

Motor Control

Sensori-motor Approaches

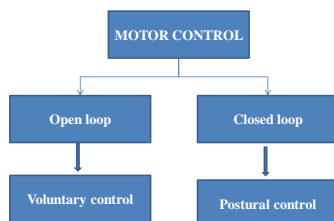
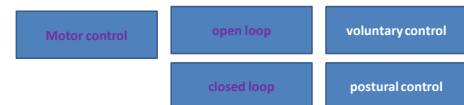
- Bobath approach
- Brunnstrom's movement therapy
- Rood approach
- Proprioceptive neuromuscular facilitation

Theoretical basis...

- Neurodevelopmental model
- Reflex theory
- Hierarchical theory
- Systems approach

NEURODEVELOPMENTAL MODEL

- **Motor control** and its production refers to **two systems of output: the open loop (voluntary control) and the closed loop (postural control) mechanisms**



OPEN-LOOP SYSTEM...

- **Commands sequences of movement that are centrally stored in the nervous system and that serve the functions of mobility in the production of isolated joint and limb motions**

CLOSED-LOOP SYSTEM...

- Dependent upon **afferent feedback** for the elicitation of its **automatic movements** that serve as the **principle motility or stability of the organism**
- **Prerequisite** for the development of normal movement behaviors
- Arise from patterns of coordination

REFLEX Theory

- The basic unit of motor control are reflexes
 - Reflexes → **purposeful movement**
 - Damage to the CNS results to **re-emergence of and inability to control the reflexes**

HIERARCHICAL Theory

- **Motor control is hierarchically arranged**
 - CNS structures involved with movement can be grouped into **HIGHER, MIDDLE, and LOWER** levels
 - Higher centers regulate and control the middle and lower centers
 - Damage to the CNS results to disruption of the normal coordinated function of these levels

SYSTEMS APPROACH

- Suggests that the CNS does not operate in a strictly **descending manner**
- **No higher levels with which to control the operation of the lower levels**
- **There is a mutable relationship between the various levels so that each level will alternate between command and subordinate roles in relation to the other levels.**

SUMMARY

