Perceptual Motor Development
Characteristic

Involves children during preschool to primary grades; usually ages 21/2 to 6.

Combines movement abilities with academics (reading, writing, language, math)

Engages children in movement activities that integrates perception and movement.
Perceptual Motor Development

Researchers have difficulty defining this term but perceptual-motor, sensory-motor processes and their effect upon growth, development, and learning has been extensively studied.

Perceptual motor development is based on the works of Piaget, Gesell, and Montessori.
Empirical Research

• Importance of active movement for optimal motor development
  – Held & Hein dark environment study with Kittens indicated that active kittens acquired normal depth perception versus inactive.
  – Individuals must attend to objects that move in order to develop normal spatial skills (Motion Hypothesis)
Sensory Motor Process

• Brain’s need for sensory stimulation is needed to function adequately.

• Importance of sensory stimulation to develop is well supported.
  - Typical growth and development trends follow a sequence of events. The child passes through developmental stages through interaction with the environment. The environment provided the sensory stimulation to which the child adapts in order to grow & develop (Moore, 1969).
Sensory-Motor Simulation

• Ayres (1972) contends that inadequate sensory integration accounts for some aspect of learning disorders.
  -Sensory integrative therapy has become popular as an intervention used primarily by occupational therapists.

Piaget (1952) wrote that children develop through sensory experiences of tactile (touch), kinesthetic, visual, and auditory modalities which later form the child’s perception….sensory experiences are a necessary part of the total development of an individual.
Kepart’s Contention

The feedback process necessary for correcting errors in movement was faulty in children with learning disabilities.

Participation in basic forms of movement would help the feedback problems and consequently improve the child’s learning of academic skills, such as reading and spelling.
Delacato’s Contention

Involvement in certain forms of movement behavior facilitates intellectual development.

Key element was the development of hemispheric dominance through the process known as patterning.

Patterning was where the patient would practice a skill they missed or be passively assisted through movements which lacked hemispheric dominance.
Researching the Contentions of Kepart & Delacato

• Meta-analysis of 180 studies indicated that:
  – Children improved slightly in their cognitive ability when involved in a perceptual motor program.
  – Perceptual motor program as in intervention to directly improve the child’s intelligence later in life was not support

• Many educators believe that a perceptual-motor program is an excellent medium through which reading, spelling, math, social studies, or math can be facilitated.
Recent Research

By having your child involved in perceptual-motor skills; they produced positive changes in their motor performance.
Perceptual Motor Learning

Perceptual-Sensory System

Tactile
Vision
Audition
Proprioception
Vestibular

Senses
Perception
Perceptual-Motor Process

- Reception of environmental information
- Comparison of Information of present movement to past movement stored in memory
- Movement selection
- Feedback
Perceptual (Sensory) Motor Program

Improvement in the perceptual sensory system occurs through environmental stimulation

Not all activities are perceptual activities

- Only activities involving children in sensory integration
  - Improve Balance (Vestibular)
  - Spatial Awareness (Understanding external spaces around the child- Audition & Vision)
  - Temporal Awareness (Ability to predict when stimuli arrives- all senses)
  - Body & Directional Awareness (Ability to know- proprioception)
## Motor Development Program

<table>
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<th>Space awareness (where the body moves)</th>
<th>Effort (how the body moves)</th>
<th>Relationships</th>
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<td>Location:</td>
<td>Time: Fast/slow</td>
<td>Of body parts: Round (curved), narrow, wide, twisted, symmetrical/ nonsymmetrical</td>
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<tr>
<td>Location:</td>
<td>Sudden/sustained</td>
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<td>Directions:</td>
<td>Force: Strong/light</td>
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<td>Forward/backward</td>
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<td>With objects and/ or people: Over/under, on/off, near/far, in front/behind, along/through, meeting/parting, surrounding, around, alongside</td>
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<tr>
<td>Right/left</td>
<td></td>
<td>With people: Leading/following, mirroring/matching, unison/contrast, alone in a mass, solo, partners, groups, between groups</td>
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<tr>
<td>Levels:</td>
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<td>Low/middle/high</td>
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<td>Pathways:</td>
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<tr>
<td>Far/near</td>
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Balance

Static Balance
- ability to maintain a desired body posture or position when the body is stationary

Dynamic Balance
- ability to maintain a desired body posture or position when the body is moving.
Wolf (1993, 1996) compared 2 types of training programs on balance with older adults (71-81 years of age).

- static balance training (balance platform)
- dynamic balance training (t’ai chi)

Results indicated a .63 reduction in risk ratio for falls in the dynamic balance training as opposed to static balance training.
Balance Training in adults
Balance Training in Adults

FIGURE 11-16. Use of a force-plate biofeedback system to provide visual feedback regarding alignment and weight-bearing status.

FIGURE 11-20. The use of ice on the anterior tibialis muscle just prior to a small backward displacement to facilitate its activation during recovery of balance.
Training Balance in Children

• Static Balance
  – Stand on both feet extend your arm, hold an object of different weights, move your arms,
  – Stand on one foot extend your arm, hold an object of different weights

• Dynamic Balance
  – Walk across a low balance beam with or without an object of different weights at slow or fast speeds
Balance Training in Children

The first tests of balance require support, especially when the child ventures onto difficult territory such as a narrow brick wall, a teetering plank, or a bouncy mattress.

Rolling barrels, cans, or wastebaskets offers challenges for balancing. Playing skills are refined through differentiated choice of play equipment.

Steps arranged at different elevations encourage playing much more than do level areas.
Awareness (Body Control Skills)

Spatial Awareness—Understanding of the external spaces surrounding an individual and the individual’s ability to function motorically in and through space.

Temporal Awareness—understanding of time relationships such as ability to predict the projectile’s time of arrival.

Body Awareness—developing ability to know and understand names and functions of various body parts

Directional awareness—understand and application of laterality and directionality.
Training of Awareness

**Location**
- Self-space
- General space
- Identify body parts

**Directions**
- Up/down
- Forward/backward
- Right/left

**Levels**
- Low-Middle-High

**Pathways**
- Straight
- Curved
- Zigzag

**Extensions**
- Far/near
- Large/Small

**Effort**
- Fast/slow
- Strong/Light
Activities that Develop Visual Perception

• Forms & Shapes
• Catching, trapping, and striking
• Throwing
• Locate Objects in space
Activities that Develop Proprioception

• Recall limb position
• Left/Right Discrimination
• Levels (UP/Down; Front/Back; Side to Side)
• Swimming, skipping, batting
• Foot-eye & Hand & Eye activities
• Cue children to locate objects on their body
• Balance activities
Activities that Develop Auditory Perception

- Simon Says (Ability to listen)
- Child changes direction upon command
- Tapping to beat of sound
- Moving to the beat of music, sound, or voice
Perceptual Motor Program

• Start with easy activities and progress to more difficult (developmentally appropriate)
  – Low level skills
  – Intermediate skills
  – High-level skills
• Assess the child regularly on their abilities
• Refine your training based on perceptual motor deficiencies.
Resources

Project Beacon, Fairfax County Public Schools, 10700 Page Avenue, Fairfax, VA.

Motor Control: Theory & Practical Applications. Shumway-Cook & Woollacott, Lippincott Williams & Wilkins.

The important Early Years, Diem, AAHPER.

