MOTOR DEVELOPMENT AND MOVEMENT ACTIVITIES FOR PRESCHOOLERS AND INFANTS WITH DELAYS

Second Edition

MOTOR DEVELOPMENT AND MOVEMENT ACTIVITIES FOR PRESCHOOLERS AND INFANTS WITH DELAYS

A Multisensory Approach for Professionals and Families

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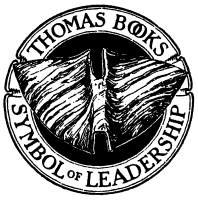

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PREFACE

The second edition of the book is intended to provide information for professionals, families, and students interested in learning about motor development of young children with delays or disabilities. A practical approach is used so that families and caregivers can provide instruction utilizing the ecological dynamics of the home environment. The book emphasizes the age group of infancy (6 months) to 6 years. However, families with older children and professionals who work with older children who have significant motor delays will also benefit from the information and activities in this book. Activities are specifically designed for parents of children with delays/disabilities and specialists of motor development, adapted physical education, special education, early childhood, early intervention and allied health.

The purpose of the book is to explain the principles of motor developmental theories and relate them to practical intervention, answer questions about muscle tone (hypotonicity, hypertonicity) related to positioning, lifting, carrying, and feeding of young children, provide directions for early diagnosis and assessment of symptoms recognizable in developmental domains including autism, and help professionals and families understand the impact of medical conditions on motor development and related daily living skills for young children. In addition, practical suggestions and activities for families and professionals to enhance sensory motor development of the young child during structured motor intervention and throughout the day are provided.

Throughout this book, the term "movement specialist" has been used to refer to one of the many professionals that provide motor assessment and activities to young children with disabilities. This array of professionals may include, but is not limited to: adapted physical educator, occupational therapist, physical therapist, early childhood

educator, preschool classroom teacher, home-based early intervention teacher, and so forth. Regardless of the title of this professional, a movement specialist will have been trained in the psychomotor domain, and will have knowledge to provide appropriate and valuable motor assessment and intervention to young children with disabilities. Additionally, it must be noted that a para-educator (teacher assistant) may also be provided specific training to complete intervention.

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Our friend, Anita Hartzell Hefler, who administers the program at the Greater New Orleans Therapeutic Riding Center, encouraging excellence in the young children with disabilities and working with university students in adapted physical education practices.

I also want to dedicate this publication to the memory of my beloved pup, Chelsea Makala Cowden, who stayed very close to her mom for 15 years providing companionship for hours of writing.

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MOTOR DEVELOPMENT AND MOVEMENT ACTIVITIES FOR PRESCHOOLERS AND INFANTS WITH DELAYS

Chapter 1

MOTOR DEVELOPMENT

Chapter Objectives: After studying this chapter, the reader will be able to:
1. Relate the importance of the interaction between the child and environment;
2. Give a meaningful definition of motor development;
3. Explain the principles of Motor Development Theory;
4. Provide a summary of traditional developmental theories, neurodevelopmental theories and Dynamic Systems Theory (DST).

Figure 1.1. Motor development begins prenatally and continues throughout the lifespan as repetitive practice and increasingly difficult challenges expand one's motor skills.

INTERACTION OF CHILD AND THE ENVIRONMENT

The interaction of a young child with his/her environment provides critical opportunities for motor development, as well as development within all of the other learning domains (language, self-help, cognitive, social). The interplay between forces within the individual and the environment is referred to by Gallahue and Ozmun (2006) as *adaptation,* while Sherrill (2004) referred to changes within the individual, the environment and the blend of both the individual and everything in his environment as *ecological theory.* Most professionals agree that the child's environment is critical in the learning process and that valuable opportunities for learning experiences are provided through interaction with an enriched environment. Thus, the importance of early intervention is highlighted.

An understanding of motor development theory and principles of normal motor development influence one's ability to administer motor assessments and to develop motor intervention programs for young children with delays or abnormal motor development. The needs of young children place specific challenges on movement specialists or teachers who provide service delivery in the motor domain. A unique understanding of varied theoretical perspectives, combined with the talents of selecting the appropriate plan of action result in development of optimal movement programs. Philosophical concepts are applied and incorporated into performance objectives for intervention and provide the framework or structure for long-term goals or outcomes. Combining elements from the various traditional, neurodevelopmental, and contemporary theories is the key to successful individualization of intervention curricula for preschoolers and infants with delays. An overview of selected theoretical perspectives will be briefly discussed within this theoretical framework.

A theoretical basis of motor development provides a basis for linking assessment and intervention processes. A theoretical background assists the movement specialist in understanding the relationship between normal and abnormal motor development. Each movement specialist who participates in the evaluation process develops an internal schema that depicts mature versus immature patterns of movement. A critical reference is then needed to determine if the immature patterns actually have a neurological orientation that would indicate possible central nervous system damage associated with abnormal

motor developmental patterns (e.g., cerebral palsy). The specialist establishes an assessment approach based on his or her theoretical frame of reference. The following model (see Figure 1.2) will assist in clarifying the link between theory, assessment, and intervention. Theories included in this model are summarized following the model.

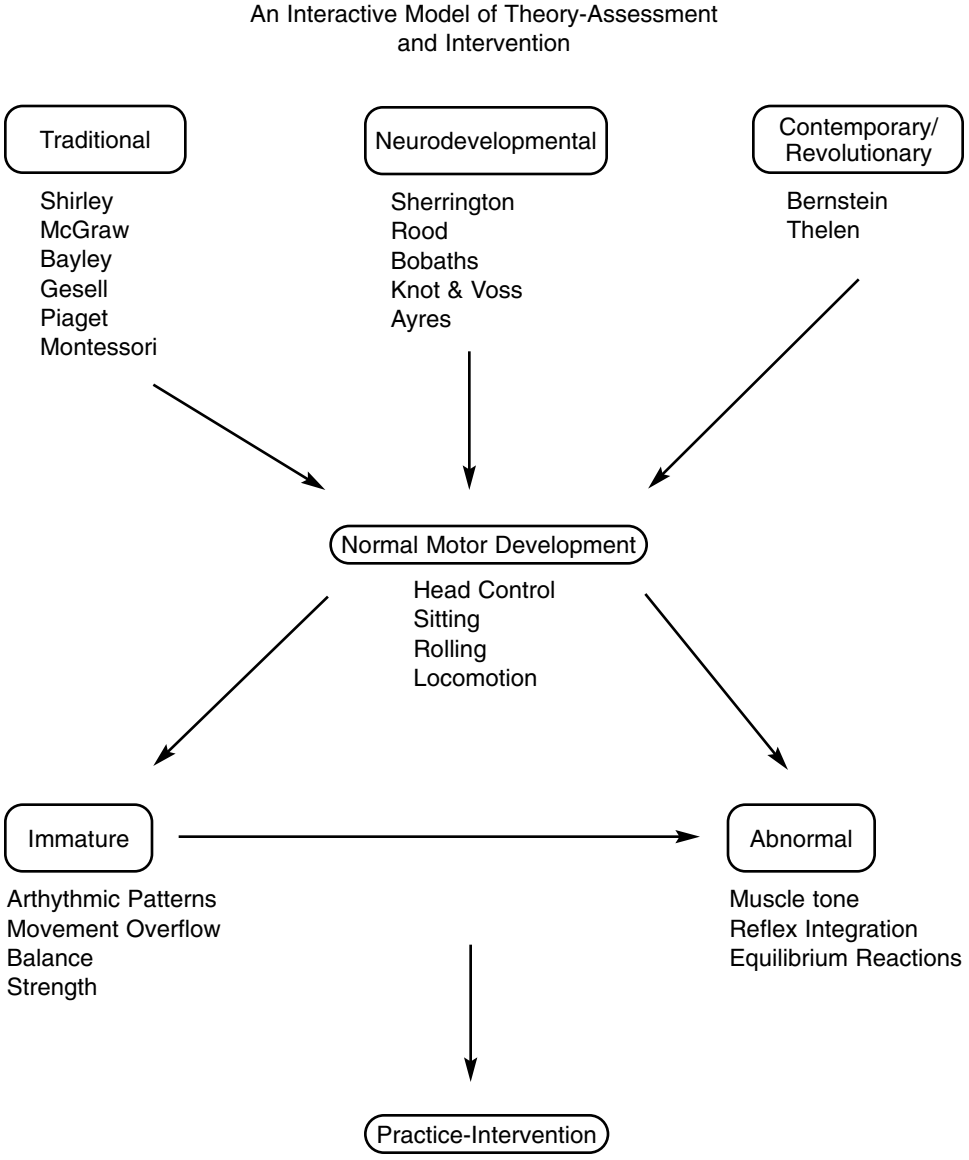

Figure 1.2. The Model for Linking Theory, Assessment, and Intervention.

MOTOR DEVELOPMENT THEORIES

Prior to discussing the various motor development theories, it is important to define some terms related to early childhood development. **Motor development** may be defined as changes of movement behavior across the lifespan including growth, development, and maturation. The process of motor development is continuous and age-related and includes growth, maturation, and development. **Growth** involves quantitative biological and structural changes of the physical size of the child. **Maturation** is defined as qualitative changes that occur as a function of time and age. **Development** includes functional changes which lead to compensation by the individual throughout the lifespan. There is a fixed and sequential order of development; however, rate of change may vary (Gallahue & Ozmun, 2006; Malina, 1975; Payne & Isaacs, 2005; Seefelt, 1989; Sherrill, 2004).

Traditional Developmental Theories

Traditional developmental theories are based on a hierarchical model of motor skill acquisition. Shirley (1931) proposed a neuromaturational theory of motor development that suggested interindividual variability exists in the motor development of young children. Shirley (1931) outlined five specific phases of motor development: "(a) development of passive postural control; (b) development of active postural control; (c) active efforts toward locomotion; (d) locomotion by creeping and walking with support, and (e) walking alone" (p. 193). These phases develop sequentially and can be correlated with observational assessment of infant movement and play.

McGraw (1932, 1940, 1945) analyzed the development of motor patterns in relation to functional growth and maturation of the nervous system. She emphasized that developmental phases must be carefully studied and understood to increase practical value of standardized tests. McGraw recorded observations of infant behavior in prone progression including neonatal swimming actions, suspended inversion and postural adjustment, rolling, sitting, erect posture, and upright locomotion. She concluded that reflexive movements appear prior to controlled motor patterns and that maturation influences acquisition of upright locomotion. New motor patterns emerge gradually, although stress may increase the use of immature patterns. Her

diagrams of erect locomotion are continually used in efforts to better understand infant development.

During this time period, Bayley (1936) developed one of the first motor scales to objectively quantify infant motor development. Her longitudinal study of mental and motor development remains one of the most intricate and complex of human development studies. The *Bayley Scales on Infant Development* is one of the more widely-used standardized instruments in clinical settings (Fewell & Glick, 1996), and it is projected that the newest edition of the instrument, *The Bayley Scales of Infant and Toddler Development, Third Edition* (2006) will continue to provide valuable assessment information.

Gesell (1928, 1939, 1949, 1954) suggested the following principles of motor development: (a) development is governed by maturation, (b) development occurs in cephalocaudal and proximodistal directions, (c) development occurs asymmetrically, and (d) progression within various developmental domains occurs at uneven paces. Gesell emphasized an intermesh or a spiraling view of development resulting in a complex model of dynamic behavior. He also suggested that an infant's upright postural stability is dependent on the process of reciprocal innervation, whether reflexive or voluntary, and progressive reintegration of muscle groups is prerequisite to subsequent motor development. Many of these principles continue to guide assessment processes and standardized testing (Sherrill, 2004) (see Figure 1.3).

Figure 1.3. The movement specialist and physical therapist collaborate to assess the strength and balance of an infant with Down syndrome.

Additionally, Piaget (1952, 1985) highlighted the importance of the environment and active involvement in the environment as critical to child development. He emphasized the following: (a) continuous development occurs in a fixed and defined order through four sequential stages (i.e., sensorimotor period, preoperational period, concrete operations, formal operations); (b) there are individual differences in rate of development; and (c) through self-organization, sensorimotor experiences influence the quality of cognitive processes. Piagetian principles are utilized throughout early intervention and link assessment to programming strategies.

Montessori, an Italian physician who began her work with children with disabilities, developed the Montessori Method which was based, in part, on the efforts of Itard and Sequin in associationistic psychology (DeVries & Kohlberg, 1990; Moran & Kalakian, 1974). Montessori was the original proponent of "sensorial education" through activities which involve both intelligence and movement (Montessori, 1936a/1956, 1936b/1966, 1949/1967). The Montessori Method allows the child the freedom to interact independently in a prepared environment that is filled with age-appropriate child-size furnishings and toys. The environment is arranged systematically to promote the child's progressive interests and personality development (Montessori, 1909/1964, 1914/1965). Exercises in daily living, sensory materials, and conceptual elements promote the child's construction of independence, self-control, self-reliance, and intrinsic rewards. Montessori recognized the connection between mental and motor development, "But to always be thinking of the mind, on the one hand, and the body, on the other, is to break the continuity that should reign between them" (1967, p. 171). Thus, there is a cyclic relationship between mental and motor development whereby one promotes the other and the working of the mind and body elevates the child to higher learning planes.

Neurodevelopmental Theories

Sherrington (1906) originated the reflex model of motor control which influenced many subsequent theories. His principles of normal motor development were utilized to better understand problems of abnormal motor development and central nervous system dysfunction. The term proprioception was derived by Sherrington (1906) to