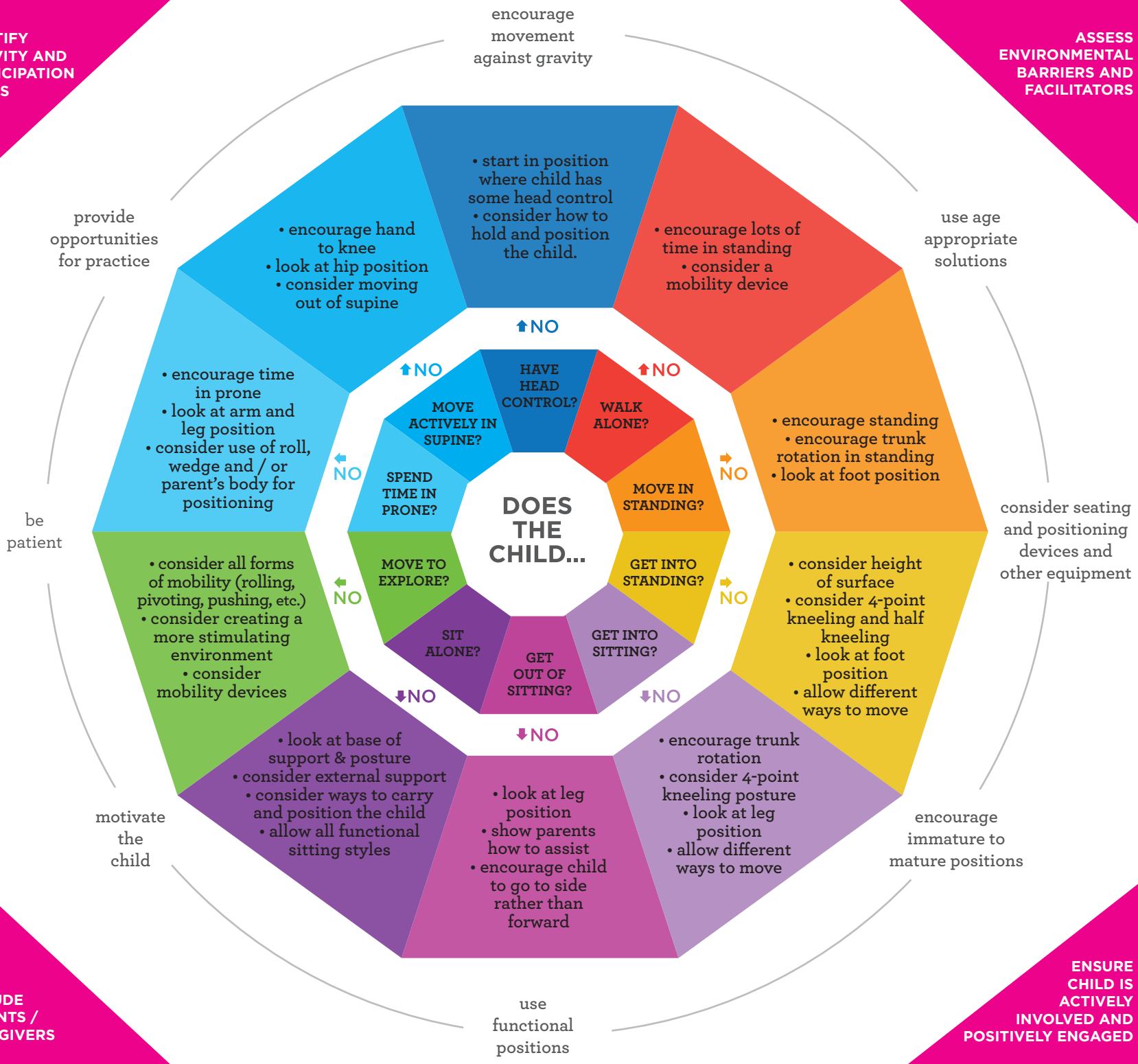
HYPOTONIA WHEEL

0-3 YEARS



SUNNYHILL HEALTH CENTRE FOR CHILDREN

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SUNNY HILL HEALTH CENTRE FOR CHILDREN

INTRODUCTION AND OVERVIEW

WHAT IS HYPOTONIA?

Muscle tone is often defined as the amount of tension or the resistance to stretch in a muscle. Too little tension in a muscle is called low tone or Hypotonia. A child is said to have hypotonia if his muscles are on the loose, floppy side. A child with hypotonia is often described as feeling and appearing as though he is a rag doll or that he seems to slip through your arms when you pick him up. Low muscle tone, is associated with various pediatric disorders with different etiologies and outcomes. Children with low muscle tone often have delayed motor skills, muscle weakness, and / or coordination problems.

WHAT CAUSES HYPOTONIA?

The mechanism leading to hypotonia can be genetic, metabolic, or unknown and the pathophysiology can be within the peripheral or the central nervous system. For example, children with hypotonia can have a progressive muscle disorder such as spinal muscular atrophy, a metabolic disorder such as Prader Willi syndrome or a genetic condition such as Rett's Syndrome. Children with a diagnosis of Down Syndrome often present with low muscle tone that influences their gross motor development. For many infants the hypotonia appears to be idiopathic with no identifiable etiology. This idiopathic type of hypotonia is often termed 'benign congenital hypotonia' (Harris 2008). Children demonstrating global developmental delay often present with muscle hypotonia.

WHAT TO DO ABOUT IT?

Children with hypotonia may exhibit delayed or immature gross motor skills. Pediatric occupational and physical therapists and early intervention consultants often provide intervention strategies which are incorporated into play in order to promote gross motor development and facilitate optimal function. Children

with hypotonia tend to prefer positions such as supine or static sitting as these positions do not require as much active muscle control. To stimulate more active muscle control it is important to encourage children to move against gravity, aid them to move from immature to mature positions, and to narrow their base of support. The Hypotonia wheel guides therapists to do this.

BACKGROUND

THE PARTNERSHIP

The development of the Hypotonia Wheel evolved from an International Health Project partnership between Sunny Hill Health Centre for Children (SHHCC), Vancouver, B.C., Canada, and Guangzhou Children's Hospital (GCH), Guangzhou, Guangdong, China. The international team consists of physiotherapists, occupational therapists and physicians all with experience in paediatrics. After some time of observation and collaboration this team realized that many of the children with delayed motor skills being treated through GCH had low muscle tone, or hypotonia.

HOW DID WE CREATE THE WHEEL?

The local group in Guangzhou requested mentorship in developing strategies and building capacity to support the development of children with hypotonia who receive services through their hospital. After numerous brainstorming sessions with the team it was determined that a clinical pathway for assessing and guiding intervention for children with hypotonia would be beneficial. As there are many etiologies of hypotonia the team decided to focus on those children who present with low muscle tone that is not of a progressive nature. A decision was made to develop a framework of intervention for infants and young children under 3 years of age. The ideas generated for this pathway were based on consensus meetings of pediatric therapists and pediatricians with experience treating children with hypotonia. The consensus meetings included discussion at Guangzhou Children's Hospital and continued discussion in Canada.

FIRST ITERATION

The framework of intervention that was chosen for the Hypotonia Wheel incorporates family centred service ideals and is based on the dynamic systems theory of motor development. This theory proposes that movement is produced

from the interaction of multiple sub-systems within the person, task and environment (Thelen, 1989) and that no sub-system is most important in this process (Thelen, Kelso, & Fogel, 1987). Thus, clinicians need to consider and evaluate all aspects of the task, person, and environment when trying to help a child learn a new motor ability.

Initially, the team worked on creating a linear pathway or algorithm with yes/no answers leading to a specific pathway. Quickly it was determined that because children develop skills in many areas at the same time this was not an accurate representation and was not satisfactory. It is important to encourage therapists to make intervention decisions using a nonhierarchical or dynamic systems approach to provide activity-based functional skill activities. Thus, the idea of an integrated wheel was born.

TESTING THE WHEEL

Once a working model of the wheel was developed, focus groups were held in Vancouver and Guangzhou to review the ideas set forth in the wheel and to gather feedback. The focus groups consisted of experienced pediatric therapists and physicians who work with infants and children with hypotonia. Feedback was also collected from a group of therapists and physicians attending an international conference. This valuable feedback was incorporated into a revised version of the Hypotonia Wheel and also helped to guide the development of this manual.

LITERATURE SEARCH

A comprehensive literature search was completed to determine what intervention strategies are presently being used to address gross motor acquisition in children with hypotonia. A complete summary of the literature and development of the Hypotonia Wheel is described in the journal article “Designing a Clinical Framework to Guide Gross Motor Intervention Decisions for Infants and Young Children With Hypotonia” Darrah, J. et al; Infants and Young Children.

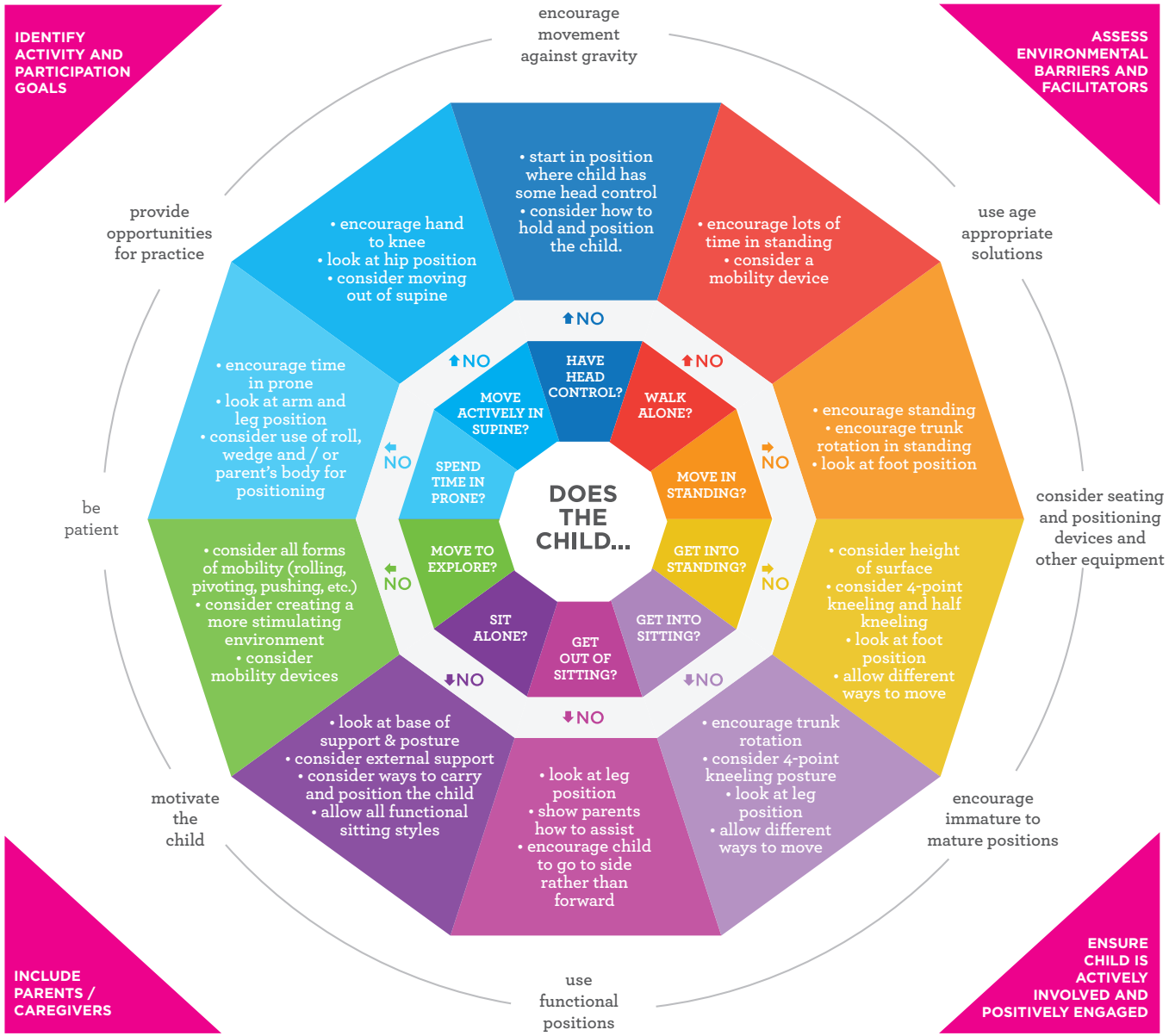
Of the articles found that matched our search terms there were only three articles that matched our vision of providing functional intervention ideas. Eleven articles reported the results of treadmill training to encourage independent

walking with children with Down Syndrome. The remaining articles discussed clinical assessment, range of motion, joint mobility, motor growth curves and commentaries on approach to practice. The 3 articles that matched our vision included many of the intervention ideas that our group had identified as important. Such as, activity-focused functional skills, opportunity for practice, use of environmental context task-specific functional activities, encouraging a more upright posture, encouraging movement and decreasing an infant's base of support. The literature review confirmed the intervention ideas that our group had identified as important but it did not reveal a gold standard therapy program.

THE PURPOSE

The intervention ideas in the wheel are meant to provide guidance for therapists new to this area of practice and encourage creative and innovative clinical decision making. The wheel does not provide an exhaustive list of intervention choices but includes some basic handling and positioning suggestions that therapists might find helpful.

The intervention strategies introduced in these recommendations are NOT appropriate for children with deteriorating conditions such as neuromuscular diseases or metabolic disorders. The ideas are appropriate for infants and children up to 3 years of age presenting with benign congenital hypotonia or diagnoses such as Down Syndrome, Developmental Delay or Cerebral Palsy.



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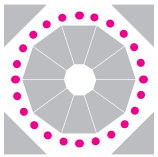
OVERVIEW OF THE HYPOTONIA WHEEL

The Hypotonia Wheel consists of four "Cornerstones," six "Information Bullets" and 10 "Motor Skills" wedges. The cornerstones and information bullets represent broad concepts to guide intervention and are integrated into the subsequent chapters on motor skills.

THE CORNERSTONES

The four cornerstones anchoring the wheel ('identify activity and participation goals,' 'assess environmental barriers and facilitators,' 'include parents' and 'observe infant reaction') represent our philosophical commitment to the principles of family centered care, activity focused interventions, the interaction of the child and the environment and respect for the infant/child. The terms 'activity,' 'participation' and 'environmental barriers and facilitators' incorporate the definitions and principles of the International Classification of Functioning, Disability and Health (WHO 2007). These cornerstones inform the start of any intervention strategy regardless of the age or abilities of the child. They provide the 'background set' for more specific intervention ideas.

THE INFORMATION BULLETS



The 'information bullets' in the outer circle of the wheel represent intervention guidelines that also need to be considered when establishing an intervention program for any child with hypotonia, regardless of the age or skill level of the child. They are ideas that can be incorporated or used for all intervention strategies.

Encourage movement against gravity suggests that children with hypotonia often will show improved muscle tone if they are encouraged to move in positions that are more upright and require more active muscle control. Supine may be a very inactive position compared to sitting or standing against gravity, even for very young infants. The therapist must take his or her cues from the infant and determine if the position is encouraging better movements or stressing the child too much. The therapist must always evaluate the effect that the intervention is having on the child. For good motor learning to occur the child should be

happy and not crying or upset. A crying child often indicates that you are asking the child to do too much.

Use age appropriate solution All children do not have to experience all motor skills. Choose motor skills that are age appropriate and important to the parents.

Consider seating and positioning devices and other equipment Regardless of ability, children need to experience a variety of positions throughout the day, e.g. sitting and standing. If a child is not able to independently attain these positions it may be appropriate to consider the use of equipment.

Encourage immature to mature positions describes the movements observed. Immature movements are characterized by wide based very stable positions. They are often preferred by children with low muscle tone because they are stable, but these immature positions may prevent children from exploring new movement options—they are 'safe.' A therapist can encourage more mature movements by narrowing the base of support, and by encouraging the child to explore different movements and positions. The specific strategy depends on the age of the child and the motor skill that is the goal, but the idea of encouraging more mature movements can be applied to many children exhibiting hypotonia.

Use functional positions Take your cues from the child. The child may spontaneously find a movement solution that works that is not the most mature movement solution. Allow the child to use it and then try to introduce more challenging movements. For example an infant may first learn to move by bottom scooting and not by crawling. Respect the solution—the child may change it once they become more comfortable with movement. There is not one right way to move. Functional success and independence is the goal, not quality of movement.

Motivate the child There must be a reason to move. Children need an environment that is interesting and stimulating to encourage them to explore. Make sure that children have people, toys, music and interesting objects in their environment along with the room to move.

Be patient When introducing a new skill or activity, give the child time to react. Sometimes an activity will make a child feel uncomfortable and she will need time to be assured of safety. It can also take a child more time to process what is being asked of her. Finally, a task or activity may require a child to assimilate or use a number of different skills and this can take time. Be patient.

Provide opportunities for practice To master a skill a child needs repetition and lots of opportunities to practice. Therapy is not effective unless it can be incorporated into the child's daily routine. Teach the parents ways to encourage movement through play, positioning and handling.

THE INNER 'MOTOR SKILLS' CIRCLE

The centre of the wheel provides more specific intervention ideas to encourage the identified motor skills. The motor skills represent fundamental motor abilities that define typical development.

First identify the motor skills that represent age-appropriate goals for a child. If the child is not able to do the motor skill, the box connected to the skill (follow the 'no' arrow) provides some ideas to encourage that motor skill.

These ideas are not exhaustive but rather provide a starting point to encourage the skill. To use the ideas well, a therapist needs to know how to recognize the change from immature to mature movements for each motor ability and how to encourage a more mature movement for each motor skill. These suggestions are only the beginning. If a therapist understands the principles and developmental concepts she or he can think of other ideas to encourage a motor skill.

THE MANUAL

This manual was developed to guide therapists in the use of the hypotonia wheel. It is divided into six chapters. Each chapter begins with an introduction to that area of development; includes a list of goals and guiding principles to help focus the therapist's intervention strategies; some activity suggestions; and finally,

a space for the therapist to record their own ideas, questions or activity suggestions. The activity suggestions provided are NOT an exhaustive list but are meant to foster creativity and problem solving. An accompanying photograph is included to clearly illustrate each activity.

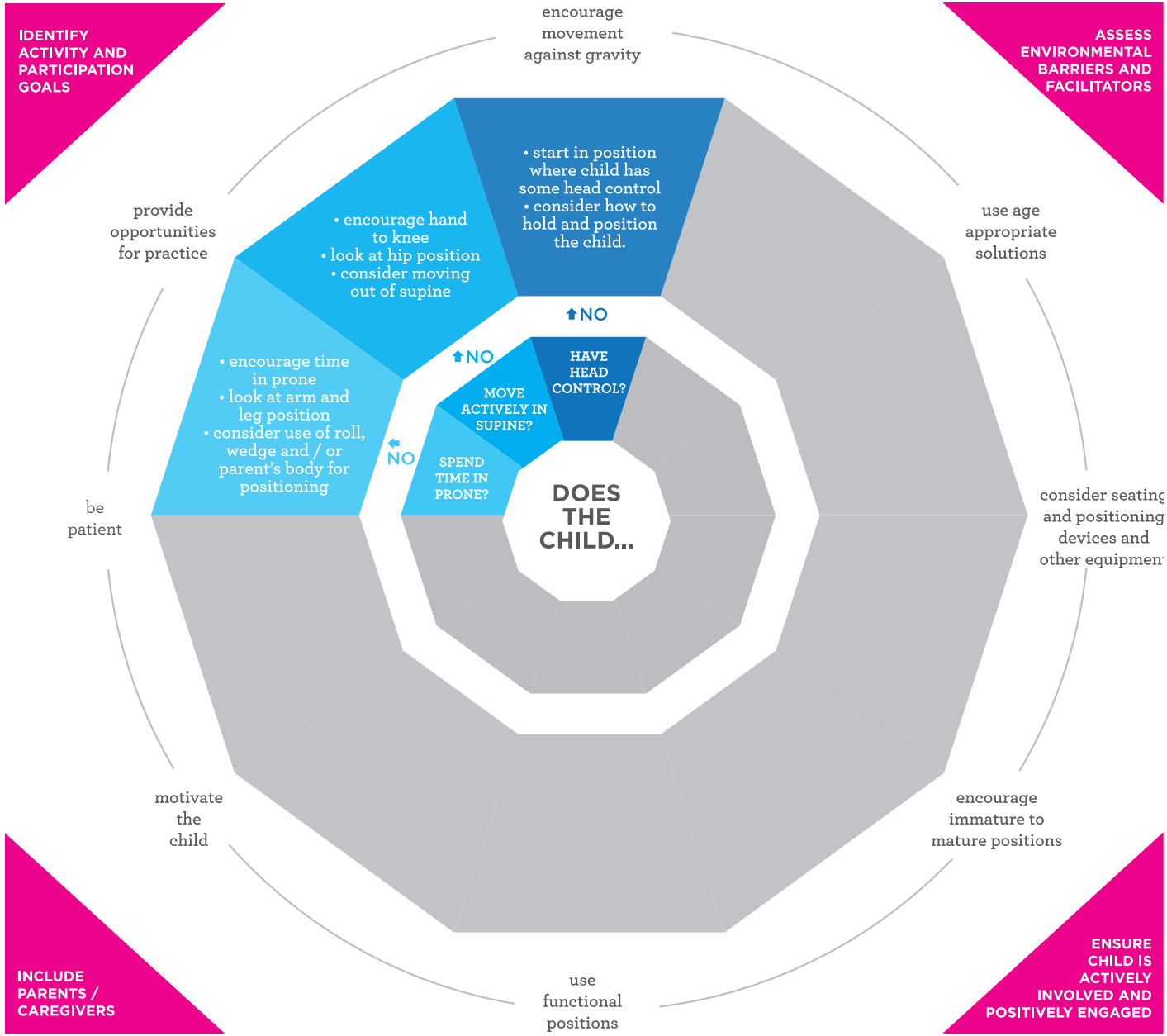
Children's development is not linear or hierarchical; they develop in multiple areas at one time. In order to reflect this reality, some of the wedges have been grouped together in one chapter. For example, Chapter 3 includes wedges "Sit Alone," "Get out of Sitting," and "Get into Sitting."

There is a wide range of gross motor skill development and attainment for children that is considered "normal." Appendix 1 is a chart of normal developmental milestones adapted from the *Motor Assessment of the Developing Infant*. This is provided as a quick reference to aide therapists in assessing a child's gross motor development. Appendix 2 lists additional resources for more in depth information on normal child development.

HYPOTONIA WHEEL AND GUIDE

Clinical Recommendations for Infants and Young Children with Hypotonia

HEAD CONTROL
ACTIVE MOVEMENT IN SUPINE
TIME SPENT IN PRONE | *overview*



HEAD CONTROL
ACTIVE MOVEMENT IN SUPINE
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CHAPTER ONE

HEAD CONTROL
ACTIVE MOVEMENT IN SUPINE
TIME SPENT IN PRONE

INTRODUCTION

HEAD CONTROL

HEAD CONTROL IS THE BASIS FOR INFANT SOCIALIZATION. It allows children to use their eyes to gaze, track, focus on objects and being able to know where their body is in space. (Connolly, 2005). Movement comes from the ability to align one's head with the body and to orient the head in space.

Head control is the ability to extend, flex, laterally flex and rotate the head in a variety of pro- and antigravity positions (Campbell, 2012). A child should be able to hold his head upright, in a mid-line position and in line with his body. He should also be able to rotate his head to either side, and to flex and extend his neck.

Head control should be considered in the following positions: while being carried, in supine, in prone, and in supported sitting and standing.

ACTIVE MOVEMENT IN SUPINE

IN SUPINE, CHILDREN DEVELOP THE ABILITY TO MOVE AGAINST GRAVITY. They are gradually able to bring their hands together in mid-line to hold, look at and play with objects. Also, they gain control and strength in their hips, legs, and abdominal muscles as they kick and bring their feet up to their hands. They start to weight bear on their feet and lift their bottoms off the ground. They learn to weight shift from side to side and rotate their trunk in preparation for rolling. Children with low muscle tone have difficulty moving against gravity which results in them lying with their legs and arms away from their bodies, as if they are stuck to the ground.

TIME SPENT IN PRONE

ULTIMATELY THE SKILLS PRACTICED WHEN IN PRONE LEAD TO FORWARD MOVEMENT. As the child is better able to support his head in an upright position he experiences weight bearing through his arms and thighs. This leads to increasing muscle strength in the shoulders, hips and back which allows him to move into trunk extension and side flexion. Balance and postural control are developed through weight shifting as the child reaches for objects.

With the advent of the "back to sleep campaign," children are spending less time in prone and more time on their backs. Therefore, there is a need to emphasize the importance of daily "tummy time."

GOALS

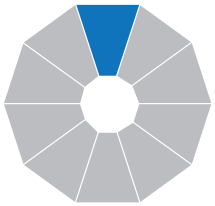
1. Promote the development of head control
2. Encourage the development of muscle control and strength to enable the child to move against gravity
3. Promote the development of trunk rotation
4. Encourage weight bearing through the arms and legs
5. Encourage weight shifting

GUIDING PRINCIPLES

Providing children with experience in a variety of positions will help lay a foundation for movement against gravity. As they develop body awareness and begin to gain muscle control they are motivated to interact with their environment through sight, sound, touch and taste. Generally when an environment is stimulating, children will continually widen their scope of exploration; thus developing new skills.

Children with hypotonia have difficulty initiating movement against gravity. For example, they often appear "stuck to the floor," sprawling out with arms and legs away from their bodies. Their base of support is wide. As a result, they often require additional support to help them bring their limbs closer to their bodies; providing stability and enabling movement.

By changing a child's orientation in space, you can affect the relationship to gravity. For example, if a parent is in a semi-reclined position and is supporting a child in prone on his chest the influence of gravity is diminished (see page 29). By placing a child in prone on the floor, the influence of gravity is increased (see page 30).






HEAD CONTROL — CARRYING

DESCRIPTION

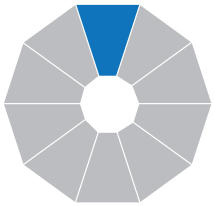
Carry the child looking away from you with his back and head supported against your body.

ACTIVITY SUGGESTIONS

- Walk around your environment providing visual stimulation for your child. For example, look out a window, look in a mirror, look at different objects or people.
- Move in different ways while holding your child. For example, walk quickly, walk slowly, dance, walk in a circle.
- Talk to your child about what he is seeing. Allow him to reach for and touch objects.
- Start with short periods and let your child rest against you as needed.

PROGRESSION

Shift child in your arms to position them slightly "off balance." This will encourage him to use his muscles to bring his head back into mid-line.



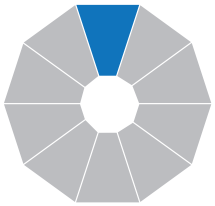
HEAD CONTROL — CARRYING

DESCRIPTION

Carry the child looking away from you with his back and head supported against one arm and bottom supported on one hip; with legs bent.

ACTIVITY SUGGESTIONS

- Walk around your environment providing visual stimulation for your child. For example, look out a window, look in a mirror, look at different objects or people.
- Move in different ways while holding your child. For example, walk quickly, walk slowly, dance, walk in a circle.
- Talk to your child about what he is seeing. Allow him to reach for and touch objects.



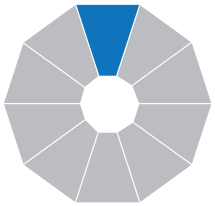
HEAD CONTROL — CARRYING

DESCRIPTION

Carry the child with her facing you. Support her head with your hand if necessary.

ACTIVITY SUGGESTIONS

- Walk around your environment providing visual stimulation for your child. For example, look out a window, look in a mirror, look at different objects or people.
- Move in different ways while holding your child. For example, walk quickly, walk slowly, dance, walk in a circle.
- Talk to your child about what he is seeing. Allow him to reach for and touch objects.



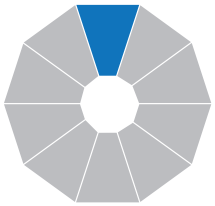
HEAD CONTROL — SUPPORTED SITTING

DESCRIPTION

Sit the child on your lap. Face the child away from you or towards you.

ACTIVITY SUGGESTIONS

- Engage the child with an interesting toy or activity to encourage him to look in different directions and move his head.



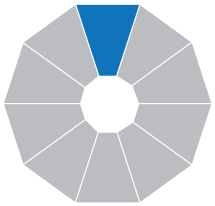
HEAD CONTROL — SUPPORTED SITTING

DESCRIPTION

Sit your child in an infant seat (e.g. supported high chair, "bouncy chair", swing, or stroller) with her trunk and head supported if needed.

ACTIVITY SUGGESTIONS

- Engage the child with an interesting toy or activity to encourage her to look in different directions and move her head.
- As the child is better able to hold her head up, bring her position gradually more upright so that she has to work against gravity.



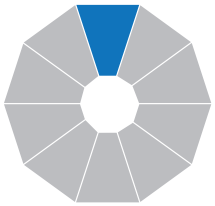
HEAD CONTROL — SUPPORTED SITTING

DESCRIPTION

Sit on the floor with knees bent, leaning back on furniture. Sit the child on your lap.

ACTIVITY SUGGESTIONS

- Engage the child with an interesting toy or activity to encourage her to look in different directions and move her head.
- As the child is better able to hold her head up, bring her position gradually more upright so that she is having to work against gravity.



HEAD CONTROL — SUPPORTED STANDING

DESCRIPTION

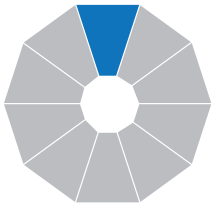
Hold the child in standing while you are sitting on the floor. Face the child towards you or away from you.

ACTIVITY SUGGESTIONS

- Talk to the child and encourage her to take weight through her feet.

PROGRESSION

Gradually lower your hands from under her arms to her chest and then pelvis.

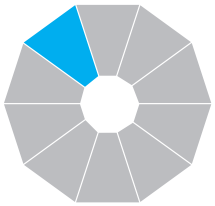


HEAD CONTROL — SUPPORTED STANDING

DESCRIPTION
Hold the child in standing on your lap. Face the child towards you or away from you.

ACTIVITY SUGGESTIONS
- Talk to the child and encourage him to take weight through his feet.

PROGRESSION
Gradually lower your hands from under his arms to his chest and then pelvis.
Encourage weight shifting and balance reactions by alternating the height of your knees.



ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

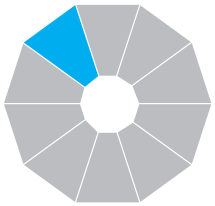
Support the child on her back with her chin in a tucked position. You may have to place a small folded towel or blanket under her head to encourage a chin tucked position so that she can see her body and environment.

ACTIVITY SUGGESTIONS

- Provide interesting toys for the child to look at. Move these objects from side to side to encourage her to follow with her eyes and rotate her head from side to side. Also, move these objects from "head to toe" to encourage her to look up and down.
- Bring the child's hands to mid-line to encourage self-exploration.
- Bring the child's hands to mid-line and place a toy in his hands for him to explore and/or hold.
- Encourage the child to bring their hands to mid-line.
- Encourage the child to reach for toys/objects.

PROGRESSION

Encourage reaching to either side, then reaching across the body.






ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

Support the child on his back on your lap with his head at your knees. Raise your knees up higher to encourage him to strengthen his muscles.

Support the child such that her head is higher than her body (e.g. wedge) so that she is able to see her environment.

ACTIVITY SUGGESTIONS

- Provide interesting toys for the child to look at. Move these objects from side to side to encourage her to follow with her eyes and rotate her head from side to side. Also, move these objects from "head to toe" to encourage her to look up and down.
- Bring the child's hands to mid-line to encourage self-exploration.
- Bring the child's hands to mid-line and place a toy in her hands for her to explore and/or hold.
- Encourage the child to bring her hands to mid-line.
- Encourage the child to reach for toys/objects.

PROGRESSION

Reaching in front, then reaching to either side, then reaching across the body.

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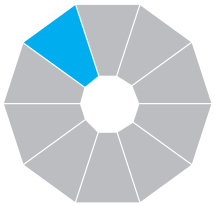


ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

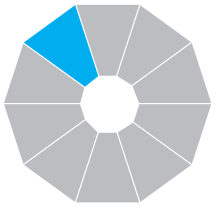
Support the child on his back. Place a folded towel under his head, if necessary, to support him in a chin-tucked position.

ACTIVITY SUGGESTIONS

- Place your hands under the child's bottom with his knees bent in order to bring his feet closer to his hands. Encourage him to reach for and grab his feet.

PROGRESSION

Gradually decrease the amount of support as the child is able to bring his feet towards his hands independently.



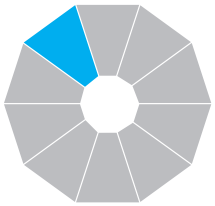
ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

Lay the child on his back.

ACTIVITY SUGGESTIONS

- Place toys on either side of the child where he can see them but just out of his reach. Encourage the child to reach for the toys with either hand; either reaching across his body and rotating his trunk or stretching to the side.





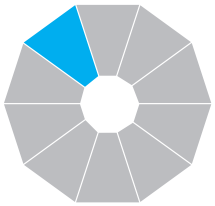

ACTIVE MOVEMENT IN SUPINE

DESCRIPTION
Lay the child on her back.

ACTIVITY SUGGESTIONS
- Place your hands under the child's bottom and rotate the hips from side to side.

PROGRESSION
Bend up one hip and bring across the child's body. Alternate sides.

After helping the child to bring his hip and leg over to the side, support the child in side lying for play. If necessary, place a rolled towel/blank behind the child's back to maintain this position.



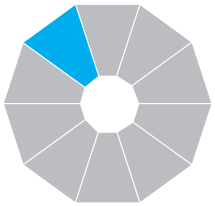
ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

Lay the child on his back.

ACTIVITY SUGGESTIONS

- Encourage the child to kick his legs by holding a toy where he can hit it with his feet. Musical toys can be a great motivator.



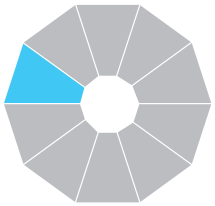
ACTIVE MOVEMENT IN SUPINE

DESCRIPTION

Lay the child on her back.

ACTIVITY SUGGESTIONS

- Play with the child by "clapping" her feet together. Place the child's feet on the ground allowing her to experience pressure from the floor or other surface through her feet. Place your hands on the child's feet and gently apply pressure.
- Allow the child time to explore the floor with her feet, to respond to your "clapping" or touching of her feet.



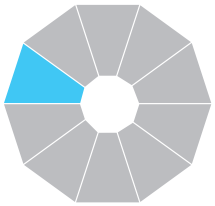
TIME SPENT IN PRONE

DESCRIPTION

While lying on your back or leaning back against something for support, place the child on her stomach on your chest with her head facing you.

ACTIVITY SUGGESTIONS

- Talk to the child and encourage her to look at you.
- Rock from side to side or bounce gently and in a controlled manner. Give the child an opportunity to react to the movement.



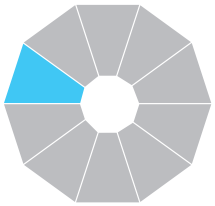
TIME SPENT IN PRONE

DESCRIPTION

Place the child on her tummy on the floor. If she is not able to lift her head up or does not like being in this position, roll up a small towel or blanket and place it under her arms and chest.

ACTIVITY SUGGESTIONS

- Provide interesting toys for the child to look at both in front and to the sides.



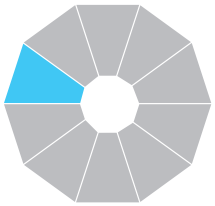
TIME SPENT IN PRONE

DESCRIPTION

Place the child on his tummy across your lap while sitting on the floor or on a chair.

ACTIVITY SUGGESTIONS

- Place the child forward on your lap (so less of his body is supported by your legs and he is supporting more of his body weight on his arms/hands).



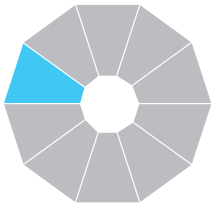
TIME SPENT IN PRONE

DESCRIPTION

Place the child on his tummy across your lap.

ACTIVITY SUGGESTIONS

- Talk to the child and encourage him to look up. Stroke / rub his back and neck muscles to encourage him to lift his head. Hold a toy where the child can see it and gradually raise it higher to encourage him to lift his head.



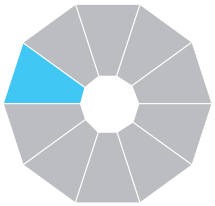
TIME SPENT IN PRONE

DESCRIPTION

Place the child on a small wedge on her tummy with her shoulders and arms over the top of the wedge.

ACTIVITY SUGGESTIONS

- Provide interesting toys, in front and to the sides, for the child to look at or reach for.



TIME SPENT IN PRONE

DESCRIPTION

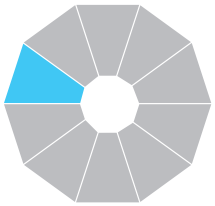
Support the child on her tummy on a therapy ball or therapy roll.

ACTIVITY SUGGESTIONS

- Slowly roll the child forward encouraging her to extend her arms and weight bear through flat hands.
- Slowly tilt the ball or roll to one side encouraging her to extend the arm on that side and weight bear through a flat hand.

PROGRESSION

While the child is weightbearing through her hands, encourage her to reach for a toy / object with one hand.



TIME SPENT IN PRONE

DESCRIPTION

While sitting on the floor, place the child over one leg so that her knees and hands are touching the floor.

ACTIVITY SUGGESTIONS

- Encourage weightbearing through the knees and hands.
- Provide interesting toys or books for the child to look at or play with.

CHAPTER ONE

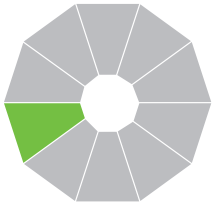
HEAD CONTROL
ACTIVE MOVEMENT IN SUPINE
TIME SPENT IN PRONE

NOTES

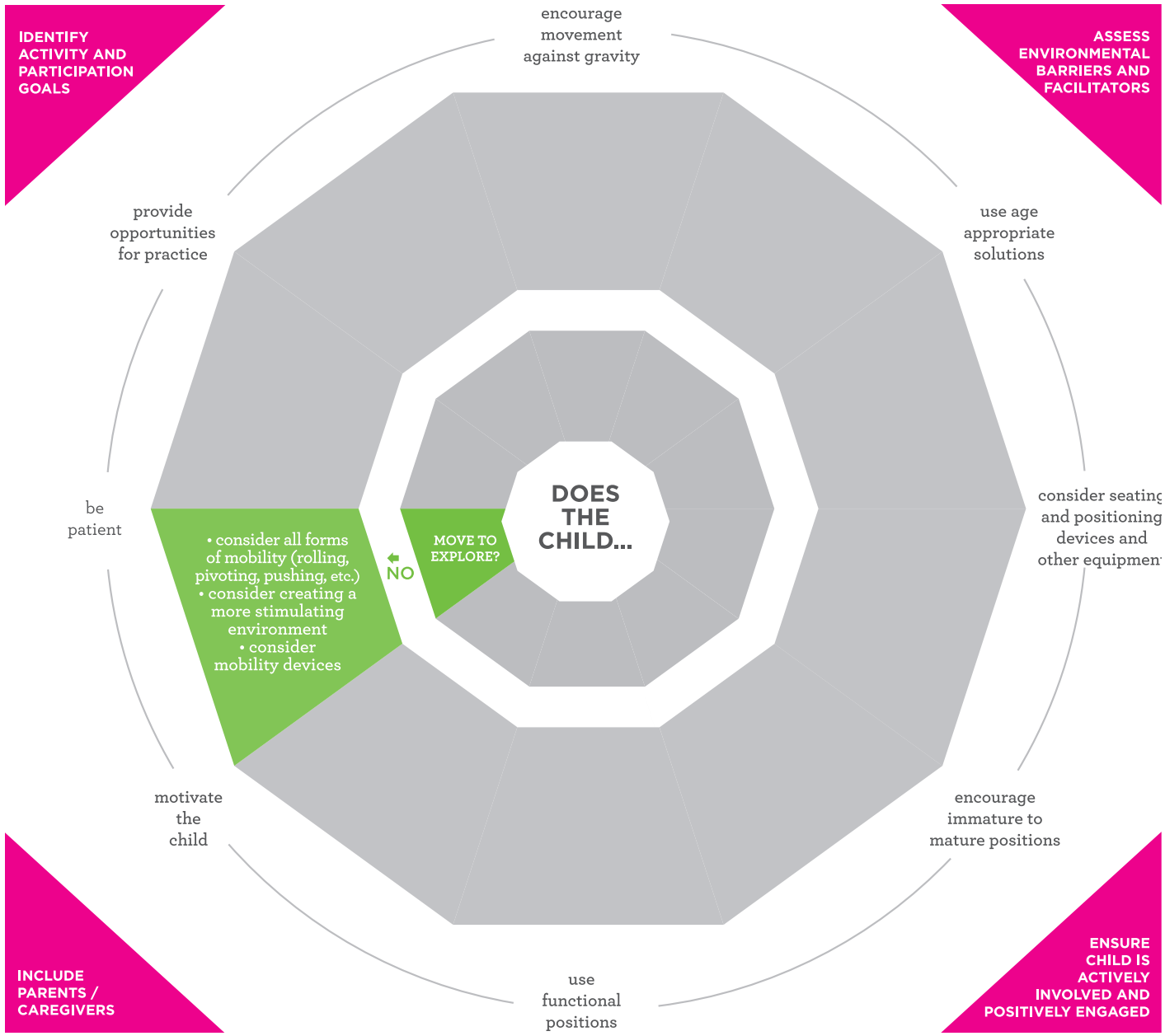
Use the following pages to make notes as needed.

SUNNY HILL HEALTH CENTRE FOR CHILDREN

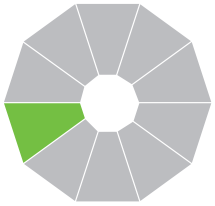
SUNNY HILL HEALTH CENTRE FOR CHILDREN



MOVE TO EXPLORE | *overview*



SUNNY HILL HEALTH CENTRE FOR CHILDREN



CHAPTER TWO

MOVE TO EXPLORE

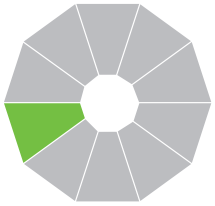
INTRODUCTION

MOVE TO EXPLORE IS ALL ABOUT MOTIVATION. You need to provide a varied and stimulating environment to encourage a child to move, explore and discover. Movement can start as accidental and then with repetition become intentional (e.g. When in supine, a child brings her feet up to her mouth and the weight of her legs causes her to accidentally roll to her side). There is no right or wrong way to move. Some children roll, pivot, bum scoot, crawl, commando crawl or bear walk to name just a few methods of mobility. All should be encouraged. Ultimately, initial movement is integrating weight shifting with balance skills and coordinating upper and lower extremities.

As a child becomes more independently mobile, he is learning about the relationship between his body and his environment. He discovers concepts such as “going over”, “going around” and “going through”; in addition, he learns about size and texture (Diamant, 1992).

GOALS

1. Encourage movement
2. Provide a stimulating environment to develop cognitive, visual and perceptual skills
3. Encourage weight shifting, trunk rotation, and development of balance
4. Develop over-all muscle strength

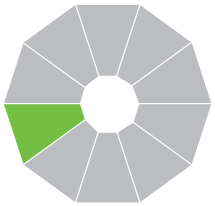


GUIDING PRINCIPLES

Providing children with time on the floor is essential for developing any kind of movement. On the floor, children have the opportunity to explore and experiment. It is important to change a child's position frequently throughout the day and to provide a variable environment, encouraging exploration in, under and on a variety of surfaces.

Movement can also be encouraged through scooter boards, castor carts, or mobility play toys.

If a child does not have a motivating environment, he will be less likely to move on his own.



MOVE TO EXPLORE

DESCRIPTION

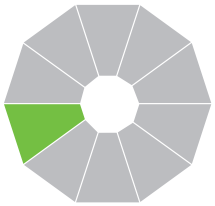
Lay the child on his back.

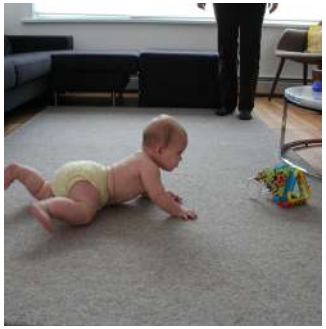
ACTIVITY SUGGESTIONS

- Place toys on either side of the child where he can see them but just out of his reach.
- Encourage the child to reach for the toys with either hand; either reaching across his body and rotating his trunk or stretching to the side.

PROGRESSION

Encourage the child to roll from his side onto his tummy.





MOVE TO EXPLORE

DESCRIPTION

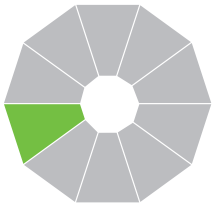
Place the child on her stomach.

ACTIVITY SUGGESTIONS

- Place toys on either side of the child such that she has to pivot on her tummy to reach them.
- Encourage her to reach for the toys.

PROGRESSION

Place toys in front, just out of reach so that the child has to pull forward to reach them.



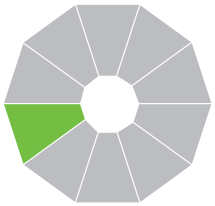
MOVE TO EXPLORE

DESCRIPTION

Rolling.

ACTIVITY SUGGESTIONS

- Use a toy to get the child's attention. Move the toy to the side in order to encourage the child to roll. Use a physical prompt to initiate rolling if necessary.
- Once the child has mastered rolling from his tummy to his back or the opposite, encourage the child to roll consecutively by placing toys out of his reach or by giving him a physical prompt.






MOVE TO EXPLORE

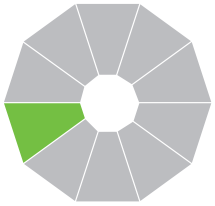
DESCRIPTION

Supported rocking in 4-point, crawling.

Bum scooting, crawling , bear walking.

ACTIVITY SUGGESTIONS

- Place toys out of the child's reach and encourage her to move towards the toys.
- Sit out of reach of the child and encourage her to come to you.



CHAPTER TWO
MOVE TO EXPLORE

NOTES

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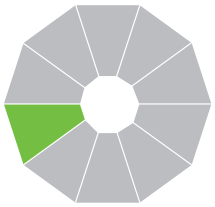


MOVE TO EXPLORE | *notes*

SUNNY HILL HEALTH CENTRE FOR CHILDREN

MOVE TO EXPLORE | *notes*

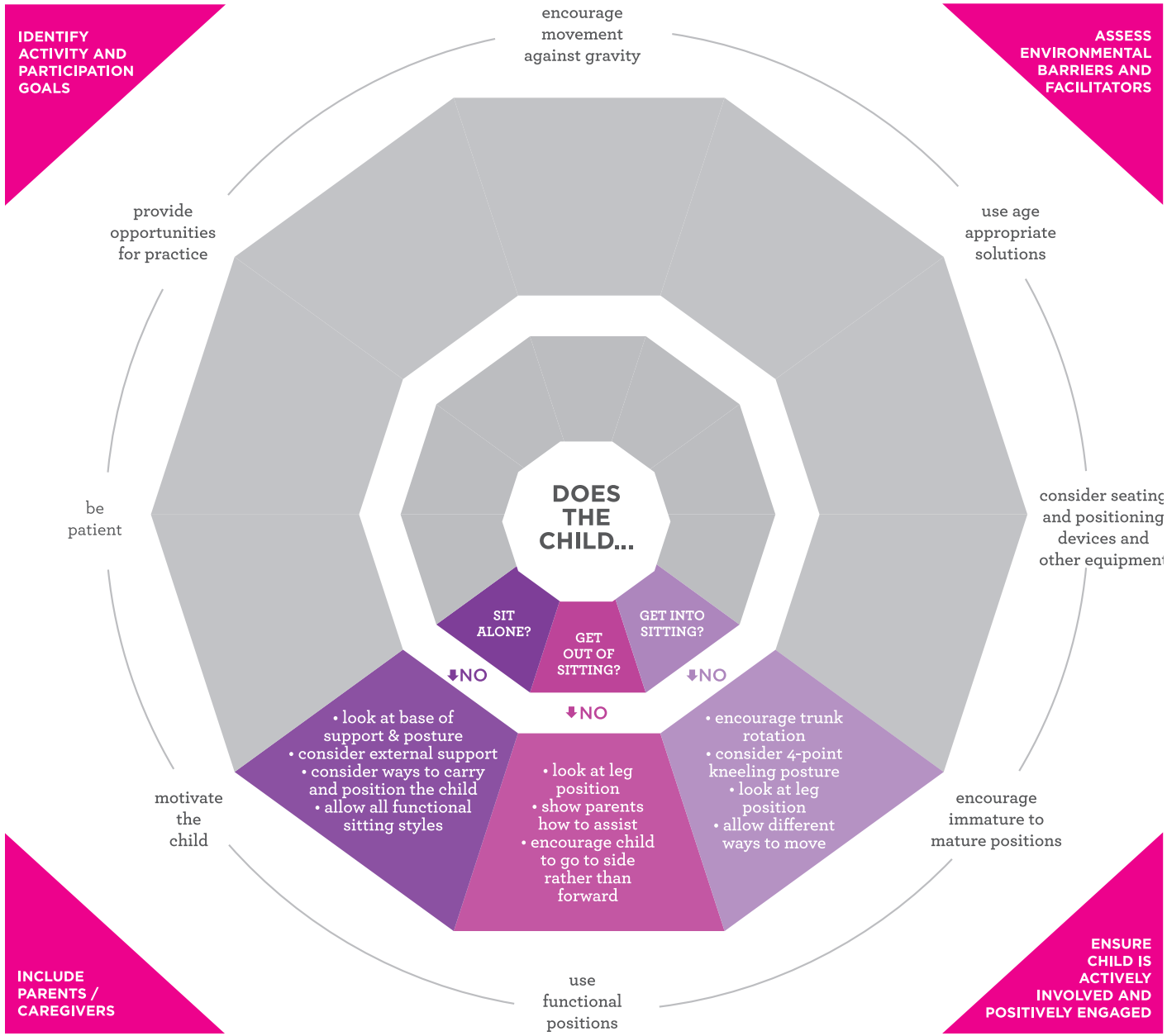
SUNNY HILL HEALTH CENTRE FOR CHILDREN

HYPOTONIA WHEEL AND GUIDE

Clinical Recommendations for Infants and Young Children with Hypotonia

SIT ALONE
GET OUT OF SITTING
GET INTO SITTING

overview



SIT ALONE
GET OUT OF SITTING
GET INTO SITTING
Page 49

SUNNY HILL HEALTH CENTRE FOR CHILDREN

CHAPTER THREE

SIT ALONE
GET OUT OF SITTING
GET INTO SITTING

INTRODUCTION

IN SITTING, A CHILD IS WELL POSITIONED TO INTERACT WITH HIS ENVIRONMENT AND THE PEOPLE AND OBJECTS IN IT. As a child's stability increases, he reaches for toys and subsequently develops more muscle strength, head and trunk control, and balance. Through this increase in strength and control the child becomes more comfortable and begins to explore movement. By shifting his weight and reaching outside of his base of support, a child initiates movement out of sitting. When a child is stable in sitting, he uses his hands to play with toys and objects; providing an opportunity for fine motor development.

GOALS

The goals of sitting are to:

1. Improve head and trunk control
2. Encourage weight shifting, trunk rotation, and development of balance
3. Encourage fine motor development
4. Further develop muscle strength of the trunk, hips, neck
5. Encourage movement in and out of sitting

GUIDING PRINCIPLES

Children sit in many different positions. A child with hypotonia may choose a position that is comfortable and stable for her. It doesn't matter which position she chooses, but she must be encouraged to move in and out of this position. For example, some children with hypotonia naturally sit with a wide base of support.

This is a position where they do not have to work as much against gravity, and creates a feeling of stability and safety. Sometimes such a position can interfere with active movement. Helping a child to narrow her base of support will encourage movement. This can be done through positioning, such as placing the child in or encouraging her to sit in side sitting. Alternately, the use of "thigh bands" or pinning pants together can be used when a child has excessive hip abduction.

If a child is not able to sit on her own then provide her with the external support she needs in order to maintain a seated position. Gradually, decrease the amount of support as her skills and stability increase.

A child with hypotonia might be able to sit independently by propping with her arms. While this is independent, it is not a functional position as she is "stuck"; not able to play with her hands or move in and out of this position. Having the opportunity to practice sitting with some support can facilitate an increase in trunk strength and control and give her an opportunity to play with her hands.

Trunk rotation is a foundation and precursor to movement. Sitting provides an opportunity for children to practice and experience this skill. They can be encouraged to rotate through intentional interaction and placement of toys.

It is important for a child to be able to develop his fine motor skills as he is developing his gross motor skills; therefore consider using supported sitting equipment to enable him to develop these fine motor skills. Providing external support will allow him to focus energy on fine motor activity rather than maintaining trunk balance.

When learning a new developmental skill, such as getting in and out of sitting, children need time to practice. They also need time to respond to hands on prompts and guidance. Finally, it is important to provide varying and interesting motivation to encourage movement.

SIT ALONE

DESCRIPTION

Carry the child on one hip, facing away from you.

ACTIVITY SUGGESTIONS

- Encourage the child to reach for objects and rotate her trunk.

PROGRESSION

Gradually decrease the amount of support.




SIT ALONE

DESCRIPTION

While lying on your back with your knees bent, support the child in sitting with his back against your thighs.

ACTIVITY SUGGESTIONS

- Talk to the child, sing songs, play "games".
- Offer the child toys to hold onto.

PROGRESSION

Start with supporting the child under the arms and gradually lower your hands down his body to decrease the amount of support.

SIT ALONE

DESCRIPTION

While sitting on the floor with your legs in a "V," support the child in sitting with her back to you. Either have the child supported against your body or hold the child under her arms.

ACTIVITY SUGGESTIONS

- Place toys around the child (in front and to the sides) and encourage her to pick them up and play with them.

PROGRESSION

Start with supporting the child under the arms and gradually lower your hands down her body to decrease the amount of support.

Start with having toys that are very close to the child or even on her lap. Gradually, move the toys so that she has to reach for them.




SIT ALONE

DESCRIPTION

While sitting on a chair, support the child on your lap:

- facing away from you
- facing you
- sitting on one leg

ACTIVITY SUGGESTIONS

- Talk to the child, ask her to reach and touch different parts of your face/body. Have toys/objects on the arm rests to encourage reaching and rotation.

SIT ALONE

DESCRIPTION

Have the child sitting on a chair/sofa and sit facing her, supporting her as necessary.

ACTIVITY SUGGESTIONS

- Talk to the child, ask her to reach and touch different parts of your face/body.
- Have toys/objects on the arm rests to encourage reaching and rotation.

SIT ALONE

DESCRIPTION

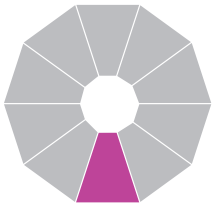
Have the child sitting on the floor and prop/support with firm pillows OR in a laundry basket OR in an inner tube OR child seat.

ACTIVITY SUGGESTIONS

- Place toys around the child (in front and to the sides) and encourage her to pick them up and play with them.

PROGRESSION

Gradually decrease the amount of support.



GET OUT OF SITTING

DESCRIPTION

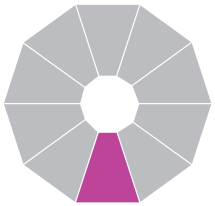
While sitting on the floor with your legs in a "V", have the child in sitting with her back to you in between your legs.

ACTIVITY SUGGESTIONS

- Place toys on either sides of your legs and encourage the child to reach over your leg for the toys with either hand. Encourage the child to weight bear on the hand/arm to the side that he is reaching.

PROGRESSION

Assist the child in getting into a 4-point position as he is reaching for the toys.






GET OUT OF SITTING

DESCRIPTION

When the child is sitting on the floor, place toys just out of her reach. Place the child in:

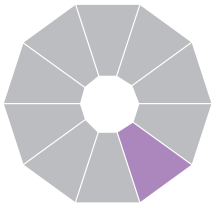
- ring sitting
- long legged sitting
- side-sitting

ACTIVITY SUGGESTIONS

- Give her support such that she will reach beyond where she is comfortable/stable.

PROGRESSION

Place toys further outside of her reach. Decrease the amount of support provided. Encourage / support the child in getting into a side-sitting position and into a 4-point position.






GET INTO SITTING

DESCRIPTION

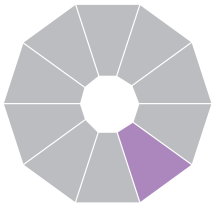
Place the child on her side and place one hand on the upper hip and the other hand underneath her trunk.

ACTIVITY SUGGESTIONS

- Push down gently on the hip while lifting the trunk up in order to guide the child into a seated position. Allow the child to react to this movement so that she will put her arm out to help bring herself into sitting.

PROGRESSION

Gradually decrease the amount of support/guidance into the sitting position.



GET INTO SITTING

DESCRIPTION

Place the child in a 4-point position over one leg or a roll or on his own.

ACTIVITY SUGGESTIONS

- Gently guide the child with your hands from 4-point into side sitting.
- Hold a toy so the child can see it; gradually raise it higher to encourage the child to look up and reach so that he naturally goes into a side-sitting position.

CHAPTER THREE

SIT ALONE
GET OUT OF SITTING
GET INTO SITTING

NOTES

Use the following pages to make notes as needed.

SUNNY HILL HEALTH CENTRE FOR CHILDREN

SIT ALONE
GET OUT OF SITTING
GET INTO SITTING

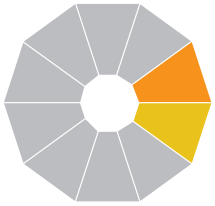
notes

SUNNY HILL HEALTH CENTRE FOR CHILDREN

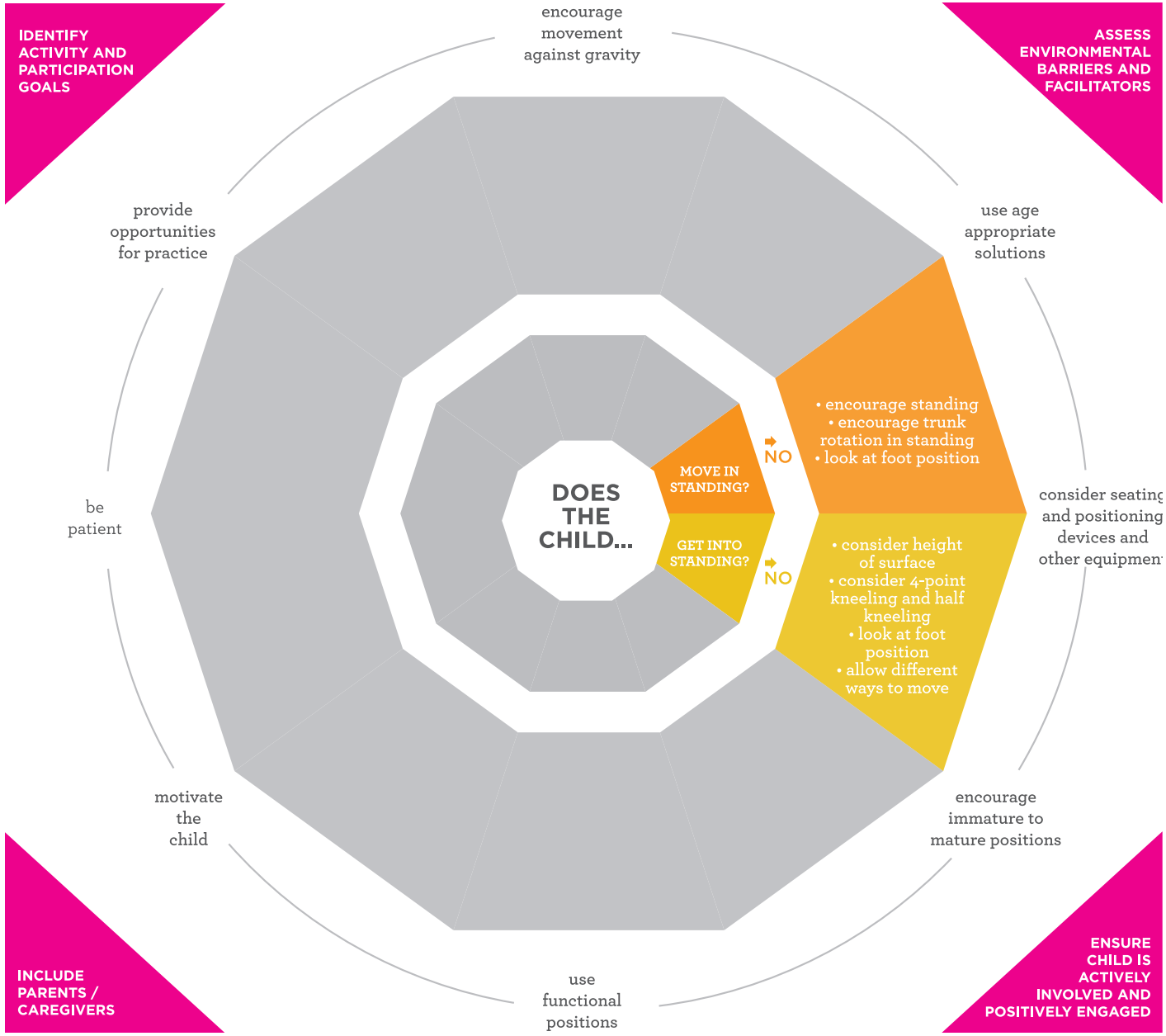
SIT ALONE
GET OUT OF SITTING
GET INTO SITTING

notes

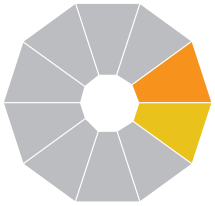
SUNNY HILL HEALTH CENTRE FOR CHILDREN



GET INTO STANDING
MOVE IN STANDING | *overview*



SUNNY HILL HEALTH CENTRE FOR CHILDREN



CHAPTER FOUR

GET INTO STANDING MOVE IN STANDING

INTRODUCTION

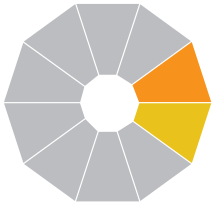
A CHILD CAN ACHIEVE AN UPRIGHT POSTURE THROUGH A NUMBER OF DIFFERENT POSITIONS, SUCH AS 4-POINT KNEELING, HIGH KNEELING AND HALF-KNEELING. Time spent in kneeling, getting into standing and in standing itself, promotes the anatomical development of the hip joint and alignment of the foot and ankle. In addition, coordination of the hip and leg muscles is refined. It is important that the child experiences weight bearing so that a relationship between the feet and the supporting surface is developed (Boehme, 1990). As the child learns to weight bear, he develops control in all the joints of the lower extremities which leads to increased muscle strength, balance and coordination. A child can practice supported standing at any point in his development.

In preparation for movement, it is important for a child to experience weight shifting in an upright position. A child will learn to weight shift both front to back and side to side. Reaching for objects encourages a child to shift his weight and rotate his trunk, subsequently balancing on legs and feet (Diamant, 1992).

By achieving a standing position, a child can better see his environment; discovering a larger world to explore.

GOALS

1. Encourage weight bearing through the knees and feet
2. Encourage movement into standing
3. Encourage weight shifting, trunk rotation, and development of balance
4. Further develop muscle strength of the trunk and lower extremities
5. Encourage movement in standing



GUIDING PRINCIPLES

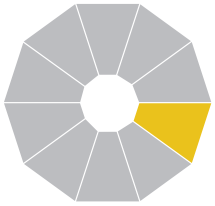
Standing is a great position for children with hypotonia as they have to work against gravity. Children with hypotonia may find it difficult to get into standing. It requires significant muscle strength and joint stability in order to overcome gravity, thus it is important to provide sufficient motivation. Children find their own ways of getting into or out of standing which may not include 4-point, high or half-kneeling. Some children pull themselves into standing using their arms rather than their legs. Getting into or out of standing should be encouraged regardless of the method.

Once in standing, children with hypotonia may lean or prop themselves against furniture as they may not have the core stability to maintain the position. . In addition, they may lock their hips and knee joints or assume a wide stance to create stability. These strategies will limit their ability to move as there is no opportunity to weight shift or rotate their trunk.

Providing children with sufficient external support will give them the stability they need to attempt movement. As they practice, they will develop muscle strength and control which can lead to improved joint stability. Motivation can be the key to helping hypotonic children out of these "stuck" positions and creating a desire for movement. Movement can also be encouraged by helping children narrow their base of support.

Children may need help to problem solve a way into standing: e.g. children with hypotonia often try to pull to standing from a ring sitting posture which is difficult. Shifting their position to side sitting or changing the surface height may encourage them to pull to standing.

As children spend more time in standing, it is important to monitor their foot position and alignment. Children with hypotonia often have flatter feet and tend to pronate. This may resolve as they gain muscle strength and control. However, if it does not resolve, it is important to consider footwear and additional foot support. This might include shoe inserts, ankle supports or orthotics.



GET INTO STANDING

DESCRIPTION

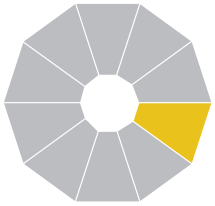
Sit in long sitting on the floor, with your legs in a "V," place the child in sitting in between your legs with her back to you.

ACTIVITY SUGGESTIONS

- Place a toy on your leg or on the floor and encourage the child to reach for the toy.
- As she reaches, gently guide her with your hands into a 4-point position, with her hands on your leg or the floor for support. Support her in this position as she plays.

PROGRESSION

Gradually decrease the assistance given, and let the child get into 4-point kneeling on her own.



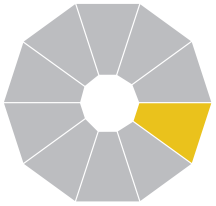
GET INTO STANDING

DESCRIPTION

High kneeling with hands on chair/couch. Vary surface height.

ACTIVITY SUGGESTIONS

- Place toys on a chair or couch and encourage the child to reach up for them; playing in a high kneeling position.



GET INTO STANDING

DESCRIPTION

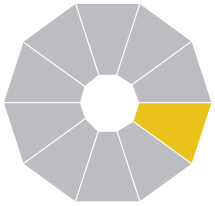
Pulling to stand at a chair/couch. Provide various surface heights, e.g. take cushions off couch, use cushions on floor, tables of varying heights, chairs, foot stool, boxes, etc.

ACTIVITY SUGGESTIONS

- Place toys on a chair or couch such that she can only reach them once in standing.
- If necessary, guide her into a half-kneel position and provide support as she stands.

PROGRESSION

Pulling to stand at a chair/couch. Vary surface height.



GET INTO STANDING

DESCRIPTION

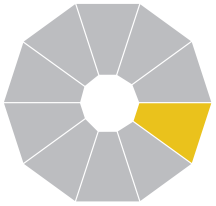
Place a child in standing such that he can hold onto support (e.g. a chair).

ACTIVITY SUGGESTIONS

- Provide him with toys to motivate him to stay upright.

PROGRESSION

Encourage trunk rotation by placing toys just out of his reach.



GET INTO STANDING

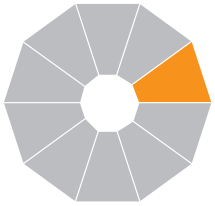
DESCRIPTION

Support the child in a standing position:

- on the floor
- on parent's lap
- in an activity "seat" stander

ACTIVITY SUGGESTIONS

- Talk to the child, sing songs, play "games."
- Offer the child toys to hold onto.



MOVE IN STANDING

DESCRIPTION

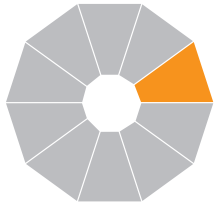
Side stepping / cruising while holding onto chair / couch.

ACTIVITY SUGGESTIONS

- Place toys along a couch, small table, such that the child has to move to reach the toys.

PROGRESSION

Place obstacle (e.g. book or cushion) such that the child has to step on or over to attain a toy.



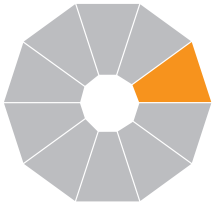
MOVE IN STANDING

DESCRIPTION

In standing, holding hands.

ACTIVITY SUGGESTIONS

- Dance.



MOVE IN STANDING

DESCRIPTION

Crouching to pick up a toy while holding onto a chair.

ACTIVITY SUGGESTIONS

- Place a cushion or low box on the floor next to the child, and place toys on top such that the child needs to crouch down to reach the toys.

PROGRESSION

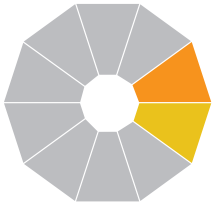
Place the toys on the ground next to the child. Place the toys on the ground and out of reach of the child, such that he has to get onto the floor to reach them.

CHAPTER FOUR
GET INTO STANDING MOVE IN STANDING

NOTES

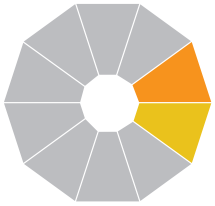
Use the following pages to make notes as needed.

SUNNY HILL HEALTH CENTRE FOR CHILDREN



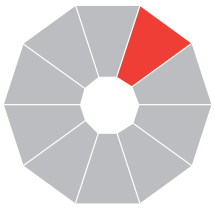
GET INTO STANDING
MOVE IN STANDING

notes

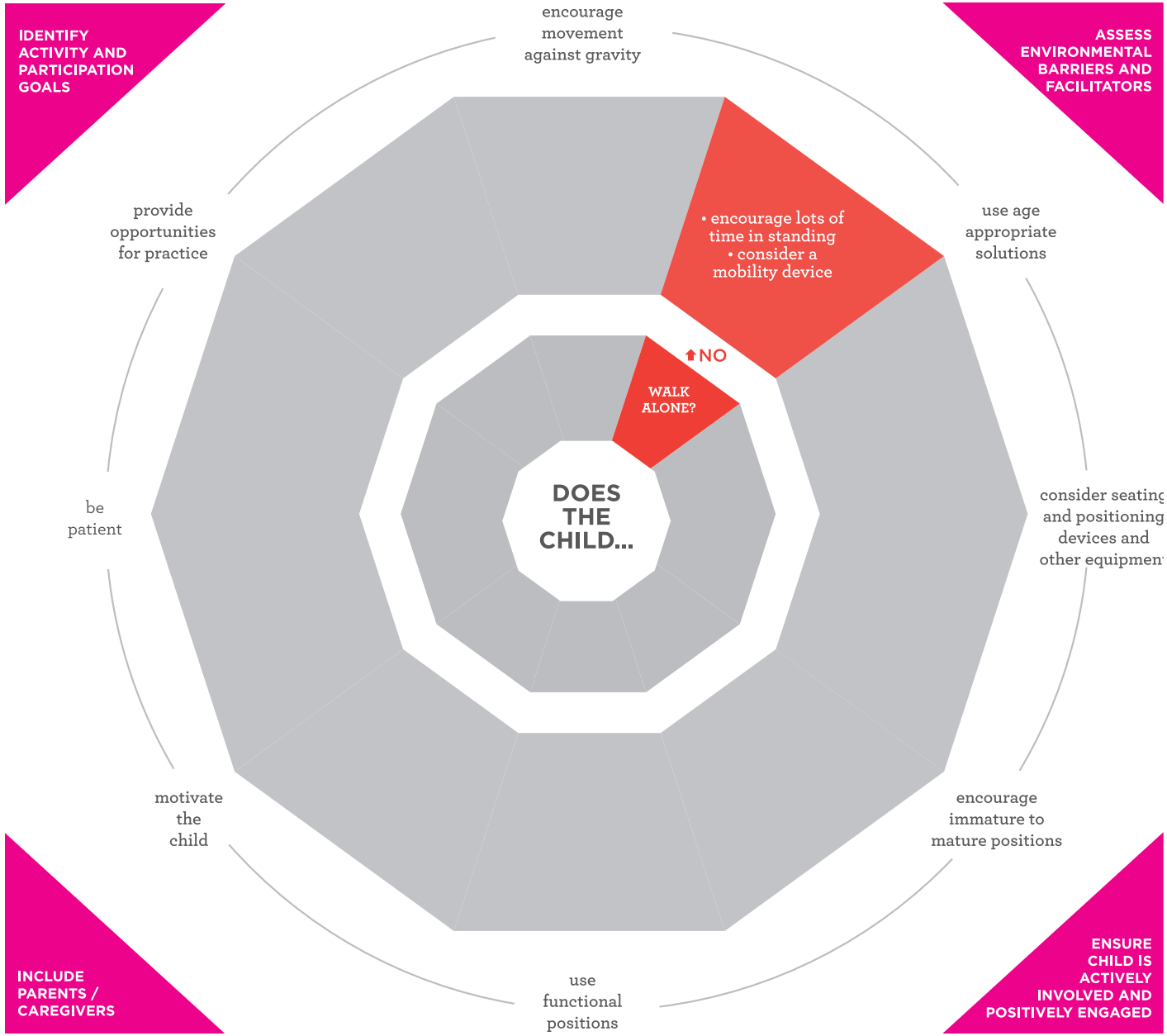


GET INTO STANDING
MOVE IN STANDING

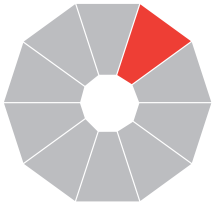
notes



WALK ALONE | *overview*



SUNNY HILL HEALTH CENTRE FOR CHILDREN



CHAPTER FIVE

WALK ALONE

INTRODUCTION

INDEPENDENT WALKING FOR THEIR CHILD IS OFTEN THE MOST IMPORTANT GOAL FOR PARENTS. For children with developmental delay, the most common question asked is "Will my child walk?" Independent walking requires integration of balance, coordination, muscle strength and postural control. Children work on these skills throughout their acquisition of developmental skills. As confidence and skill in walking grows, children are more able to explore their environment. As they explore, their cognitive, perceptual and social skills (Wood 2001) flourish.

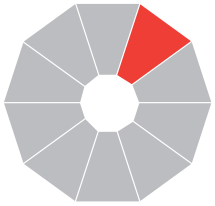
GOALS

1. Independent mobility
2. Negotiate a variety of obstacles and uneven ground/terrain
3. Develop solid base from which to learn more complex gross-motor skills (e.g. running, jumping, climbing, hopping)

GUIDING PRINCIPLES

When children first walk, they do so with a wide base of support and a high-guard position of their hands. Gradually, as their balance and muscle control improve their hands will lower and their base of support will narrow. Often children with hypotonia maintain this "immature" walking pattern for a longer period of time and require more opportunity to practice in order to develop stability and control. In addition, children with hypotonia often need to be challenged to step out of their comfort zone in order to develop more complex skills.

Movement should be encouraged, however possible. If a child is not able to walk independently, consider use of support through equipment.



WALK ALONE | *skills*

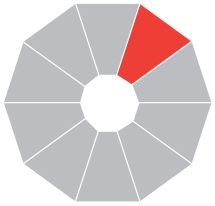
WALK ALONE

DESCRIPTION
Supported walking.

ACTIVITY SUGGESTIONS
- Hold onto the child's hands and provide encouragement to walk.

PROGRESSION
Gradually decrease the amount of support provided.

SUNNY HILL HEALTH CENTRE FOR CHILDREN



WALK ALONE

DESCRIPTION

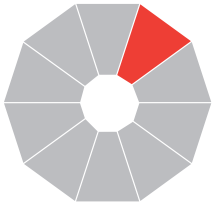
Stepping between two objects (e.g furniture or parents). Walking on knees pushing a “push toy,” inverted bucket/basket.

ACTIVITY SUGGESTIONS

- Provide the child with an object or toy to push.

PROGRESSION

Walking on feet pushing a “push toy,” inverted bucket/basket.



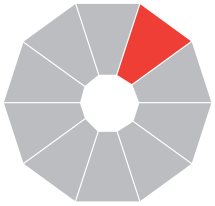
WALK ALONE

DESCRIPTION

Child walking carrying an object.

ACTIVITY SUGGESTIONS

- Supply the child with objects/toys to carry of different sizes and weights.



WALK ALONE

DESCRIPTION

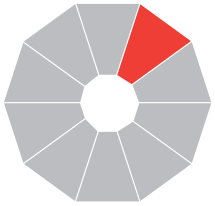
Child walking on uneven ground.

ACTIVITY SUGGESTIONS

- Provide the child with one hand support as she walks on different surfaces.

PROGRESSION

Gradually decrease the amount of support provided.

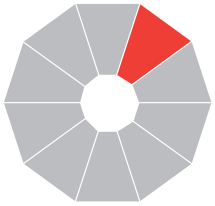


WALK ALONE

DESCRIPTION
Standing on one foot.

ACTIVITY SUGGESTIONS
- While holding onto one hand, encourage the child to lift one foot.

PROGRESSION
Kicking a ball/object. Gradually decrease the amount of support provided.






WALK ALONE

DESCRIPTION

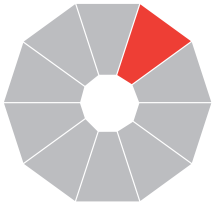
Child stepping up and down.

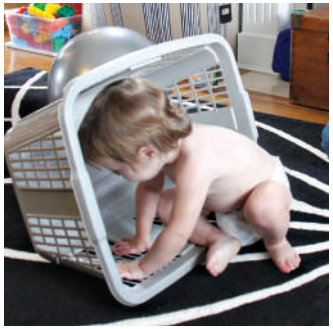
ACTIVITY SUGGESTIONS

- Provide the opportunity for the child to practice stepping up and down, e.g. books on the floor, small curbs. Provide support as needed.

PROGRESSION

Gradually decrease the amount of support provided. Increase the height of the obstacle. Walk up and down stairs.





WALK ALONE

DESCRIPTION

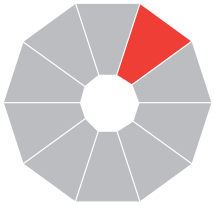
Child climbing in and out of objects.

ACTIVITY SUGGESTIONS

- Provide the child with a "wash bucket" or laundry basket (if sides are low enough) to climb into and out of.

PROGRESSION

Provide opportunities for the child to climb onto furniture or playground equipment.



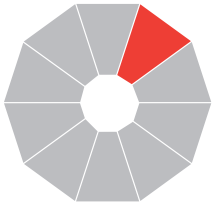
WALK ALONE

DESCRIPTION

Crouching to pick up a toy without holding on for support.

ACTIVITY SUGGESTIONS

- Place toys on the floor to encourage the child to crouch down.



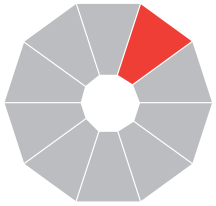
WALK ALONE

DESCRIPTION
Walking backwards.

ACTIVITY SUGGESTIONS
- Holding onto the child's hand (or hands), encourage him to walk backwards.

PROGRESSION
Gradually decrease the amount of support provided.

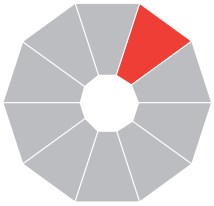
CHAPTER FIVE
WALK ALONE



NOTES

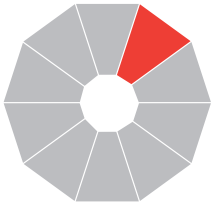
Use the following pages to make notes as needed.

SUNNY HILL HEALTH CENTRE FOR CHILDREN



WALK ALONE | *notes*

SUNNY HILL HEALTH CENTRE FOR CHILDREN



WALK ALONE | *notes*

SUNNY HILL HEALTH CENTRE FOR CHILDREN

CHAPTER SIX

EQUIPMENT SUGGESTIONS

INTRODUCTION

IT IS VERY IMPORTANT FOR CHILDREN WITH LOW MUSCLE TONE TO BE UPRIGHT AGAINST GRAVITY. As discussed in previous chapters, when working against gravity, muscle tone can improve and children can experience greater active muscle control. Children who are not able to assume these positions independently may need extra support to enable them to experience sitting, standing and independent mobility. These may be short term or long term solutions, depending on the child.

GOALS

1. Provide experiences in the upright position, e.g. sitting & standing.
2. Facilitate active movement
3. Facilitate functional activity
4. Facilitate social, cognitive and perceptual development
5. Independent mobility

GUIDING PRINCIPLES

When you are choosing a piece of equipment, the child's abilities and postural needs must be assessed to determine the most appropriate device. This is not a one-time "quick-fix" but must be continually monitored and adapted and/or changed as the child grows and develops.

If equipment is used, it is a part of the whole therapeutic intervention and should be used in conjunction with other activities. A child needs to be given the opportunity to experience many different positions as well as different opportunities to move and explore throughout the day.

Children learn through independent mobility. Giving children, who may not move on their own, this opportunity can greatly enhance their cognitive, social and perceptual skills. Studies have shown that there are positive effects on emotional, intellectual and motor development in children who are provided with the means to be independently mobile, such as through use of a power wheelchair (e.g. Paulsson K & Chirstoffersen M, 1984).

The following equipment suggestions are intended to show the different options or types of support that may be beneficial in order for a child to maintain a specific position. This list is not exhaustive. There is a wide variety of equipment that is commercially available. It is up to the therapist and family to determine which is the most appropriate for the child.

EQUIPMENT SUGGESTIONS

SUPPORTED SITTING

INFANT SEAT

Used when a child does not yet have head control.

BREAST FEEDING PILLOW

Used when a child has some head control and limited trunk control.

BUMBO

Used when a child has good head control and limited trunk control.

BOOSTER SEAT

Used when a child has good head control and limited trunk control. Can be adapted to provide additional trunk support if needed.

HIGH CHAIR

If used in a reclined position, can use with a child with limited head control. If used in an upright position, the child can have limited trunk control, and must have good head control. Can be adapted to provide additional head and trunk support if needed.

BABY SWING

Used when a child does not yet have head control.

EQUIPMENT SUGGESTIONS
Page 95

EQUIPMENT SUGGESTIONS

SUPPORTED SITTING

STROLLER

Can be used with any level of ability. Can be adapted to provide additional head, trunk and pelvic support as needed.

CUSTOM FLOOR SITTER

Used when a child has good head control and limited trunk control.

CUSTOM FLOOR SITTER

Used when a child has good head control and limited trunk control.

LECKY ACTIVITY MAT

Used when a child has good head control and limited trunk control.

FLIP TO SIT

Used when a child has good head control and limited trunk control.

THE TURTLE

Used when a child has good head control and limited trunk control.

EQUIPMENT SUGGESTIONS

SUPPORTED SITTING

POSTURAL CONTROL SYSTEM

Can be used with any level of ability. Can be adapted to provide additional head, trunk and pelvic support as needed.

BATH RING

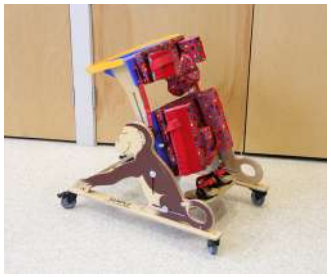
Used when a child has good head control and limited trunk control.

EQUIPMENT SUGGESTIONS

SUPPORTED STANDING

ACTIVITY SEAT STANDER

Used when a child has good head control and limited trunk control. Can be adapted to provide additional trunk support if needed.



PRONE STANDER

Used when a child has good head control. Can be adapted to provide additional trunk, pelvic and lower extremity support if needed.

UPRIGHT STANDER

Used when a child has good head control and limited trunk control. Can be adapted to provide additional trunk, pelvic and lower extremity support if needed.

SUPINE STANDER

Can be used with any level of ability. Can be adapted to provide additional head, trunk, pelvic and lower extremity support as needed.

EQUIPMENT SUGGESTIONS

INDEPENDENT MOBILITY

SCOOTER BOARD

Used when a child has good head control and limited trunk control. Need to have intentional movement in arms.

FOOT PROPELLED TRICYCLE

Used when a child has good head control and limited trunk control.

RIDE ON TOY

Used when a child has good head control and limited trunk control.

PUSH TOY

Used when a child has good head and trunk control.

SUPPORTED WALKER

Used when a child has good head control and limited to good trunk control. Need to be able to weight bear through feet. Can adapt to provide additional trunk support if needed.

SUNNY HILL HEALTH CENTRE FOR CHILDREN

EQUIPMENT SUGGESTIONS

INDEPENDENT MOBILITY

WHEELCHAIR

Can be used with any level of ability. Can be adapted to provide additional head, trunk, pelvic and lower extremity support as needed. Need to have intentional movement in arms or legs.

RIDE ON POWER TOY

Can be used with any level of ability. Can be adapted to provide additional head, trunk, pelvic and lower extremity support as needed. Need to have intentional movement and cognitive awareness.

CASTER CART

Used when a child has good head control and limited trunk control. Need to have intentional movement in arms. Can adapt to provide additional trunk and pelvic support if needed.

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: PRONE

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Prone lying with head lifted asymmetrically to 45°	Weight on hands, forearms and chest with elbows behind shoulders. Hips and knees remain flexed.	2 weeks	2 months
Prone lying with head lifted to 45° in midline	Weight on hands, forearms and chest with shoulders slightly abducted and elbows behind shoulders.	1 month, 1 week	2 months, 3 weeks
Prone lying with head lifted >45°	Weight distributed symmetrically on forearms and trunk with shoulders abducted and elbows in line with or forward of shoulders.	10 weeks	3 months, 3 weeks
Prone with arms extended	Weight on hands, lower abdomen and thighs.	4 months, 1 week	6 months
"Swimming" in prone	Weight on abdomen.	4 months, 3 weeks	8 months

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: PRONE

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Reaching in prone	Weight on one forearm, hand and abdomen.	5 months	7 months
Pivoting in prone	Weight on trunk, arms and hands.	5 months, 3 weeks	8 months, 1 week
Rolling prone to supine without trunk rotation	Movement is initiated by head. The shoulder stays in line with the pelvis throughout the movement.	6 months	8 months, 2 weeks
Rolling prone to supine with trunk rotation	Movement is initiated by shoulder, pelvis OR head.	7 months	9 months, 1 week
4-point kneeling		7 months, 1 week	9 months
Reciprocal crawling	Also known as "commando" crawling.	7 months, 2 weeks	9 months, 1 week

SUNNY HILL HEALTH CENTRE FOR CHILDREN

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: PRONE

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Reciprocol creeping	Also known as 4-point crawling.	8 months, 2 weeks2 weeks	13 months

POSITION: SUPINE

Supine lying with head in midline	Legs may be flexed or extended. Arms my be flexed and abducted or held at the side of the body. Bilateral or reciprocol kicking.	3 weeks	2 months
Supine lying, bringing hands to midline	Head in midline with chin tuck. Bilateral or reciprocol kicking.	2 months, 2 weeks	3 months, 3 weeks
Supine, bringing hands to knees	Head moves easily from side to side with chin tucked.	3 months, 2 weeks	5 months
Supine, bringing hands to feet	Chin tucked with hips flexed greater than 90°	4 months, 2 weeks	6 months

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: SUPINE

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Rolling supine to prone without rotation	Shoulder in line with pelvis throughout movement.	5 months, 3 weeks	9 months
Rolling supine to prone with rotation		6 months, 3 weeks	9 months

POSITION: SITTING

Sitting with support	Maintains head upright and in midline briefly. Requires support around the upper trunk	0 weeks	1 month
Unsustained sitting	Holds head in midline, with shoulders in front of hips. Sits with extension through thoracic spine and flexion through lumbar spine. Briefly maintains an independent sitting position.	4 months, 1 week	6 months

SUNNY HILL HEALTH CENTRE FOR CHILDREN

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: SITTING

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Sitting with arm support	Maintains a sitting position by supporting weight on hands. Holds head in midline. Cannot move in or out of this position.	4 months, 2 weeks	6 months
Independent sitting	Sits with shoulders aligned over hips. Able to play with a toy and be left alone.	6 months, 1 week	8 months
Sitting to prone		8 months, 1 week	12 months, 1 week
Sitting to 4-point kneeling		7 months, 3 weeks	9 months, 3 weeks

POSITION: STANDING

Supported standing	Weightbearing on feet or toes with head in line with the body and hips behind the shoulders. Support is provided under the axillae.	1 month	3 months

APPENDIX A

GROSS MOTOR MILESTONES*

** Adapted from "Motor Assessment of the Developing Infant"*

POSITION: STANDING

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Supported standing with hips and shoulders in line	Weightbearing on the feet with active trunk control and support provided at the chest.	4 months, 2 weeks	7 months, 2 weeks
Pulls to stand	Independently assumes the standing position while holding onto support surface; may be through 1/2 kneeling or other postures.	8 months, 1 week	10 months
Half-kneeling using arm support		8 months, 2 weeks	11 months
Cruising		9 months, 1 week	11 months, 3 weeks
Independent standing		10 months, 2 weeks	13 months

** Adapted from "Motor Assessment of the Developing Infant"*

APPENDIX A

GROSS MOTOR MILESTONES*

POSITION: STANDING

MOTOR SKILL	DESCRIPTION	AGE 50% CREDITED	AGE 90% CREDITED
Independent walking		11 months	14 months, 1 week
Standing from a squat position		11 months, 2 weeks	14 months, 1 week
Standing from a quadrupted position		11 months, 3 weeks	15 months
Squat	Maintains a squat position.	12 months	14 months, 3 weeks

APPENDIX B

RESOURCES—GROSS MOTOR DEVELOPMENT

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