

Research Summary: Physical Development (PD) Domain in the DRDP-K (2015) and KIDS (2015) Kindergarten Assessment Instruments

The **Physical Development (PD)** and **Health (HLTH)** domains assess motor development and the development of routines related to personal care, safety, and nutrition. The PD domain includes the following knowledge or skill areas: perceptual-motor skills and movement concepts, gross locomotor movement skills, gross motor manipulative skills, and fine motor manipulative skills. The HLTH domain includes the following knowledge or skills areas: active physical play, nutrition, safety, personal care routines, and knowledge of wellness.

PD 1: Perceptual-Motor Skills and Movement Concepts

This measure highlights how children develop increasing awareness of their own physical effort, body awareness, spatial awareness, and directional awareness while moving their bodies and interacting with the environment. At the earlier stages, children experiment with adjusting movements in response to task or spatial demands and benefits from adult guidance (Boyer, Carlson, & Pasnak, 2012). At the later stages, the children adjust aspects of movement (e.g., effort, spatial, directional) during new activities, in changed environments, or on different surfaces. Then, at the latest stage, the children adjust movement of their bodies in time and space to meet the requirements of structured physical play activities, including games and dance (Parham & Mailloux, 2015; Poole, Miller, & Church, 2007).

PD 2: Gross Locomotor Movement Skills

This measure reflects how children show increasing proficiency in fundamental locomotor skills, for example, rolling, crawling, cruising, walking, running, jumping, and galloping (Fitts & Posner, 1967; Fairbrother, 2010; Gentile, 1972, 2000; Gallahue, Ozmun, & Goodway, 2012; Haibach, Reid, & Collier, 2011; Magill, 2010; Newell, 1984, 1986). The movements of beginner- or novice-level learners are uncoordinated and uneven. The model by Gallahue, Ozmun and Goodway (2011) looks at both the cognitive characteristics of the learner and the goals of the learner, but also places importance on the role of the instructor in fostering developmentally appropriate movement skill learning. Beginners focus on understanding the placement of parts of their bodies while moving and the coordination and timing of movements. They pay attention to all the information in the environment, are unable to screen out what is irrelevant, and cannot adapt movements to changing conditions. Intermediate- or practice-level learners perform movements with greater consistency and fewer errors. They have a good general understanding of the movement task and, with a more highly attuned kinesthetic sensitivity, are acquiring a feel for the skill. Conscious attention to the movements of the skill diminishes, and learners increasingly devote attention to the goal or product of the skill. They become more capable of timing their movements with objects and events and adapting movements to changing environments. Advanced or fine tuning learners perform movements consistently and automatically. Their movements appear effortless. Performance at the advanced level of learning “requires countless hours of practice” (Coker, 2004). Advanced learners have a complete understanding of the movement task and are able to detect and correct their own errors. Their movements are characterized by consistency, adaptability, and anticipation of adjustments to changing environments.

PD 3: Gross Motor Manipulative Skills

This measure highlights how children show increasing proficiency in gross motor manipulative skills, which refer to, for example, reaching, kicking, grasping, throwing, and catching. The research literature on the development of gross motor coordination emphasizes children's growing prospective and dynamic control of balance and body coordination in a variety of locomotor skills such as running, jumping, and skipping (Gabbard, 2008; Gallahue, Ozmun, & Goodway, 2011; Haibach, Reid, & Collier, 2011; Payne & Isaacs, 2008). In the early stages of this continuum, the child manipulates objects using one or more body parts, with stability but limited coordination followed in later preschool years by demonstrating coordination of arms, legs, or body to manipulate objects, with sequential or simultaneous movements. By kindergarten, the child applies a variety of manipulative skills, in combination with locomotor skills, in different physical activities. By the age of six or seven, the child applies a variety of manipulative skills with locomotor and stability skills to organized games and dance activities.

PD 4: Fine Motor Manipulative Skills

This measure highlights how children show increasing proficiency in fine motor manipulative skills, which refer to how the child demonstrates increasing precision, strength, coordination, and efficiency when using muscles of the hand for play and functional tasks. The research literature on the development of fine motor coordination emphasizes the increasing flexibility and planning of fine motor manipulative skills such as writing, cutting, and dressing activities (Case-Smith & Exner, 2015; Henderson & Pehoski, 2005; Klein, 1983). In the early preschool years, the child manipulates objects with one hand while stabilizing objects with the other hand or with another part of his or her body. By later preschool years, the child manipulates objects using hands with strength, accuracy, and coordination. By kindergarten, the child performs with efficiency a variety of tasks that require precise manipulation of small objects. Finally, by age six or seven the child performs a variety of tasks with sequential steps that require precision of one hand while manipulating or repositioning small objects in that hand (Benbow, 2002).

References: Physical Development (PD)

- Benbow, M. (2002). Hand skills and handwriting. In S. A. Cermak & D. Larkin (Eds.), *Developmental coordination disorder*. Albany, NY: Delmar.
- Boyer, C. E., Carlson, A. G., & Pasnak, R. (2012). Objects and size awareness in preschool-age children. *Perceptual Motor Skills*, *114*, 29–42.
- Case-Smith, J. C., & Exner, C. (2015). Hand function evaluation and intervention. In J. Case-Smith and J. C. O'Brien (Eds.), *Occupational therapy for children and adolescents* (7th ed., pp. 220–257). St. Louis, MO: Elsevier Mosby.
- Coker, C. (2004). *Motor learning and control for practitioners*. New York, NY: McGraw-Hill.
- Fairbrother, J. (2010). *Fundamentals of motor behavior*. Champaign, IL: Human Kinetics.
- Fitts, P., & Possner, M. (1967). *Human performance*. Belmont, CA: Brooks/Cole.
- Gabbard, C. P. (2008). *Lifelong motor development* (5th ed.). San Francisco, CA: Benjamin Cummings.
- Gallahue, D. L., Ozmun, J. C., & Goodway, J. D. (2011). *Understanding motor development: Infants, children, adolescents and adults* (7th ed.). New York, NY: McGraw-Hill.
- Gentile, A. M. (1972). A working model for skill acquisition with application to teaching. *Quest*, *17*, 3–21.
- Gentile, A. M. (2000). Skill acquisition: Action, movement and neuromotor processes. In J. H. Carr & K. B. Shepherd (Eds.), *Movement science foundations for physical therapy*. Rockville, MD: Aspen Press.
- Haibach, P., Reid, G., & Collier, D. (2011). *Motor learning and development*. Champaign, IL: Human Kinetics.
- Henderson, A., & Pehoski, C. (2005) *Hand function in the child*. St. Louis, MO: Mosby.
- Klein, M. D. (1983). *Pre-dressing skills*. Tucson, AZ: Communication Skill Builders.
- Magill, R. (2010). *Motor learning: Concepts and applications*. Boston, MA: McGraw-Hill.
- Newell, K. M. (1984). Physical constraints to development of motor skills. In J. Thomas (Ed.), *Motor development during preschool and elementary years* (pp. 105–120). Minneapolis, MN: Burgess.
- Newell, K. M. (1986). Constraints on the development of coordination. In M. G. Wade & H. T. A. Whiting (Eds.), *Motor development in children: Aspects of coordination and control* (pp. 341–360). Dordrecht, Germany: Martinus Nijhoff.

- Parham, L. D., & Mailloux, Z. (2015). Sensory integration. In J. Case-Smith & J. C. O'Brien (Eds.), *Occupational therapy for children and adolescents* (7th ed., pp. 258–303). St. Louis, MO: Elsevier Mosby.
- Payne, G. V., & Isaacs, L. D. (2008). *Human life motor development: A lifespan approach* (7th ed.). New York, NY: McGraw-Hill.
- Poole, C., Miller, S. A., & Church, E. B. (2006). Development: Ages & stages—spatial awareness. *Early Childhood Today*, 20, 25–30.