

Nervous System
NC Chiropractic Assistant Certification Education
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Fundamentals

- + Anatomy- the study of the parts
- + Physiology- the study of how the parts function
- + The Cell- basic unit of life
- + Atoms (Elements) – Molecules – Cells – Tissue – Organs –
- + Organ Systems i.e. Skeletal, muscular, nervous, digestive

Fundamentals

- + Cells have a pre-programmed structure and function
- + Controlled by Innate, Life Force, other
- + Cells that BALANCE their functions based on the environment are in HOMEOSTASIS (steady-state)
- + Cells, tissues, organs, and organ systems that are maintaining a steady state are in HOMEOSTASIS or HEALTH
- + The inability to maintain homeostasis is DISEASE

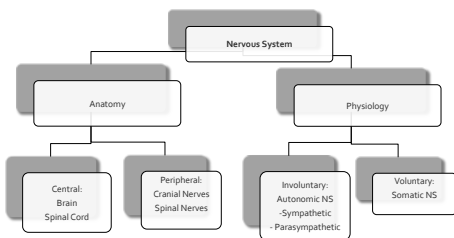
Subluxation

- + Spinal dysfunction/misalignment plus nerve interference that prevents homeostasis
- + May include:
 - + Spasm
 - + Inflammation
 - + Pain
 - + Swelling
 - + Redness
 - + Heat
 - + Loss of Function (Disease)

Terminology

- + Central
- + Peripheral
- + Afferent
- + Efferent

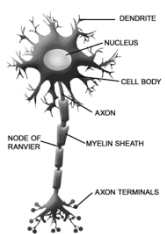
Organization of the Nervous System



Organization of the Nervous System

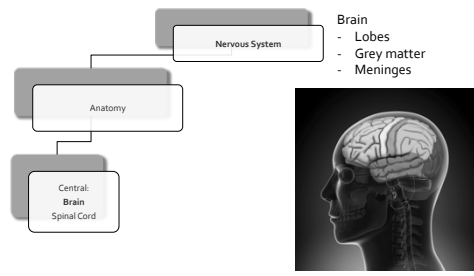
Basic Nervous System Cell is the **Neuron**:

- Myelin vs. Gray
- Regeneration
- Synapse



The diagram shows a single neuron with a central cell body containing a nucleus. Branching out from the cell body are several dendrites. A long axon extends from the cell body, covered by a myelin sheath with gaps called nodes of Ranvier. The axon ends in axon terminals.

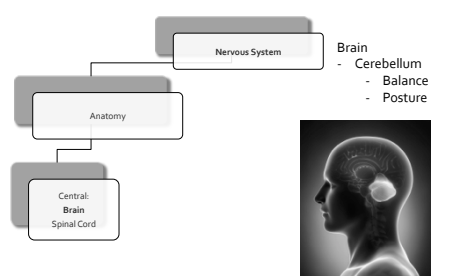
Organization of the Nervous System



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graph TD; NS[Nervous System] --- AN[Anatomy]; AN --- CB[Central: Brain, Spinal Cord];
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- Brain
 - Lobes
 - Grey matter
 - Meninges

Organization of the Nervous System



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graph TD; NS[Nervous System] --- AN[Anatomy]; AN --- CB[Central: Brain, Spinal Cord];
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- Brain
 - Cerebellum
 - Balance
 - Posture

Organization of the Nervous System

The diagram shows a hierarchical structure of the Nervous System. At the top is 'Nervous System', which branches into 'Anatomy' and 'Central: Brain Spinal Cord'. 'Anatomy' further branches into 'Central: Brain Spinal Cord' and 'Peripheral: Spinal Cord'. To the right of the diagram is a human figure showing the spine, with a list of components: Spinal Cord, Brain Stem, Ends -L2, Cauda Equina, and Cerebro-spinal fluid (CSF).

- Nervous System
- Anatomy
- Central: Brain Spinal Cord
- Peripheral: Spinal Cord
- Spinal Cord
- Brain Stem
- Ends -L2
- Cauda Equina
- Cerebro-spinal fluid (CSF)

Organization of the Nervous System

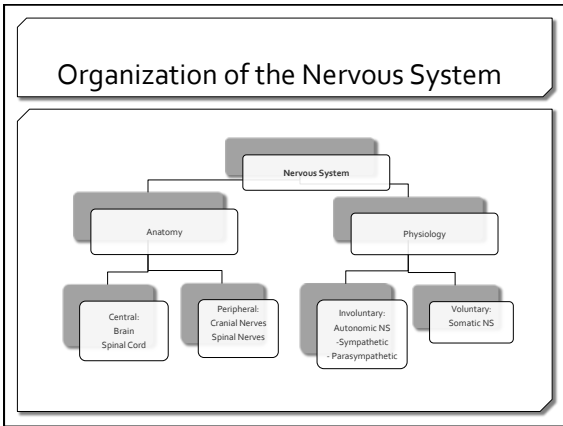
The diagram shows a hierarchical structure of the Nervous System. At the top is 'Nervous System', which branches into 'Anatomy' and 'Peripheral: Cranial Nerves I-XII'. 'Anatomy' further branches into 'Peripheral: Cranial Nerves I-XII' and 'The Cranial Nerves'. 'The Cranial Nerves' is further divided into 'Cranial Nerves' and 'Peripheral: Cranial Nerves I-XII'. To the right of the diagram is a human figure showing the head and neck, with a list of components: Cranial Nerves, V (Trigeminal), VII (Facial), X (Vagus), XI (Spinal Accessory), and a detailed list of cranial nerves: Olfactory nerve fibers (I), Optic nerve (II), Oculomotor nerve (III), Trochlear nerve (IV), Trigeminal nerve (V), Abducens nerve (VI), Facial nerve (VII), Vestibulocochlear nerve (VIII), Glossopharyngeal nerve (IX), Vagus nerve (X), Accessory nerve (XI), and Hypoglossal nerve (XII).

- Nervous System
- Anatomy
- Peripheral: Cranial Nerves I-XII
- The Cranial Nerves
- Cranial Nerves
- V (Trigeminal)
- VII (Facial)
- X (Vagus)
- XI (Spinal Accessory)
- Olfactory nerve fibers (I)
- Optic nerve (II)
- Oculomotor nerve (III)
- Trochlear nerve (IV)
- Trigeminal nerve (V)
- Abducens nerve (VI)
- Facial nerve (VII)
- Vestibulocochlear nerve (VIII)
- Glossopharyngeal nerve (IX)
- Vagus nerve (X)
- Accessory nerve (XI)
- Hypoglossal nerve (XII)

Organization of the Nervous System

The diagram shows a hierarchical structure of the Nervous System. At the top is 'Nervous System', which branches into 'Anatomy' and 'Peripheral: Spinal Nerves'. 'Anatomy' further branches into 'Peripheral: Spinal Nerves' and 'Spinal Nerves'. To the right of the diagram is a human figure showing the spine, with a list of components: Spinal Nerves, Dermatomes, and Reflexes.

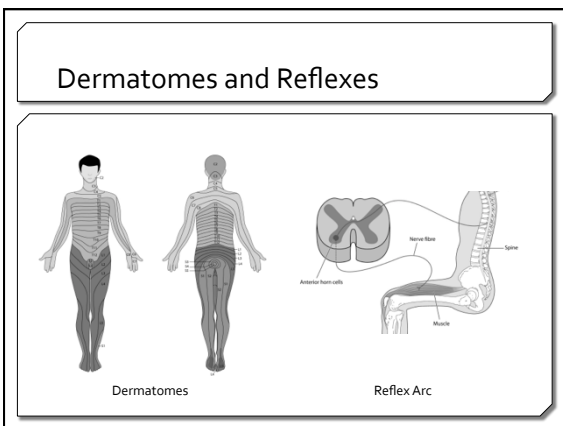
- Nervous System
- Anatomy
- Peripheral: Spinal Nerves
- Spinal Nerves
- Dermatomes
- Reflexes



Dermatomes and Reflexes

- + Dermatomes
 - + Allow evaluation of specific sensory nerves

- + Reflexes
 - + Allow evaluation of specific motor nerves, spinal cord levels
 - + NOTE: Impulse does not rise to the brain
 - + Into spinal cord and then back out at the same level



Common Reflexes

- + Bicep
- + Tricep
- + Patellar
- + Achilles

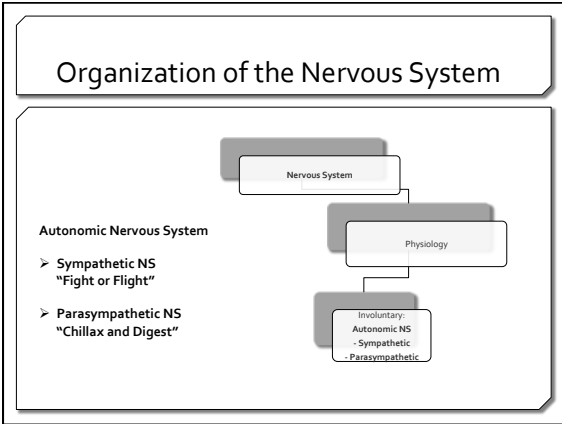
Motor unit = anterior horn cell + nerve fibre + muscle fibre

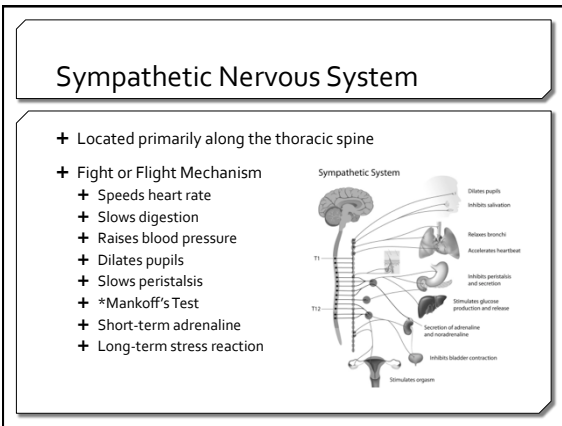
Organization of the Nervous System

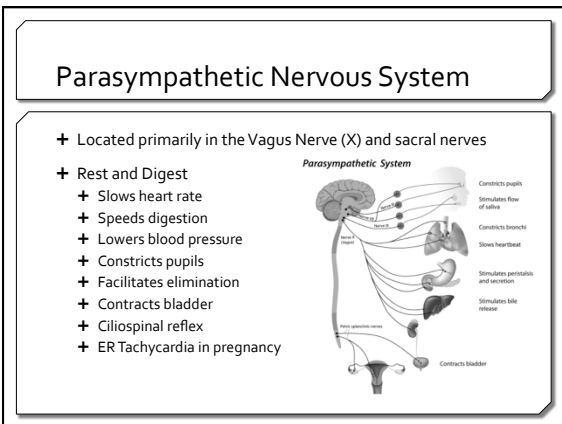
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graph TD; NS[Nervous System] --> AN[Anatomy]; NS --> PH[Physiology]; AN --> AN_C[Central: Brain, Spinal Cord]; AN --> AN_P[Peripheral: Cranial Nerves, Spinal Nerves]; PH --> PH_I[Involuntary: Autonomic NS (Sympathetic, Parasympathetic)]; PH --> PH_V[Voluntary: Somatic NS];
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Organization of the Nervous System

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graph TD; NS[Nervous System] --> PH[Physiology]; PH --> PH_V[Voluntary: Somatic NS];
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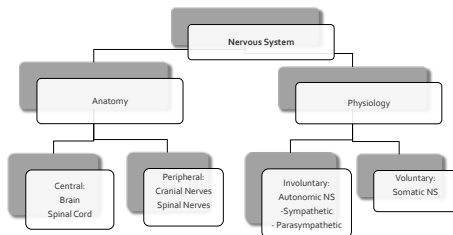




Health = Homeostasis

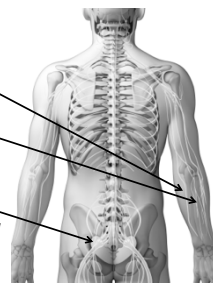
- + Balance between sympathetic and parasympathetic
- + Emphasis one over the other depending on situation
- + Subluxations may interfere with function and/or balance
- + Because of the wide distribution, any symptom is possible
- + Not fully predictable
- + Subluxations can be harmful but not painful

Organization of the Nervous System



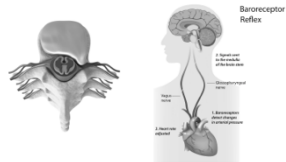
Named Nerves

- + Ulnar Nerve
 - + Funny bone
 - + Little finger side
- + Median Nerve
 - + Carpal Tunnel
 - + Thumb side
- + Sciatic Nerve
 - + longest nerve in the body
 - + Symptoms in hip, back of thigh, lower leg, foot drop



Pathology / Diseases

- + Meningitis
- + Multiple Sclerosis
- + Spinal Cord Injury
- + Disc Herniation
- + Disc Degeneration
- + Subluxation
 - + Atlas/Axis (Upper Cervical)



Nervous System Review

- + Review

