

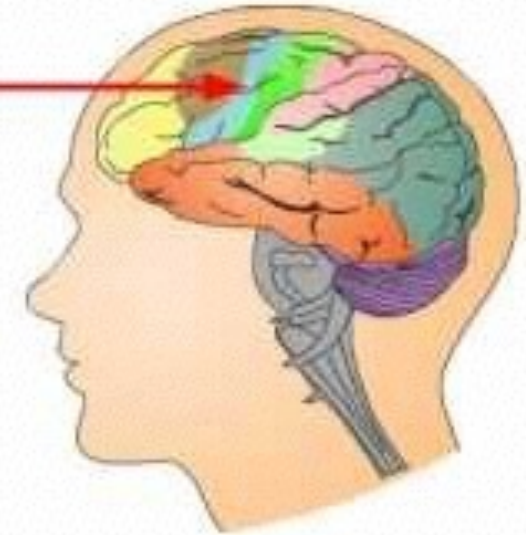
Spastic Cerebral Palsy

by: Nicole Victoria T. Koumentis

What is CP?

- * A group of non-progressive movement disorders due to brain damage
- * Most common cause of permanent disability in children
- * Cerebral: Brain
- * Palsy: Loss or impairment of motor function

CP is caused by problems with the **motor skill areas** of the brain. These areas may develop abnormally or get damaged. The brain's ability to control movement and posture is disrupted.



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**CEREBRAL PALSY
IS THE MOST COMMON
MOTOR DISABILITY IN
CHILDHOOD**

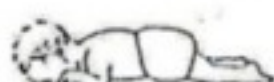
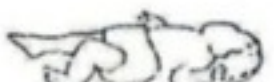
About 10,000 babies born each year will develop cerebral palsy

Etiology

- * Any injury of the CNS due to congenital abnormalities
- * Prenatal trauma
- * Postnatal trauma
- * Meningitis up to 2 years of age
- * Genetic abnormalities
- * Maternal infections
- * Fetal injury
- * Head injuries from MVAs

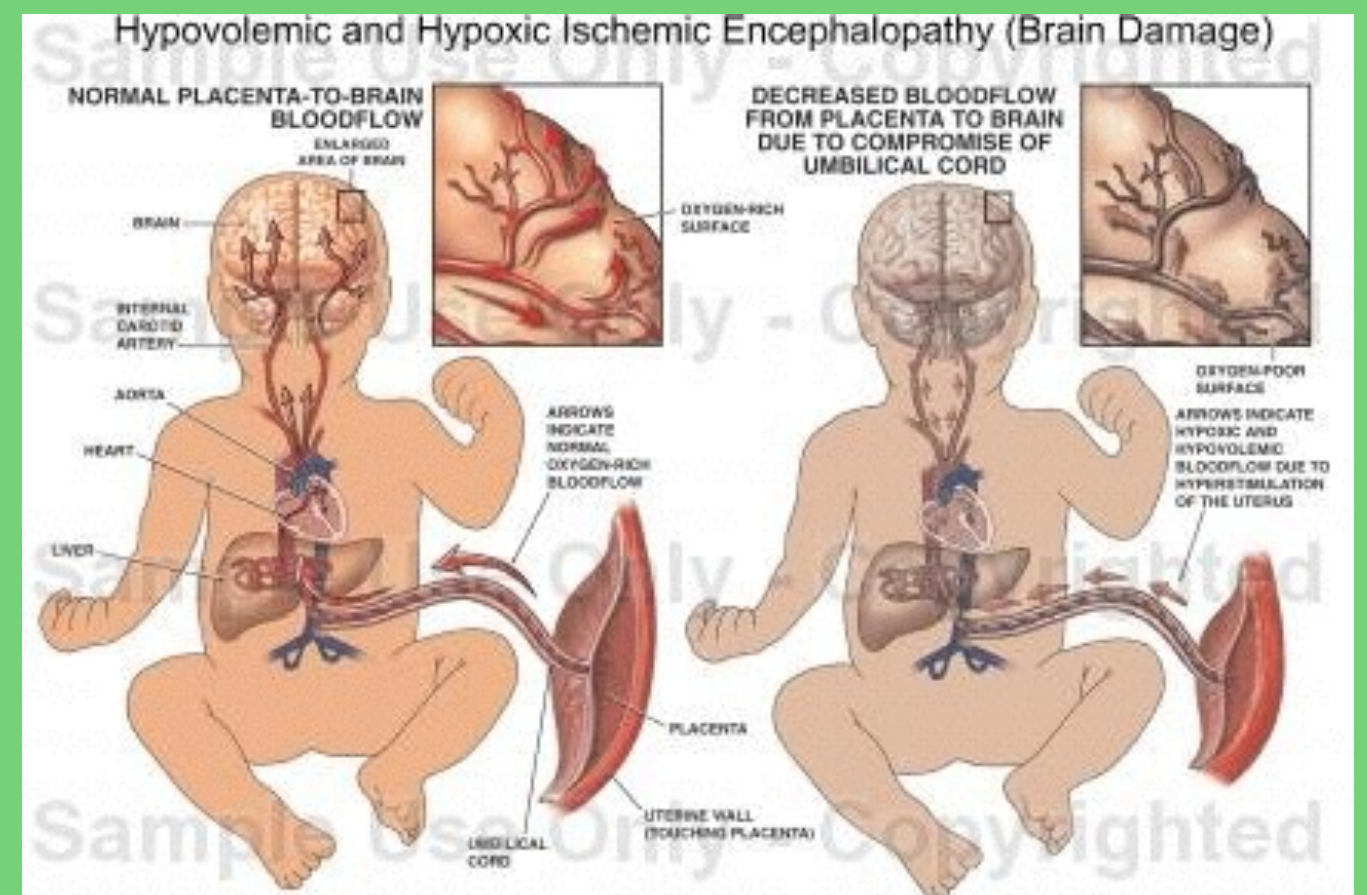
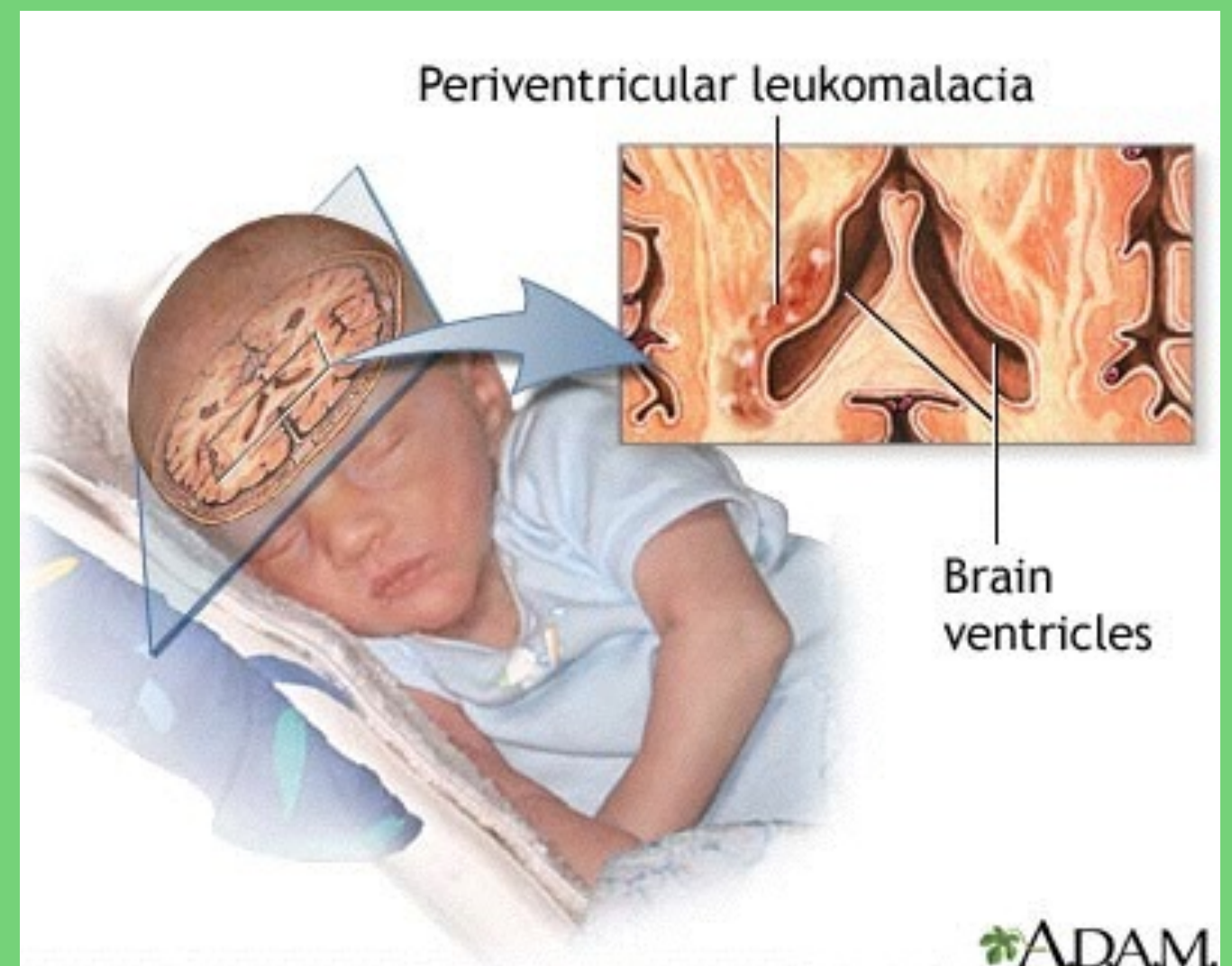
Early Warning Signs

* *Specific diagnosis may be delayed until 2 years of age or later*

Age	Normal development	Cerebral Palsy	
By 3 Months	A  Lies straight on stomach; holds head up well; pushes up arms lies on back; brings two hands together	F  Still legs Cannot lift head Cannot push up on arms	K  Pushes back head to one side One arm and leg bent, the other arm and leg straight cannot bring hands together
by 6 months	B  Sits leaning on hands takes weight on feet when held in standing	G  Cannot lift head Round back Stiff arms and flisted hands	L  Tiptoe standing arms pull back stiff legs which are crossed like scissors
By 9 months	C  Sits alone, reaches out, supports self when placed standing	H  Round back Poor use of hands for play Stiff legs, pointed toes	M  Does not take weight on legs poor head lighting
By 12 months	D  Pulls to stand holding something, crawls well	I  Difficulty pulling to stand, still legs, pointed toes	N  Cannot crawl, uses only one side of the body or drags self by only using
By 18 months	E  Stands and walks alone, moves into and out of sitting; sits straight, uses both hands	J  One arm stiff and bent Tiptoe walking on one side poor standing balance	O  Uses mostly one hand to play, one leg may be stiff, Sits with weight to one side

Types of Brain Damage

- * **Periventricular leukomalacia (PVL) -> White matter damage**
- * **Cerebral dysgenesis -> abnormal brain development**
- * **Intracranial hemorrhage -> due to fetal strokes caused by placental blood clots; Pelvic inflammatory diseases**
- * **Severe lack of brain oxygen (Asphyxia)**
- * **Hypoxic-Ischemic Encephalopathy**



Risk Factors

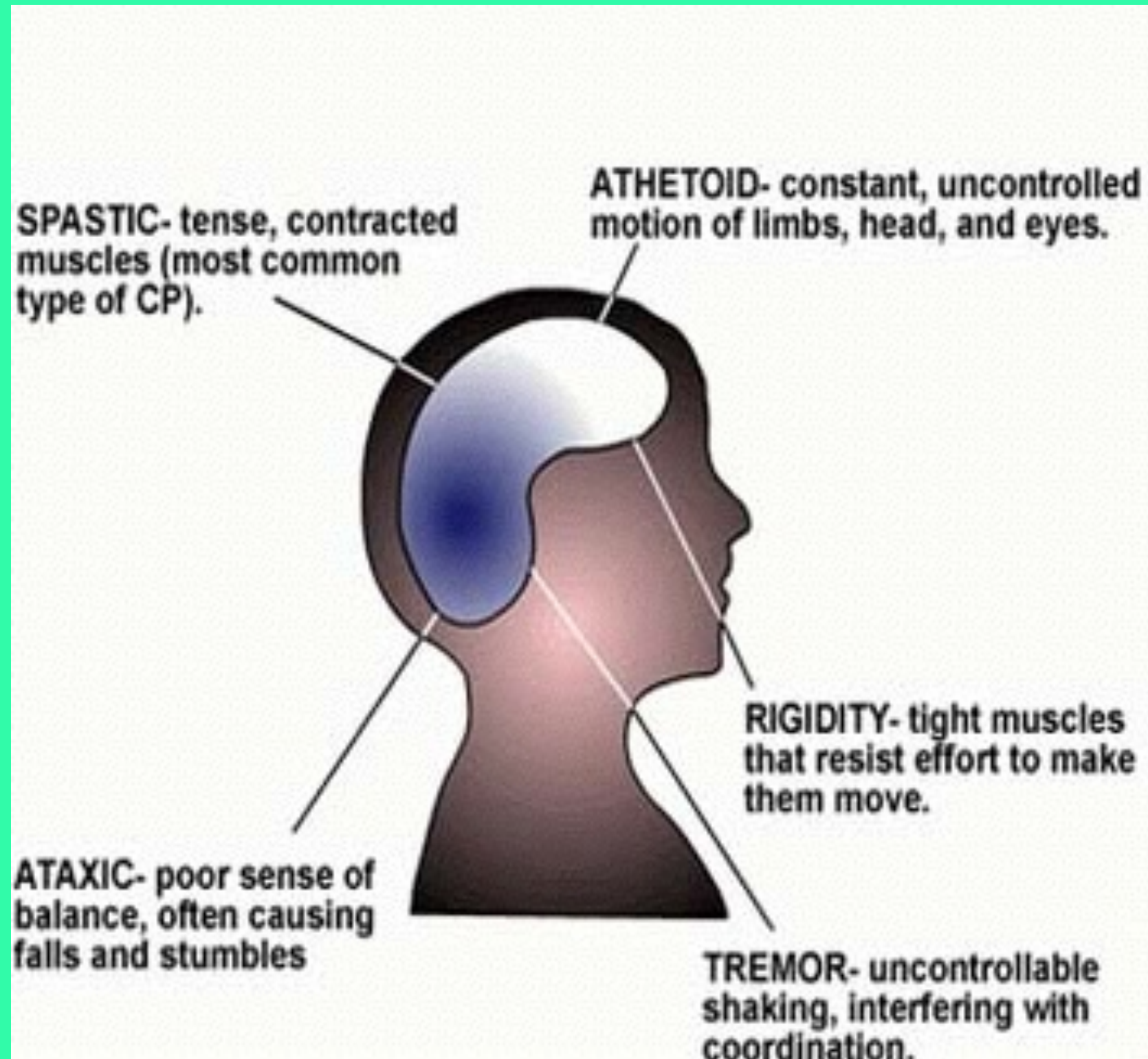
- * Low Birthweight (Premature birth)
- * Multiple births
- * Blood type incompatibility
- * Low Apgar score
- * Infants with seizures

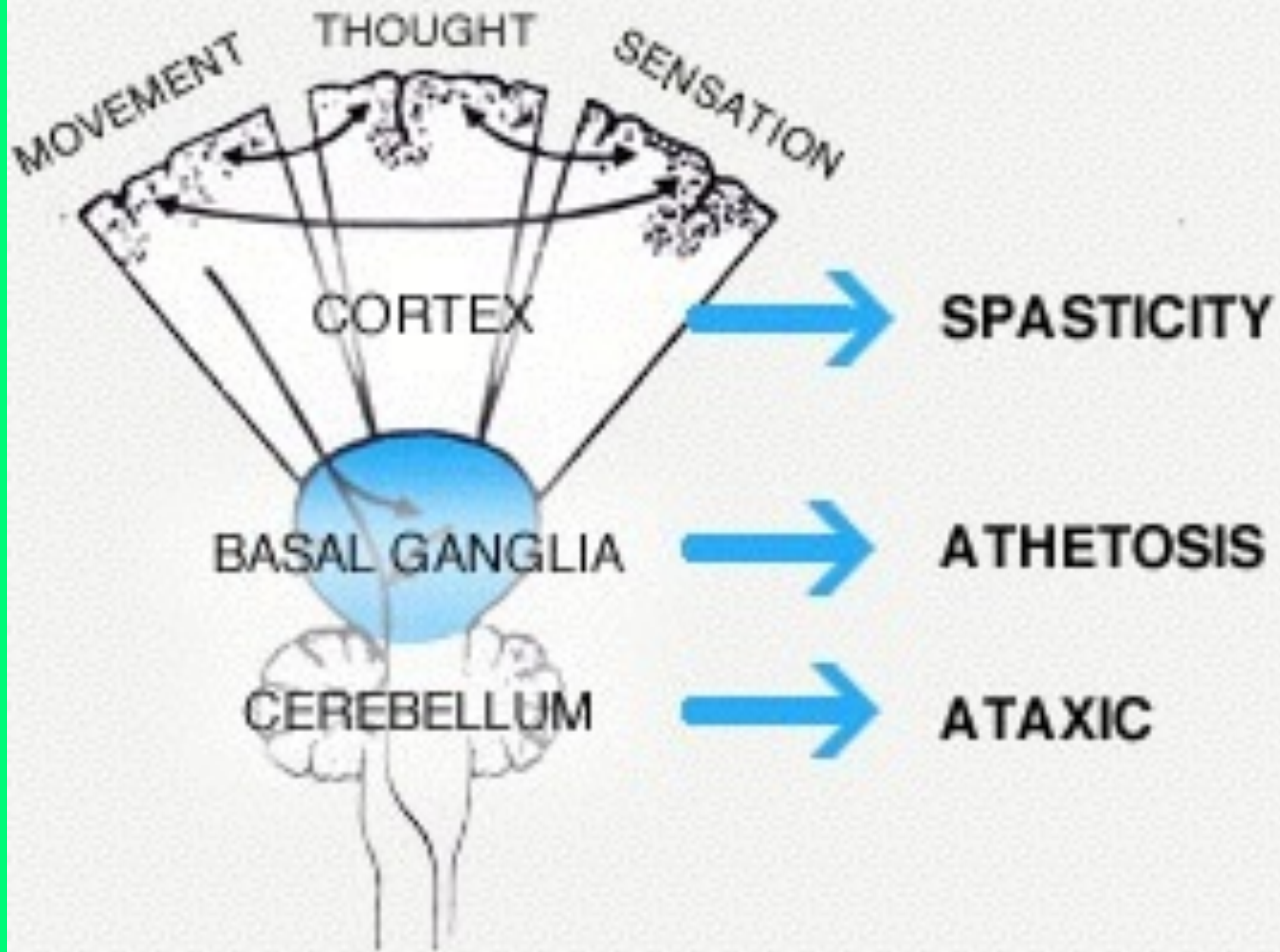
Preventive Measures



Classification

- * Pyramidal -> Damage to the motor areas of the cerebral cortex
- * Extrapyramidal -> Basal ganglia and cerebellum
- * Mixed





Spastic CP

- **Increased muscle tone, tense and contracted muscles**
 - Have stiff and jerky or awkward movements.
 - limbs are usually underdeveloped
 - increased deep tendon reflexes
- **most common form**
- **70-80% of all affected**



Spastic Gait



The child who learns to walk may do so in a stiff, awkward position, with the knees pulled together and bent. Feet often turn in.

Lesion: Corticospinal & Corticobrainstem tracts

- * Eliminates competition for synaptic sites
- * Abnormal development of spinal motor centers
- * Loss of cortical inhibition in the brainstem causes overactivity of reflexes
- * UMN overactivity affecting vestibulospinal and reticulospinal tracts

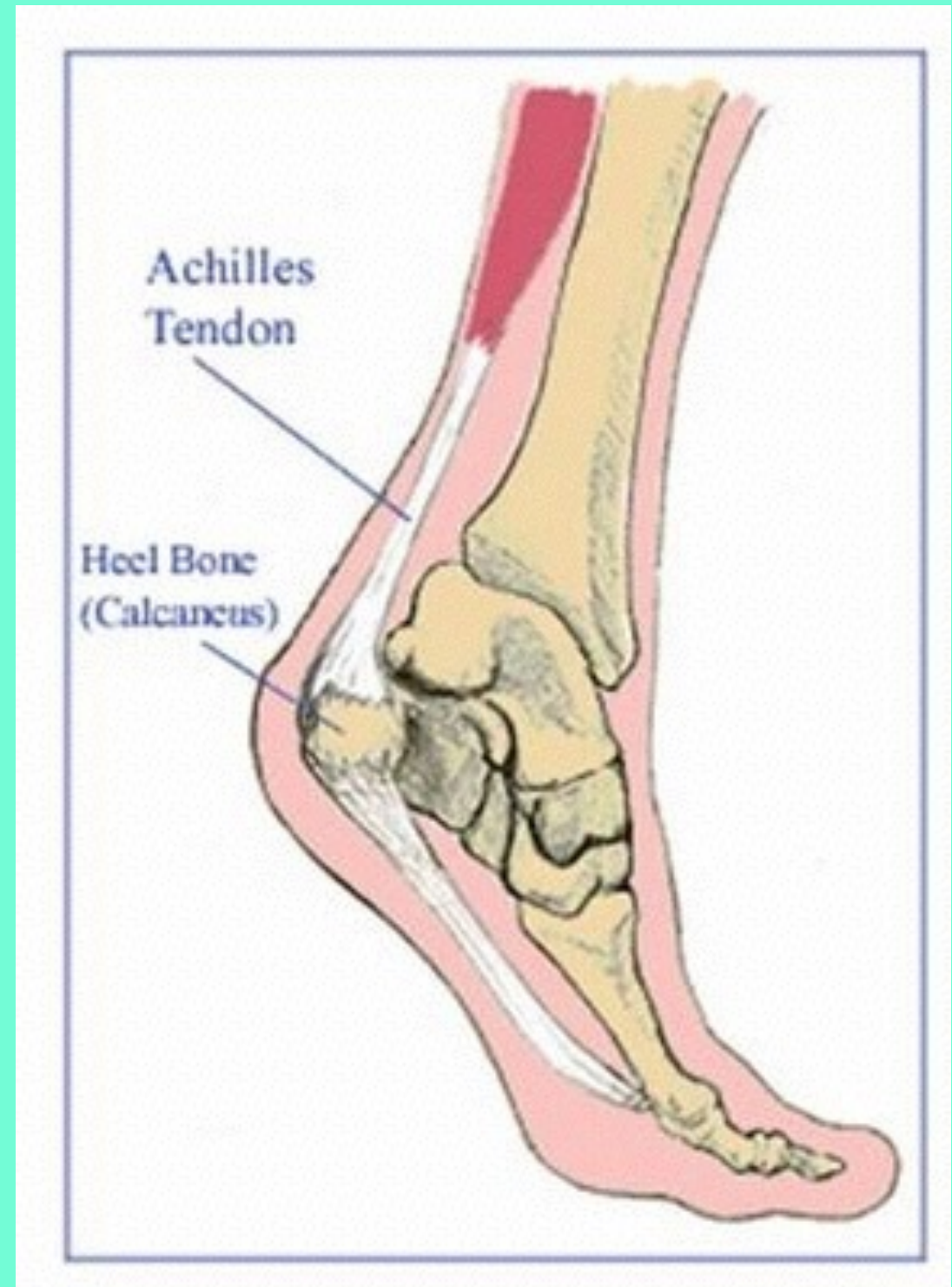
* Vestibulospinal tract:
Muscle tone, limb/head position, supporting posture, balance

* Reticulospinal tract:
locomotion, postural control

Hemiplegia/Hemiparesis

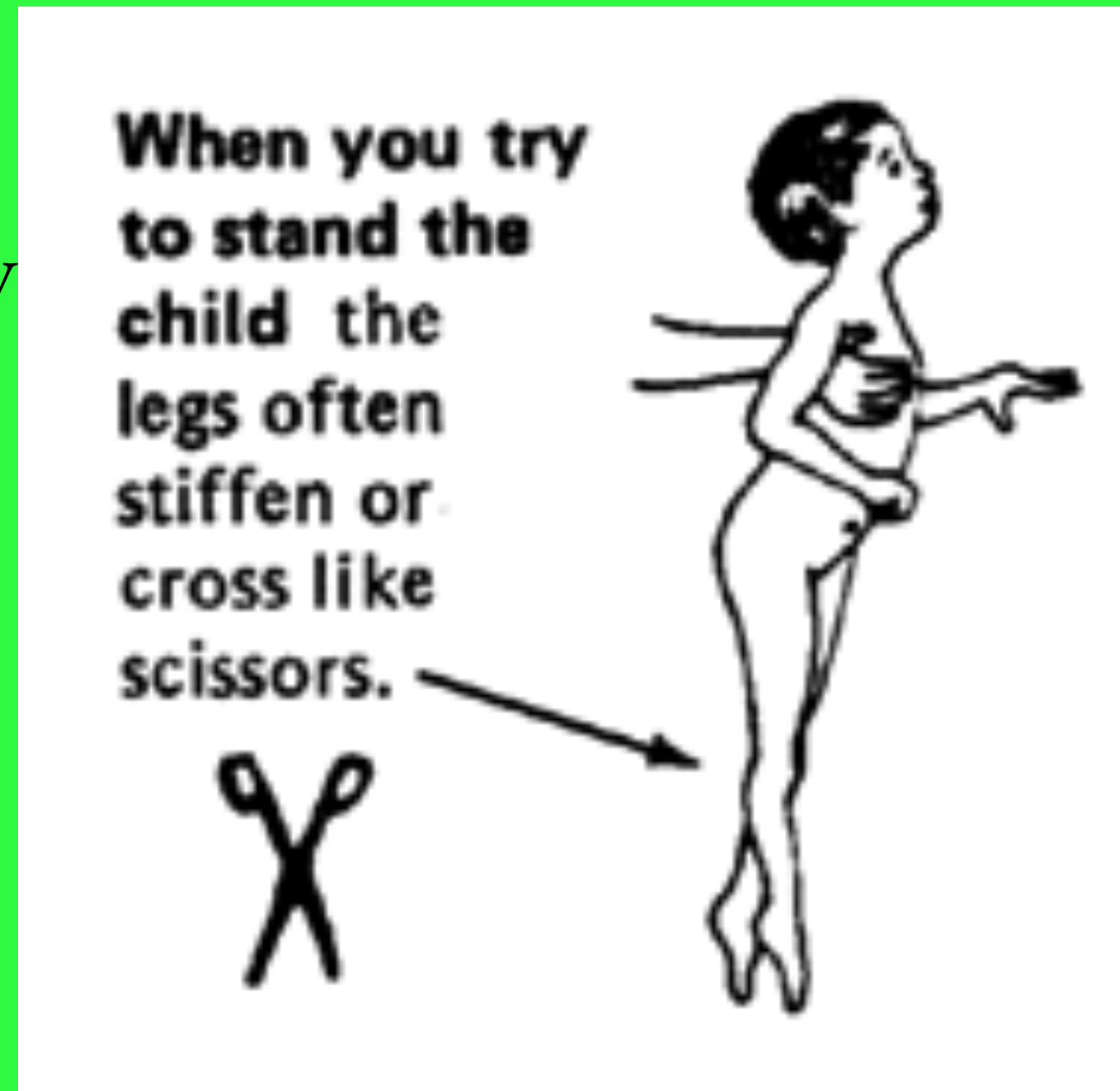
- * Arm and leg of affected side are shorter and thinner
- * Tight Achilles tendon
- * Scoliosis
- * Delayed speech

- * Normal intelligence



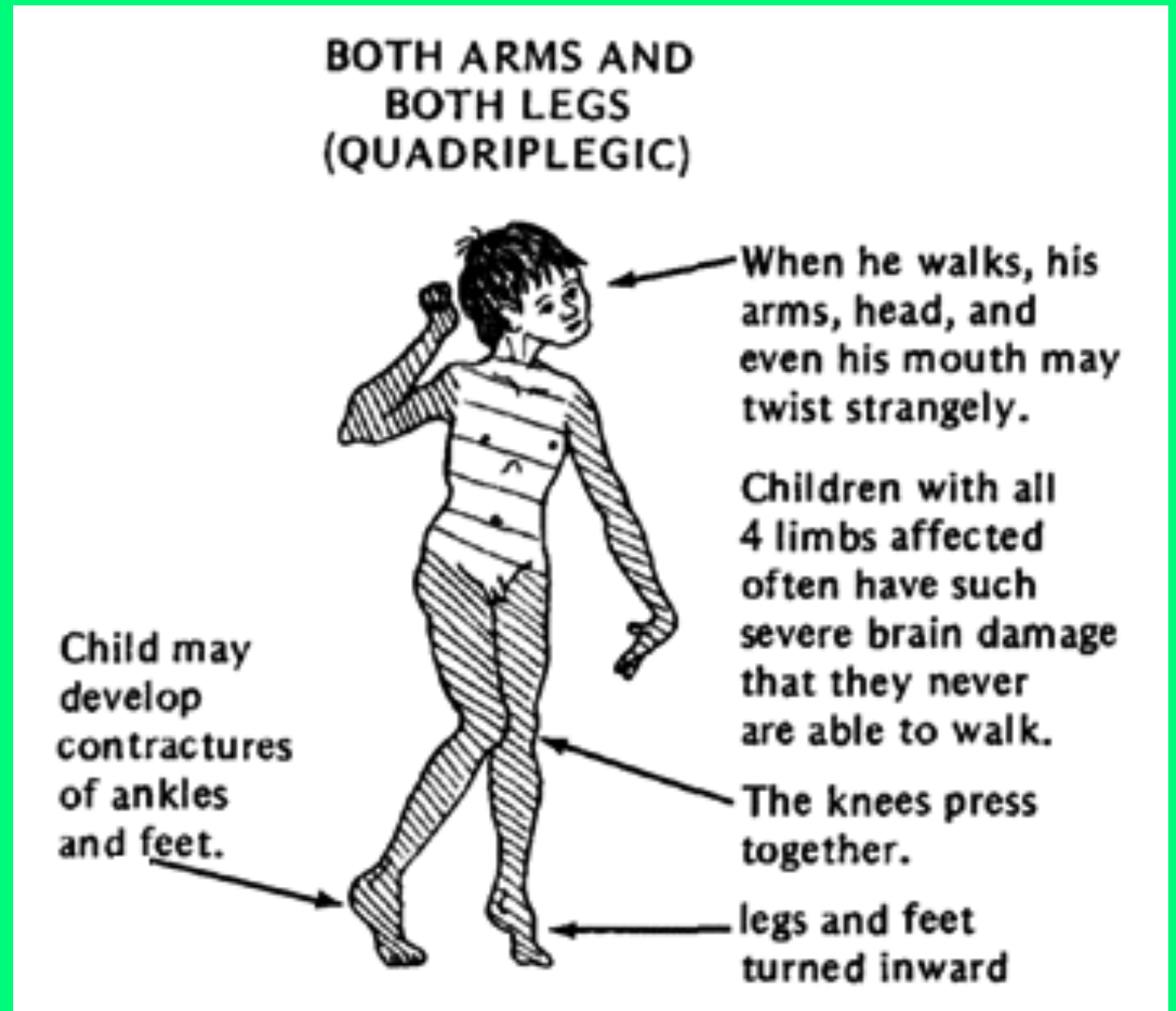
Spastic Diplegia/Diparesis

- * Muscle stiffness mostly in the arms and legs; Severely affects arms and face
- * Hyperactive tendon reflexes
- * Positive Babinski's Sign
- * Leg spasticity



Spastic Quadriparesis

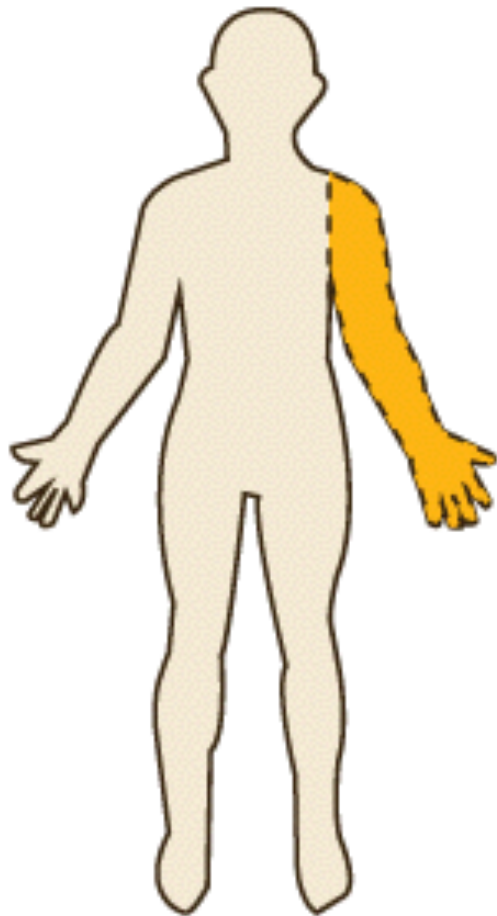
- * Most severe!
- * Moderate-to-severe intellectual disability
- * Widespread brain damage
- * Severe stiffness
- * Speaking difficulties
- * Seizures



TYPES

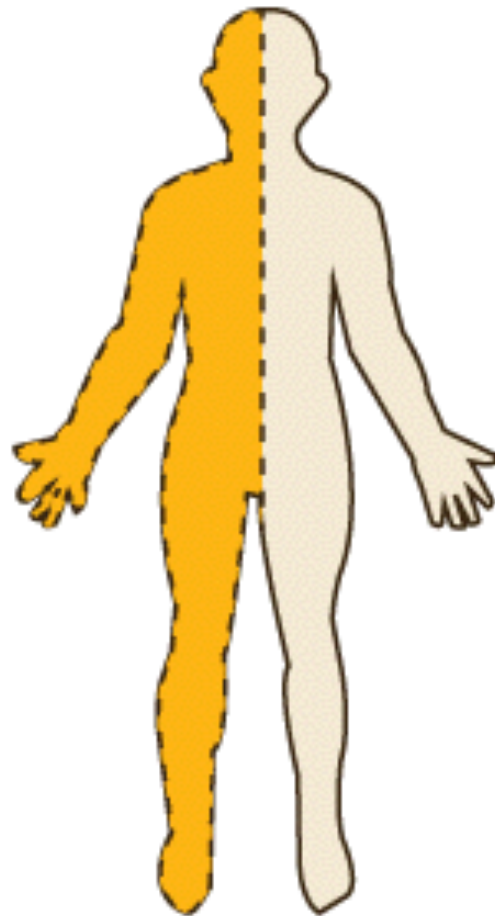
CEREBRAL PALSY

Monoplegia



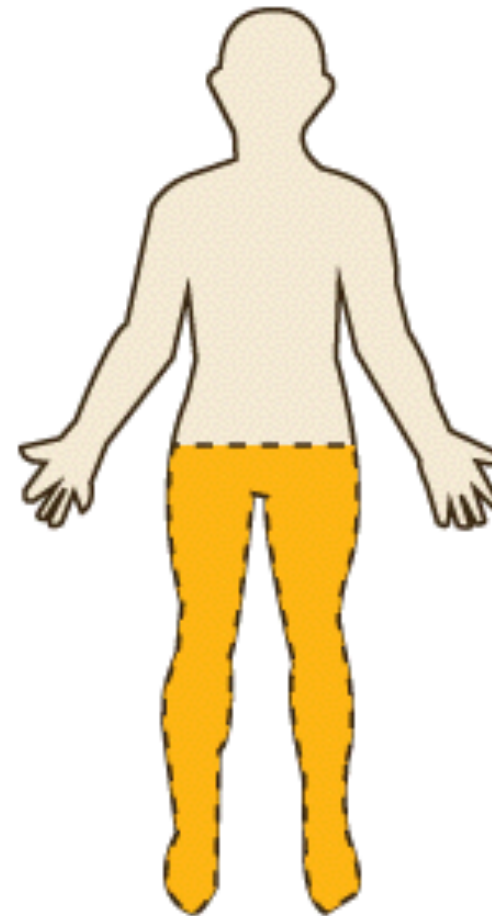
Affects one limb, usually an arm.

Hemiplegia



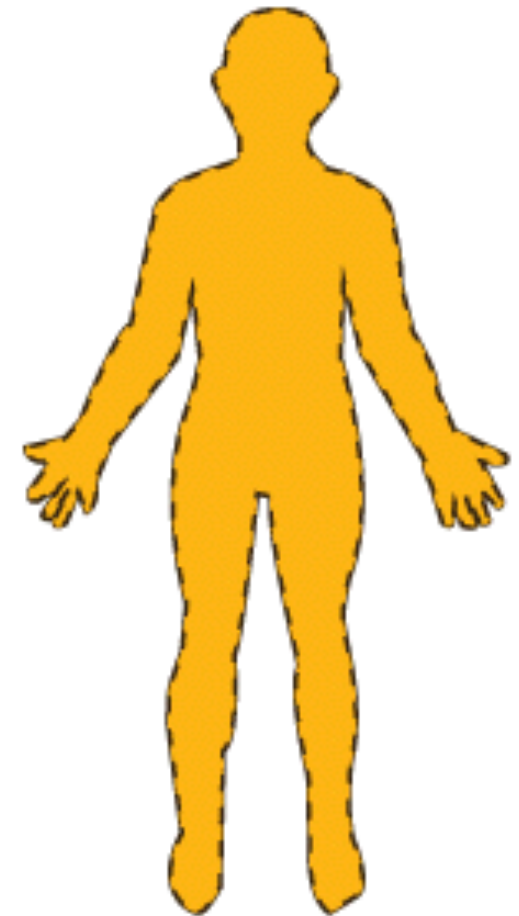
Affects one side of the body, including arm, leg, and trunk.

Diplegia



Affects symmetrical parts of the body (legs or arms).

Quadriplegia



Affects all four limbs

Conditions Associated with CP

- * Intellectual Disability
- * Seizure disorder
- * Delayed growth and development
- * Spinal deformities
- * Speech and language disorders
- * Aspiration, Pneumonia, Contractures
- * Incontinence
- * Hearing loss/Impaired vision

Diagnosis

Cranial ultrasound -> high-frequency sound waves to produce pictures of the brains of young babies; Least intrusive

Computed tomography -> shows brain structure and areas of damage

MRI -> uses magnetic fields and radio waves to create an anatomical picture of the brain's tissues and structures; Finer levels of details than CT



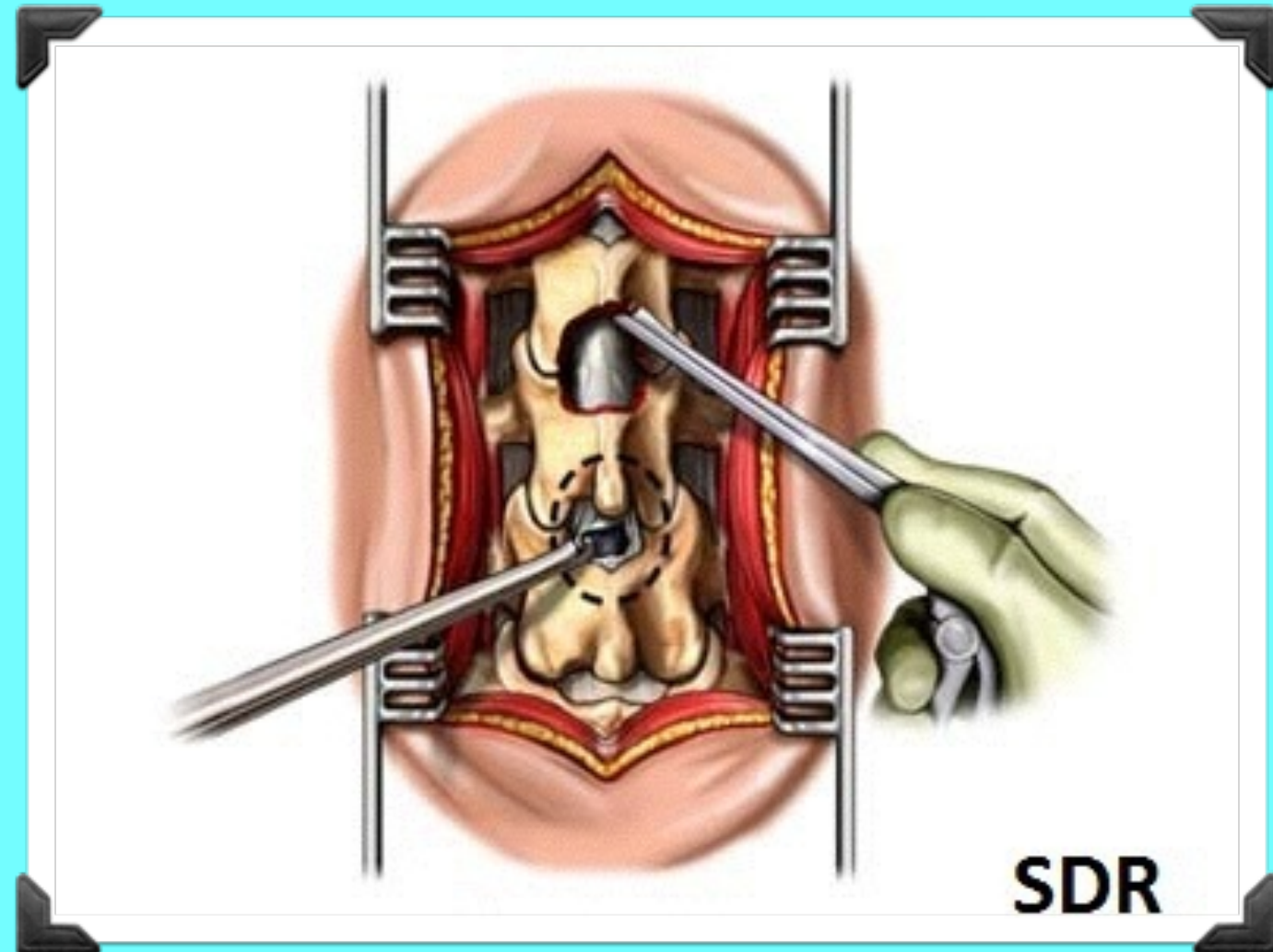
Drug Treatments

- * Botulinum Toxin -> standard treatment for overactive muscles; Lasts 3 months; Most effective when followed by a stretching program and splinting
- * Intrathecal Baclofen -> decreases the excitability of nerve cells in the spinal cord; Appropriate for those w/ severe stiffness or uncontrolled muscle movement



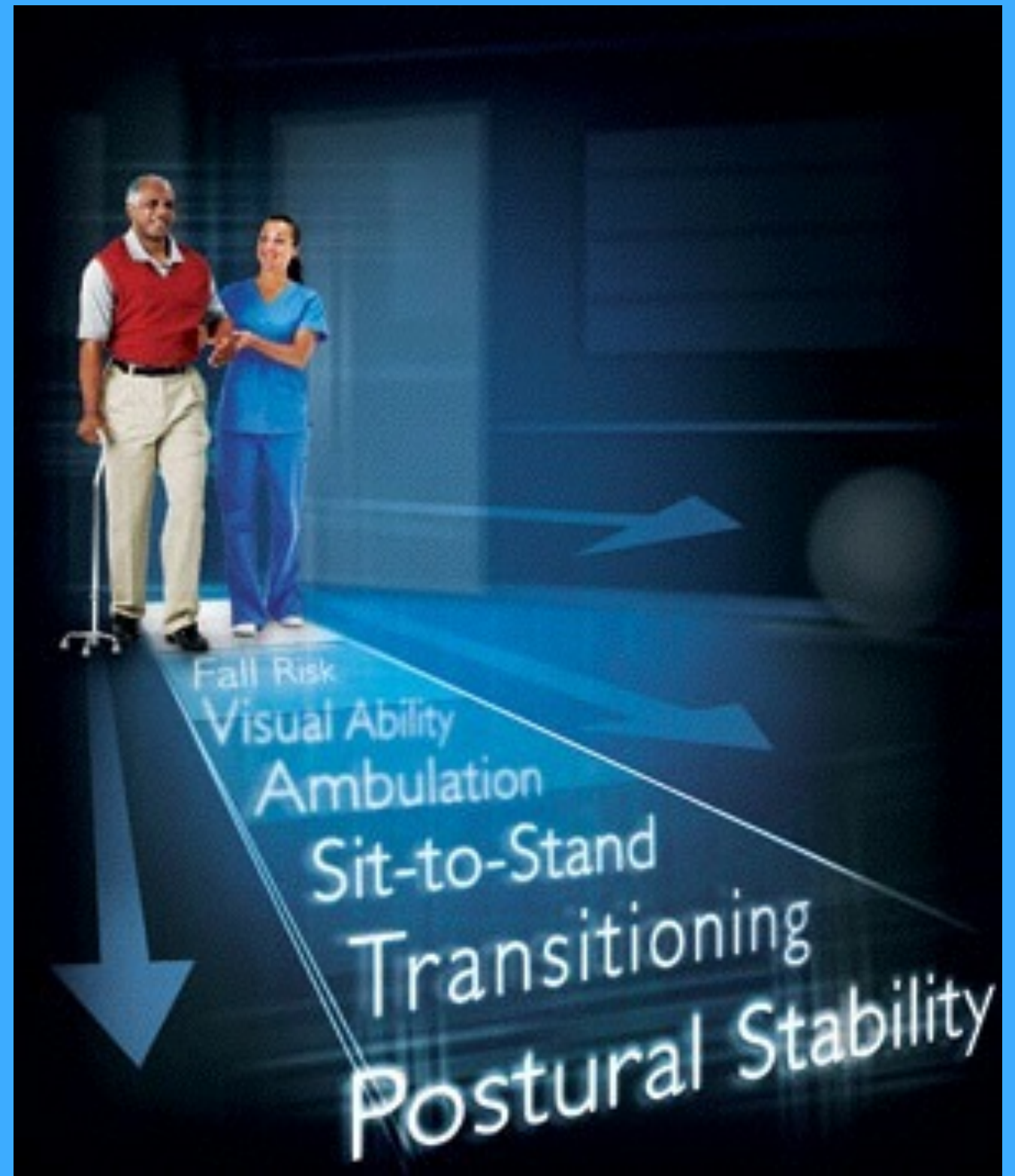
Surgery

- * **Selective Dorsal Rhizotomy (SDR)** -> A surgeon locates and selectively severs overactivated nerves at the base of the spinal column. SDR is most commonly used to relax muscles and decrease chronic pain in one or both of the lower or upper limbs. It is also sometimes used to correct an overactive bladder. Potential side effects include sensory loss, numbness, or uncomfortable sensations in limb areas once supplied by the severed nerve.



Physical Therapy Tests/Measures

- * Aerobic capacity and endurance
- * Arousal, attention, cognition
- * Assistive and adaptive devices
- * Gait, locomotion, balance
- * Integumentary integrity
- * Motor function
- * Neuromotor development and Sensory Integration
- * ROM, Reflex integrity
- * Pain
- * Posture
- * Ventilation



Physical Therapy Interventions

- * Assistive Devices (AD)
- * Orthotics
- * Visual Aids
- * Hearing Aids
- * Constraint-Induced Movement Therapy
- * E. Stim



- * PROM
- * Strengthening, Stretching, Balance, Mobility Skills

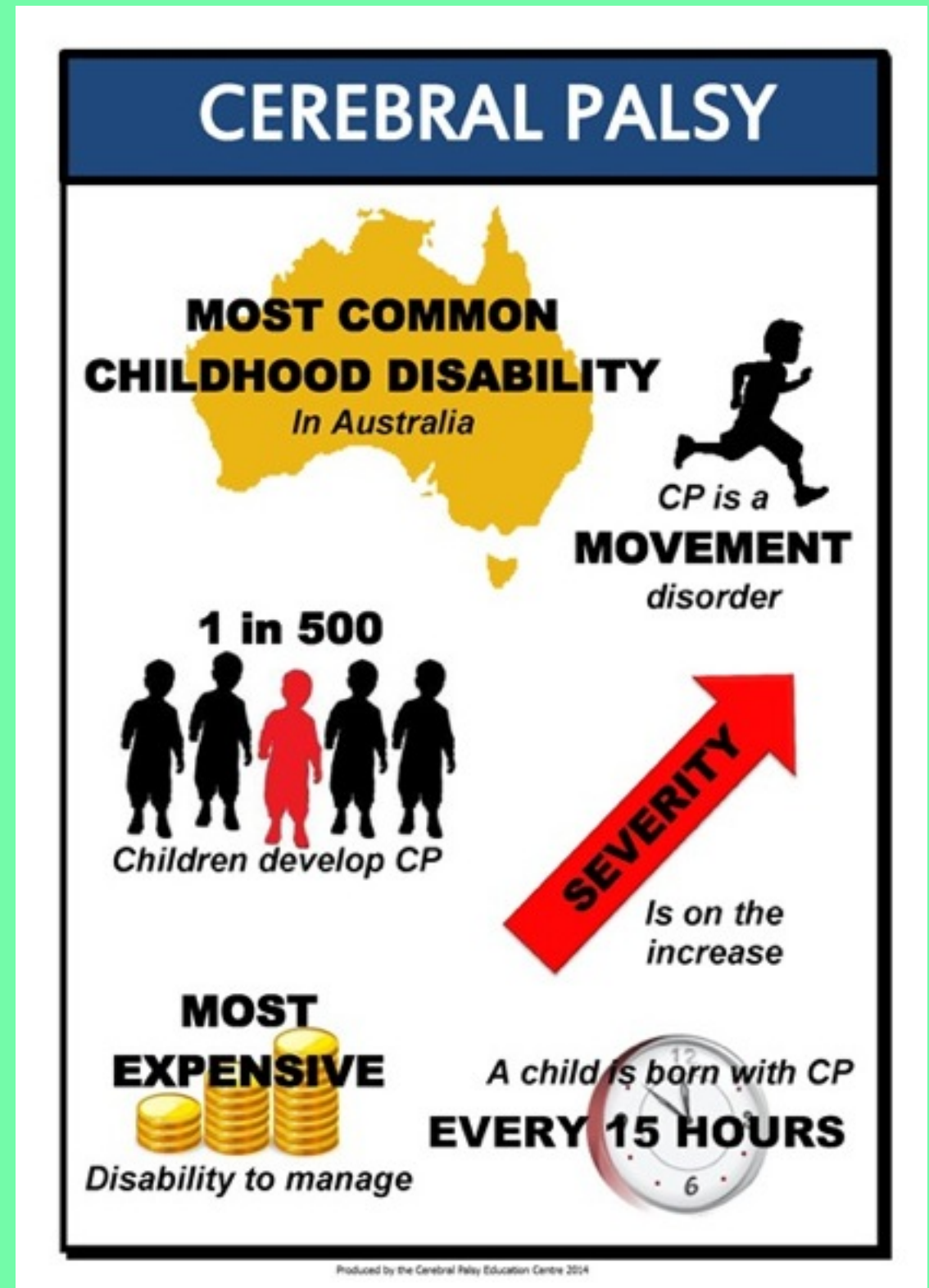
Multidisciplinary Team

- * Physical Therapists
- * Occupational Therapists
- * Recreational Therapists
- * Speech therapists



Did You Know?

- * Stem cell therapy is currently being investigated as a treatment
- * Systemic hypothermia protects the brain and decreases the rate of death and disability from certain disorders and brain injuries
- * Researchers are studying a chemical called erythropoietin to see if it decreases the risk of CP in infants



Some of us use wheelchairs, walkers, forearm crutches, or walk with a limp

Some of us speak clear, some have speech problems, or some can't speak at all

Some of us have problems hearing, seeing, eating, and moving

People with Cerebral Palsy are affected in different ways but we all want the same thing, understanding and acceptance



Charisse Living with Cerebral Palsy



Work Cited

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