1. Motor Speech Systems

2. Levels of Motor Activity
   - FCP/LMN
   - UNM
   - Extrapyramidal
   - Cerebellar
   - Conceptual-Programming

3. FCP/LMN
   - part of PNS
   - innervates muscle fibers
   - anterior horn cells of spinal cord and motor nuclei of cranial nerves

4. LMN Damage
   - paresis - flaccid, voluntary and reflexive behavior
   - atrophy
   - fasciculations
   - hypotonia

5. LMN for speech = cranial nerves
   - V - Trigeminal - paresis masticatory muscles
   - VII - Facial - paresis facial muscles
   - IX - Glossopharyngeal - decreased gag reflex
   - X - Vagus - paresis sp, pharynx and larynx
   - XII - Hypoglossal - paresis tongue

6. UMN system
   - regulates LMN
   - corticospinal and corticobulbar tracts
   - contralateral innervation: exception - tongue and lower 1/3 of face

7. UMN Damage
   - weakness
   - spasticity
   - disuse atrophy

8. Extrapyramidal System
   - indirect UMN
   - corticoreticular and corticorubral tracts
   - important to stretch reflex and maintenance of muscle tone and posture

9. Extrapyramidal Damage
   - hypotonia
   - reflexive disinhibition
movement disorders
  – hypokinesia
  – hyperkinesia

10 Cerebellar System
  controls accuracy of response at other levels
  maintains body equilibrium and muscle tone

11 Cerebellar System Damage
  truncal ataxia
  intention tremor
  hypotonia
  nystagmus
  rebound disorders

12 Conceptual-Programming
  formulation of ideas and content
  plan for neuromuscular execution