EARLY IDENTIFICATION AND INTERVENTION

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SVNIRTAR
पुनर्वास सेवा भवन
REHABILITATION SERVICES BUILDING

India

- India has 447 million children – the highest child force in the world !
- Indians love children and look to them as an extension of themselves – the future

Disabled Population by Type of Disability India : 2011

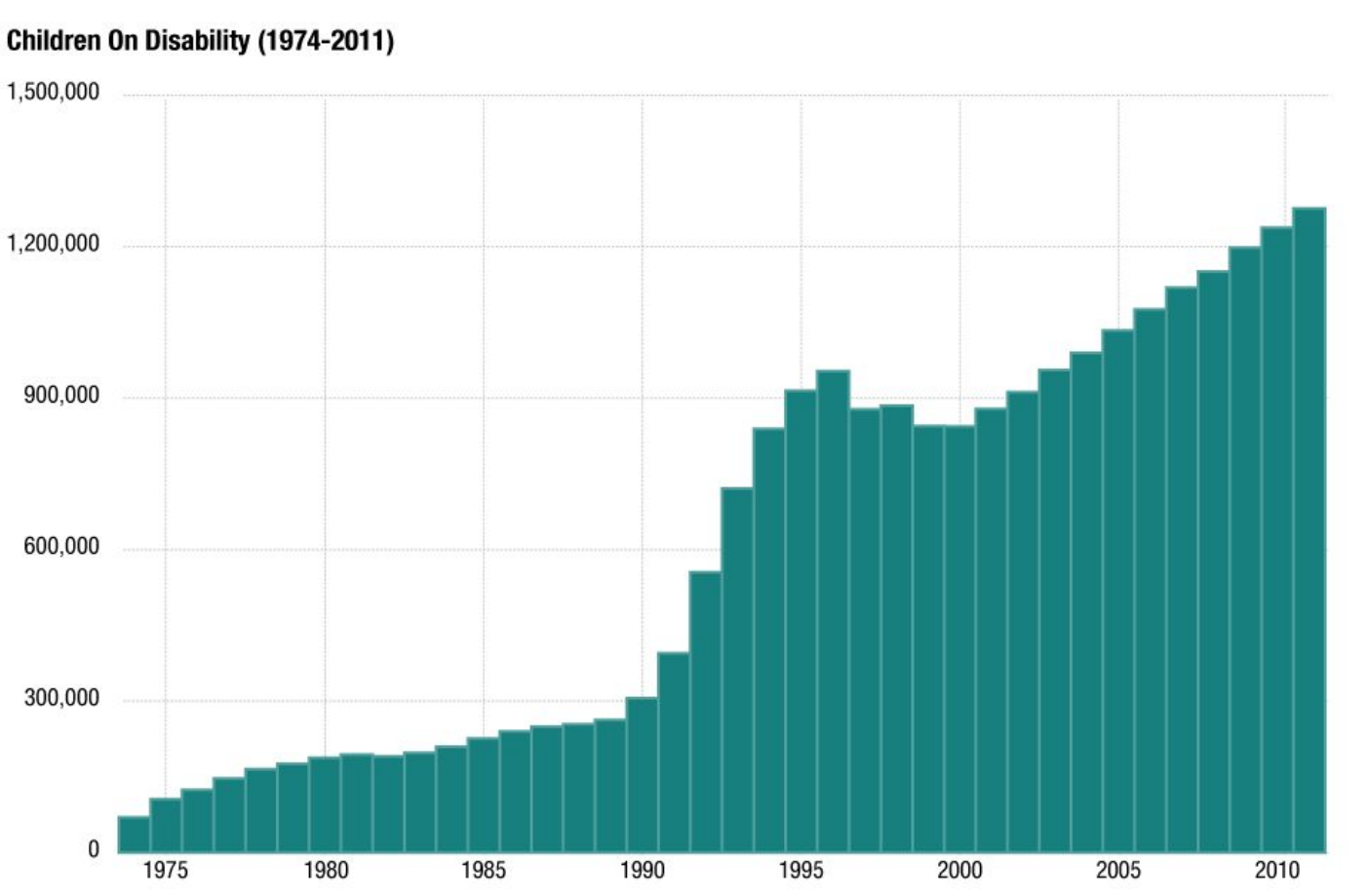
Disabled Population by Type of Disability
India : 2011

Total	**26,810,557**	**14,986,202**	**11,824,355**
In Seeing	5,032,463	2,638,516	2,393,947
In Hearing	5,071,007	2,677,544	2,393,463
In Speech	1,998,535	1,122,896	875,639
In Movement	5,436,604	3,370,374	2,066,230
Mental Retardation	1,505,624	870,708	634,916
Mental Illness	722,826	415,732	307,094
Any Other	4,927,011	2,727,828	2,199,183
Multiple Disability	2,116,487	1,162,604	953,883

Source: C-Series, Table C-20, Census of India 2011

WE LOVE INDIA

CHILDREN ON DISABILITY



What is the future we are building?

How can we build a vibrant & healthy society ?

Right of People with Disability Act 2016

PWD Act 1995

INCLUDES’’’’’’’’

- CLUB FEET
- CEREBRAL PALSY
- CPT
- PERTHE’S
- SKELETAL DEFICIENCY
- POST TRAUMATIC DEFORMITY
- RICKETS
- POST SEPTIC DEFORMITY
- AMPUTATION
- DDH
- POLIO

Largely eliminated

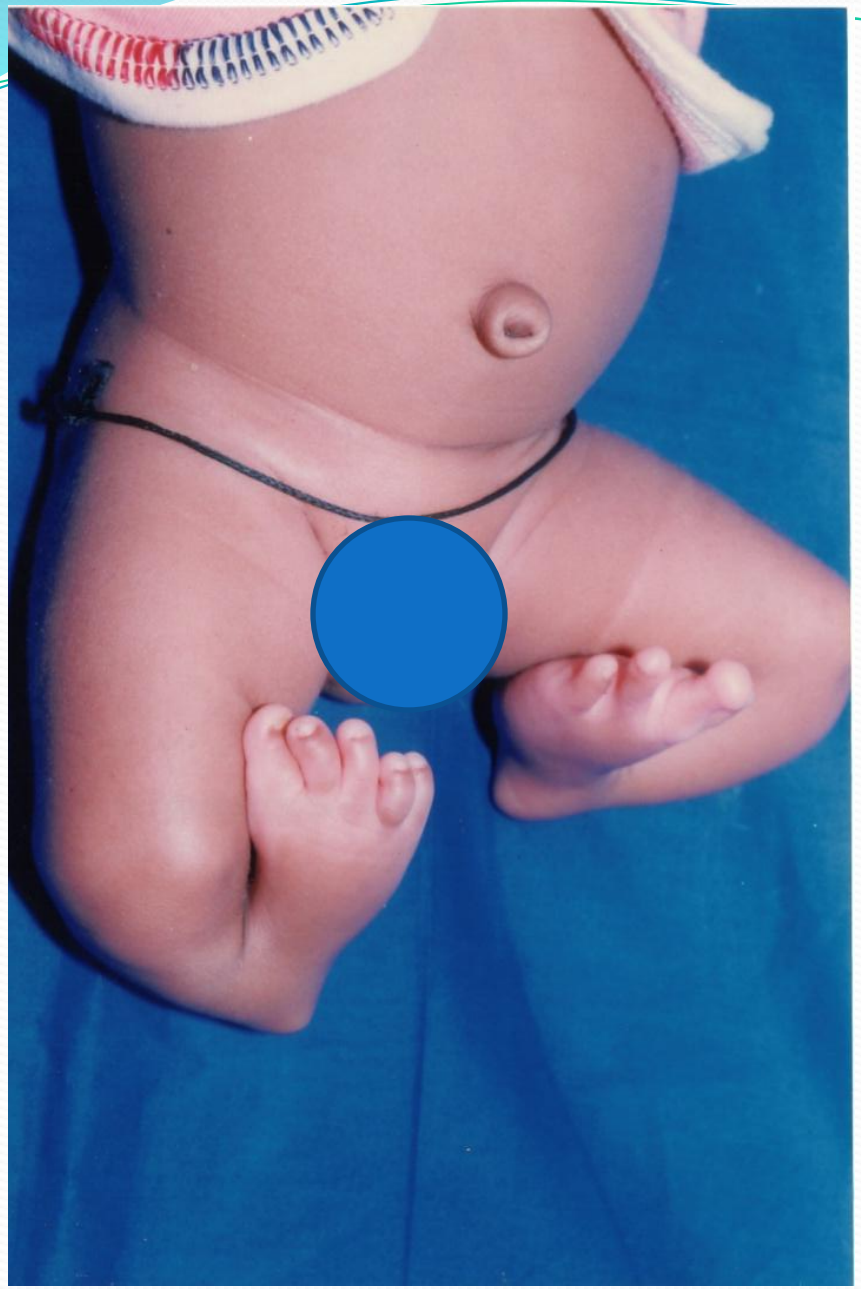
~~Rickets ?~~

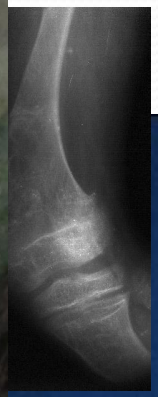
~~Scurvy~~

~~Poliomyelitis~~

Polio Eradication

The problem of disability!!






Tubai Hauk
Pelvis
9/1/2008 7:55 AM
GEETA X-RAY & DIAGNOSTIC CENTRE
Ph-(0671)2422808
AGFA


SMILE
ATHLETICS
07/03/2014 11:52


SMILE
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FUTURE

- Prevention
- Surveillance
- Early detection
- Early treatment

PREVENTION

Early detection and intervention

Reducing childhood trauma

Reduce childhood infection

Latest scientific observation

- **Early identification**
- **Early intervention**
- **Better out come**

HOW EARLY?

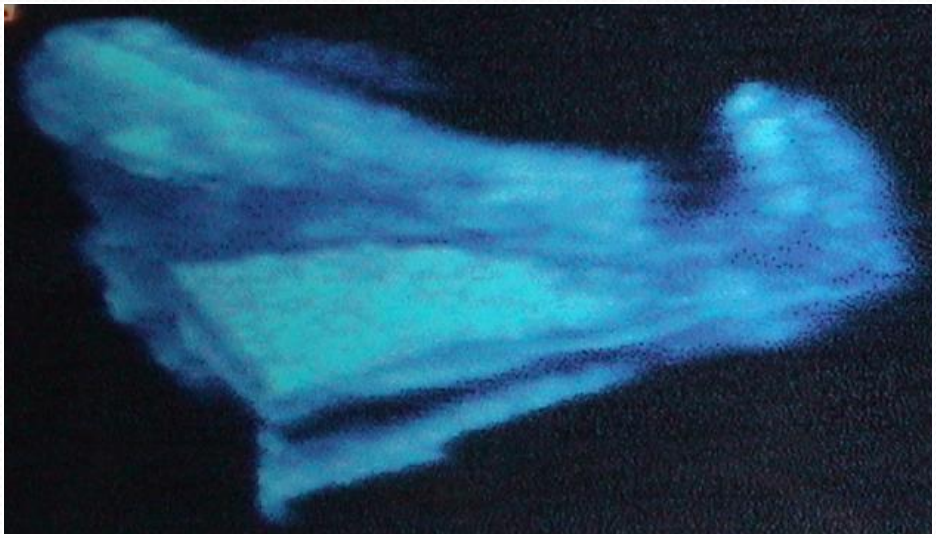
BEFOR AFTER

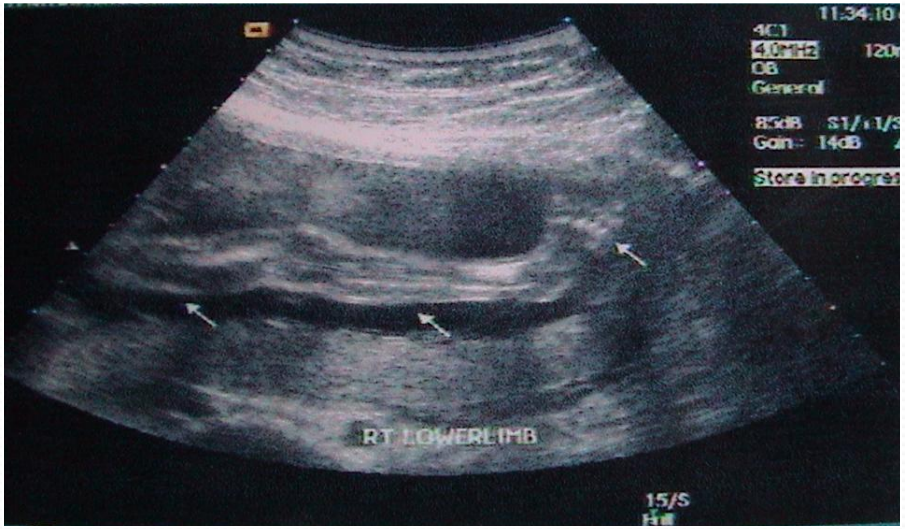
BIRTH BIRTH

Sonoembryology

Perinatal USG

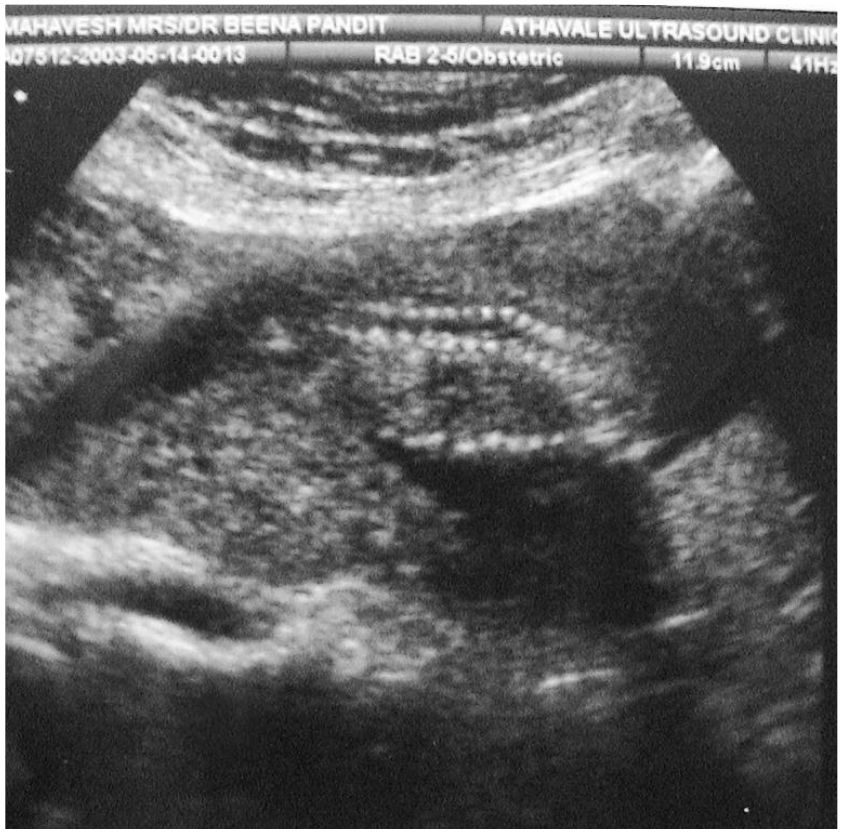
CTEV





RADIAL CLUB HAND

CONGENITAL SCOLIOSIS



GMFCS III,IV.V

Ponseti technique

High risk babies-DDH

Family history

Breech presentation

Foot anomalies

Scoliosis

Torticollis

1st born, female

Early detection of DDH

Screening programs

Ortolani's test

Barlow's test

ORTOLANI's TEST

Click of entry

Click of exit

BARLOW's TEST

Early detection of DDH

Telescopy

Galeazzi Sign

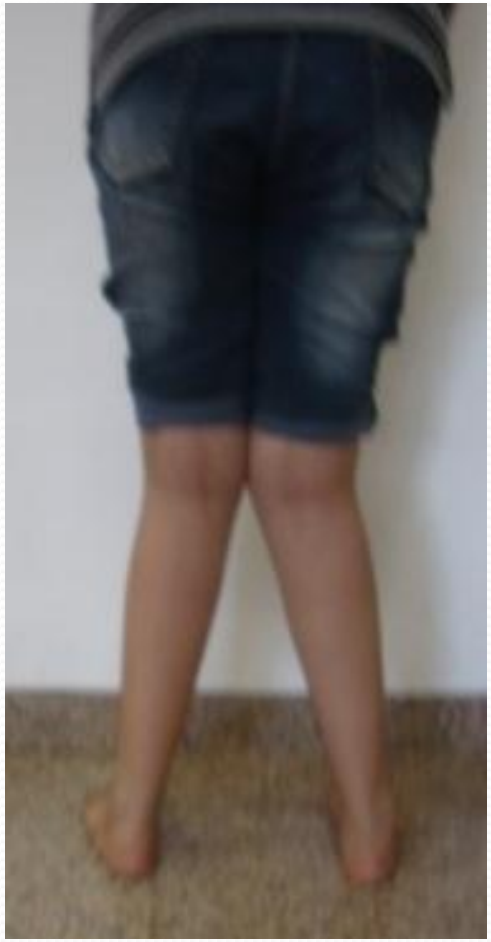
Shortening of lower limb

TELESCOPY

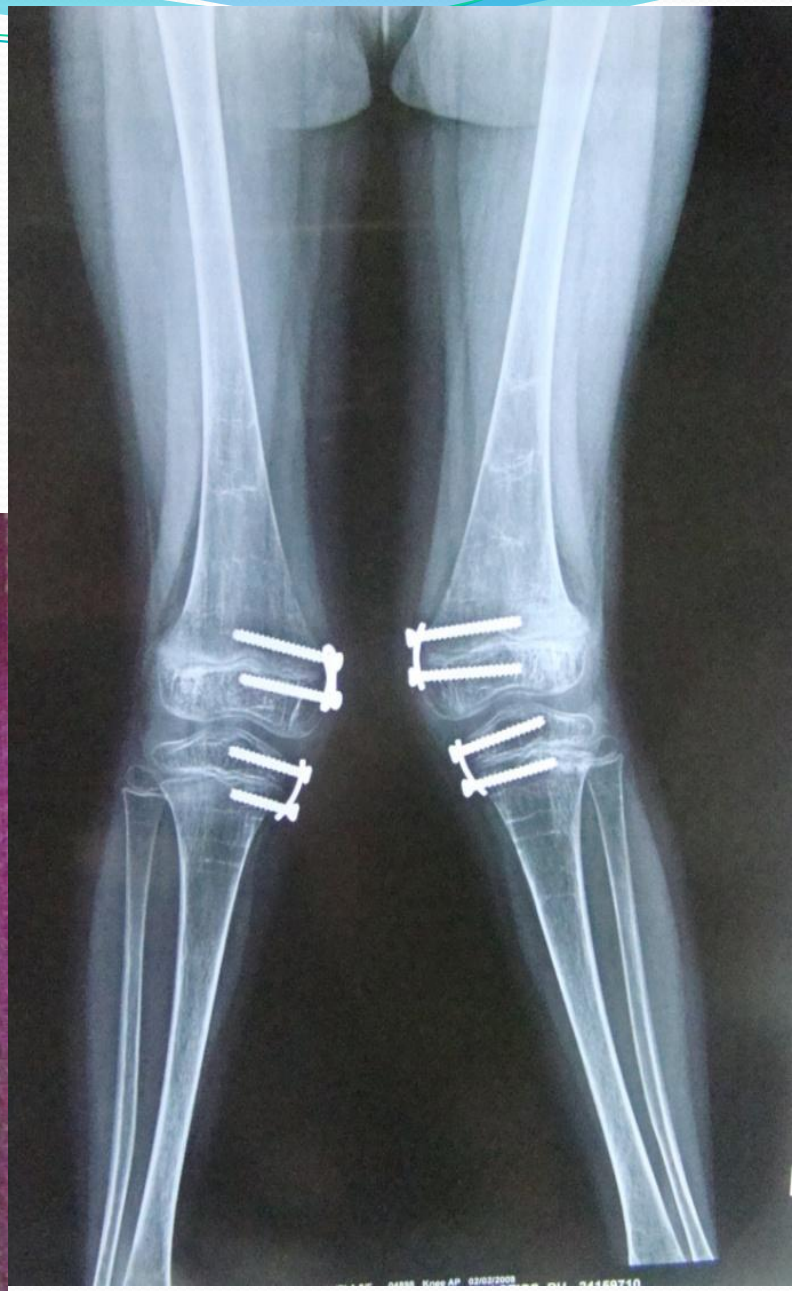
EXTRA THIGH FOLDS

ACETABULAR DYSPLASIA

1.5 y FU – No correction



Growth modulation




CS-3
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W:4095 L:2047

Leg lengthening

STATURE ENHANCEMENT

NICU

PRETERM BIRTH

Preterm Birth: Now the Leading Cause of Child Death Worldwide

Citation:
J. E. Lawn, M. Kinney, Preterm birth: Now the leading cause of child death worldwide. *Sci. Transl. Med.* **6**, 263ed21 (2014).

10.1126/scitranslmed.aaa2563

Relation between CP and time of birth
(gestational age)

	Prevalence	Proportion
>=37 SA	1 per 1000	**50 %**
32-36 SA	1 per 100	**30 %**
<32 SA	6 per 100	**20 %**

Outline

- Causation of CP
- Mechanism
- Evidence
- Prevention

Thyroid

Hypoglycemia

STEROIDS

Hypoglycemia

- Panhypopituitarism
- Isolated growth hormone deficiency
- Cortisol deficiency
- Hypothyroidism
- Glucagon deficiency

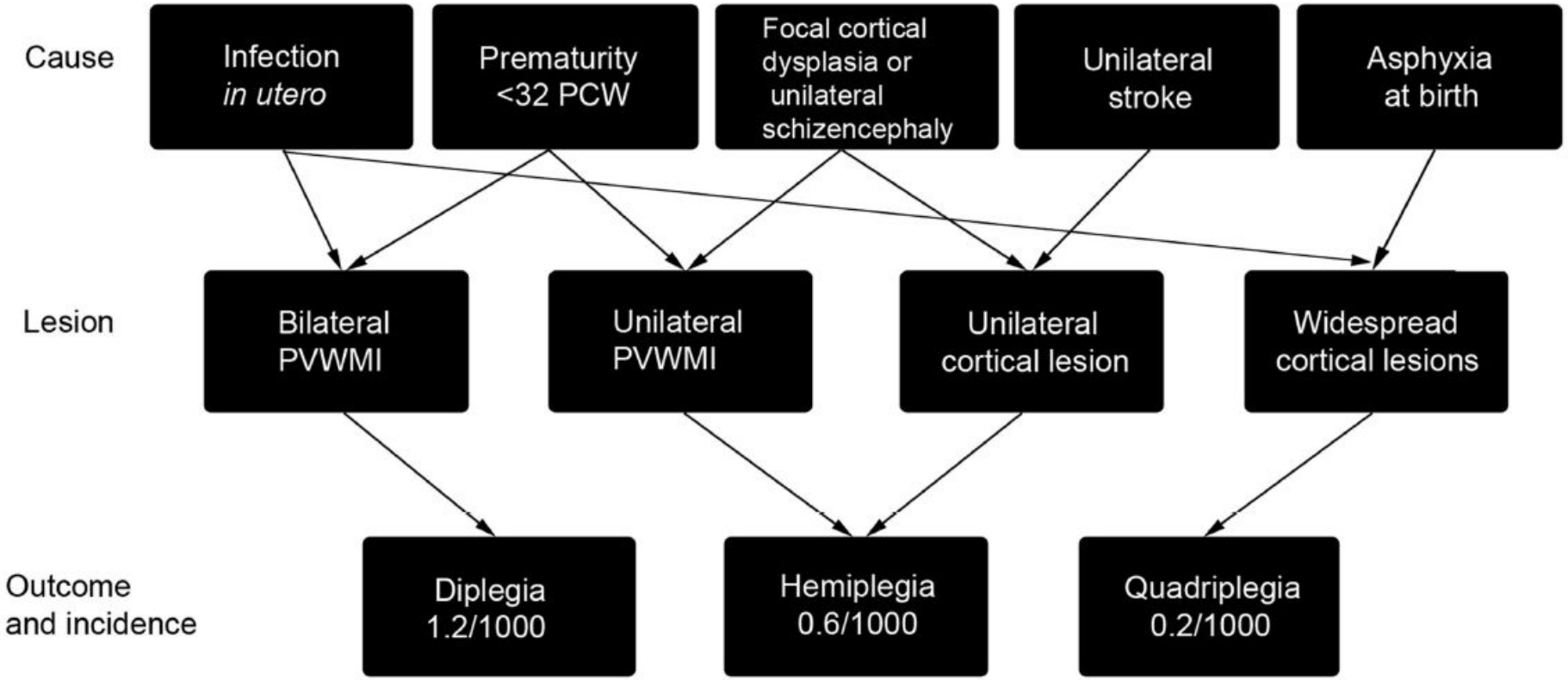
LBW

Preterm

IDM

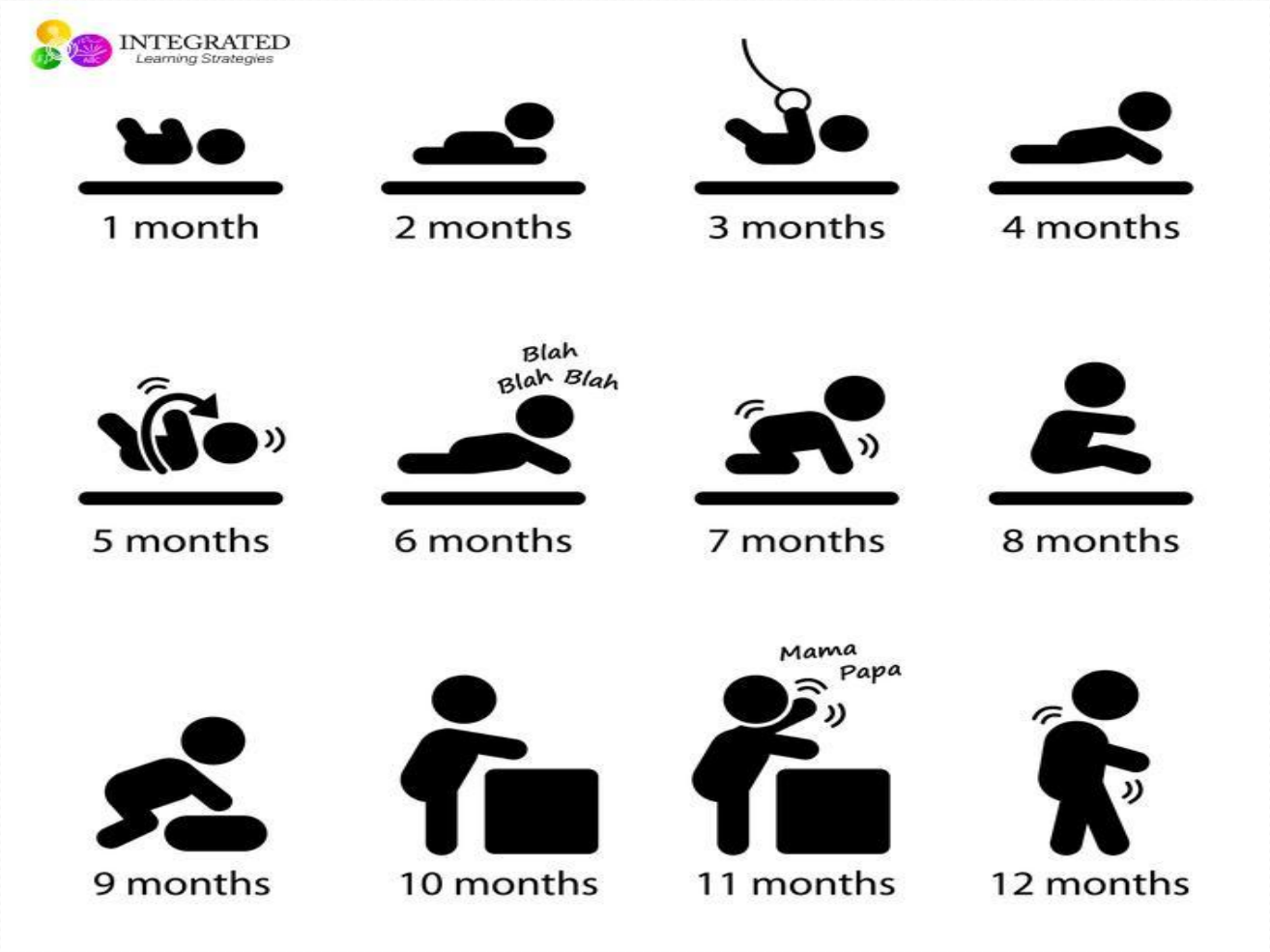
Sick baby

Spastic cerebral palsy; causes and outcomes



NEURODEVELOPMENTAL DISORDERS	PREVALENCE Sweden
ADHD	5-7 %
Autism Spectrum Disorders (ASD)	1, 3 %
Dyslexia	3 %
Language Disorders (SLI)	3-5 %
Intellectual Disability (ID)	1 %
Cerebral Palsy (CP)	0,2 %
Dev. Coordination Disorder (DCD)	3-5 %
Tourettes syndrome	1 %

Developmental milestones



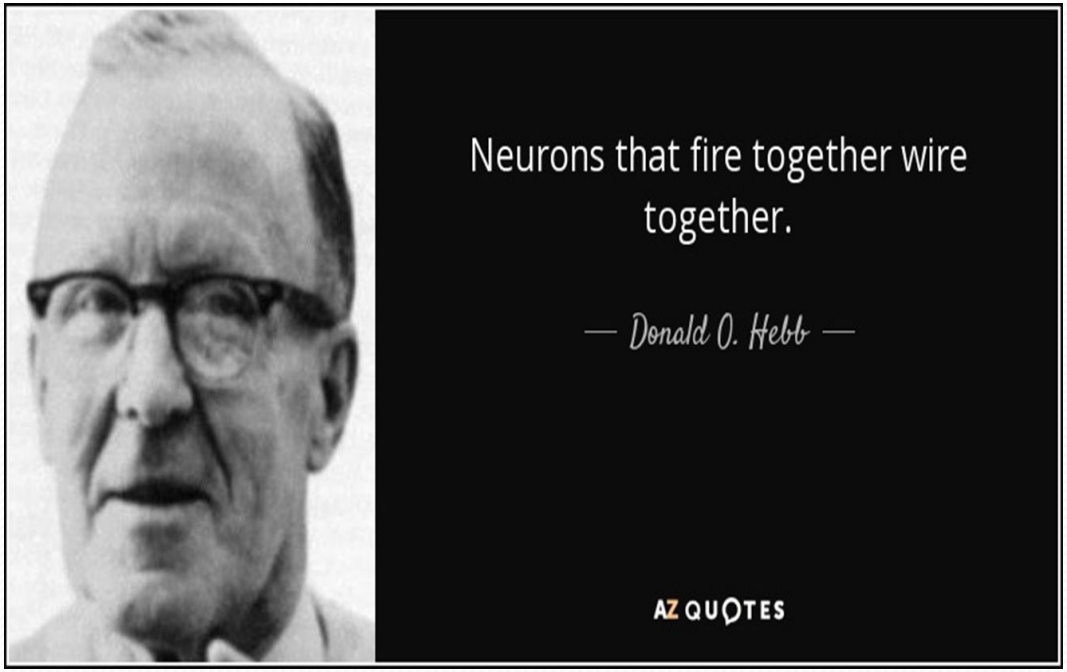
NEUROPLASTICITY

- " Neuroplasticity" can be defined as the ability of the nervous system to respond to intrinsic & extrinsic stimuli by reorganizing its structure, function & connections.
- Greek word " Plastikos" meaning " to form".

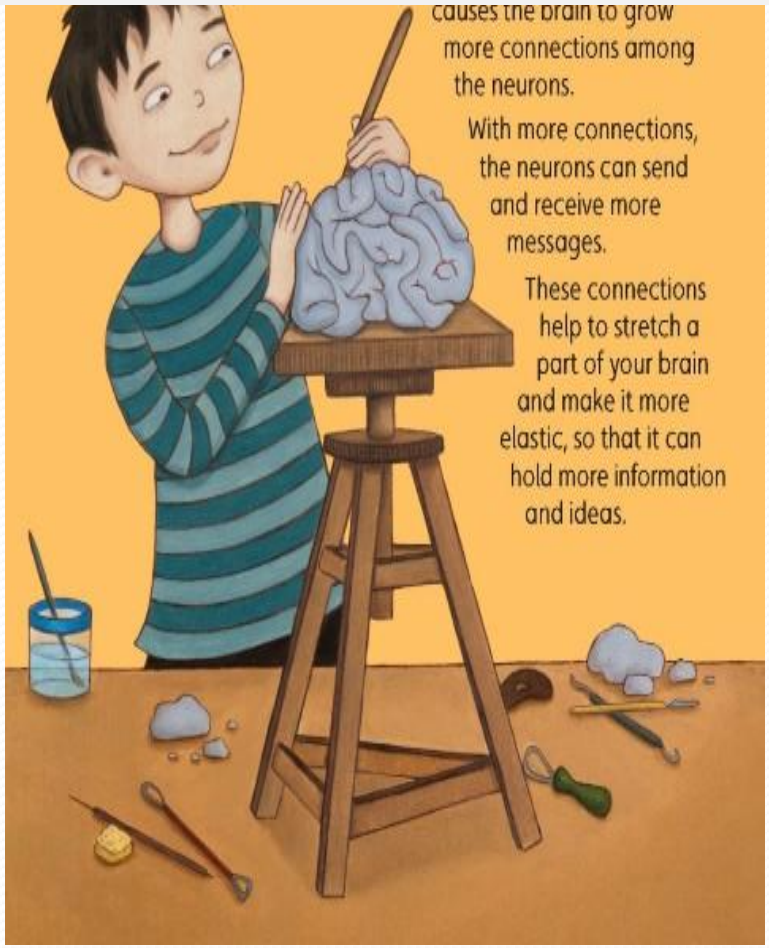
Naegele J, Epilpesy & the plastic mind. Epilpesy Curr: 2009:9(6)

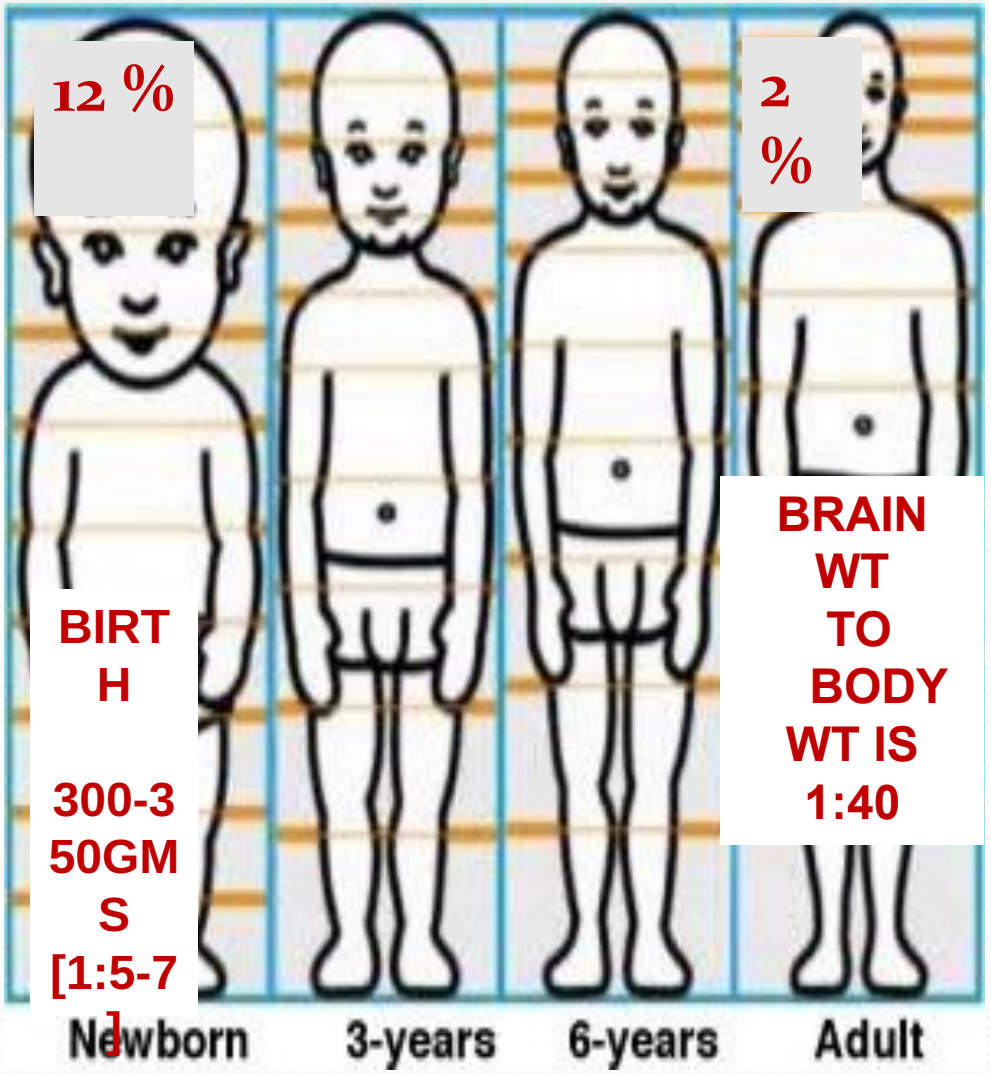
The Hebb Rule

- Canadian neurophysiologist: Donald Hebb, 1949
- Neurons and synapses that are activated repeatedly are preserved



Plasticina in Italian means to mould- can brain be moulded with growth?





- Maximal in first few years of life
- Continues at a reduced rate throughout life
- Importance of first three years of life
- As myelination increases, plasticity of brain decreases

NEURO PLASTICITY IS AKIN TO RAINS ON A MOUNTAIN TOP-[Dr.Medha Rajadhyaksha-Mind Master-CSIRGolden Jubileeseries]

Kennard principle

young brains are more plastic than older brains
earlier cells are more plastic than functionally

NASA'S FLOATING TREADMILL: LOCOMOTION STIMULATOR

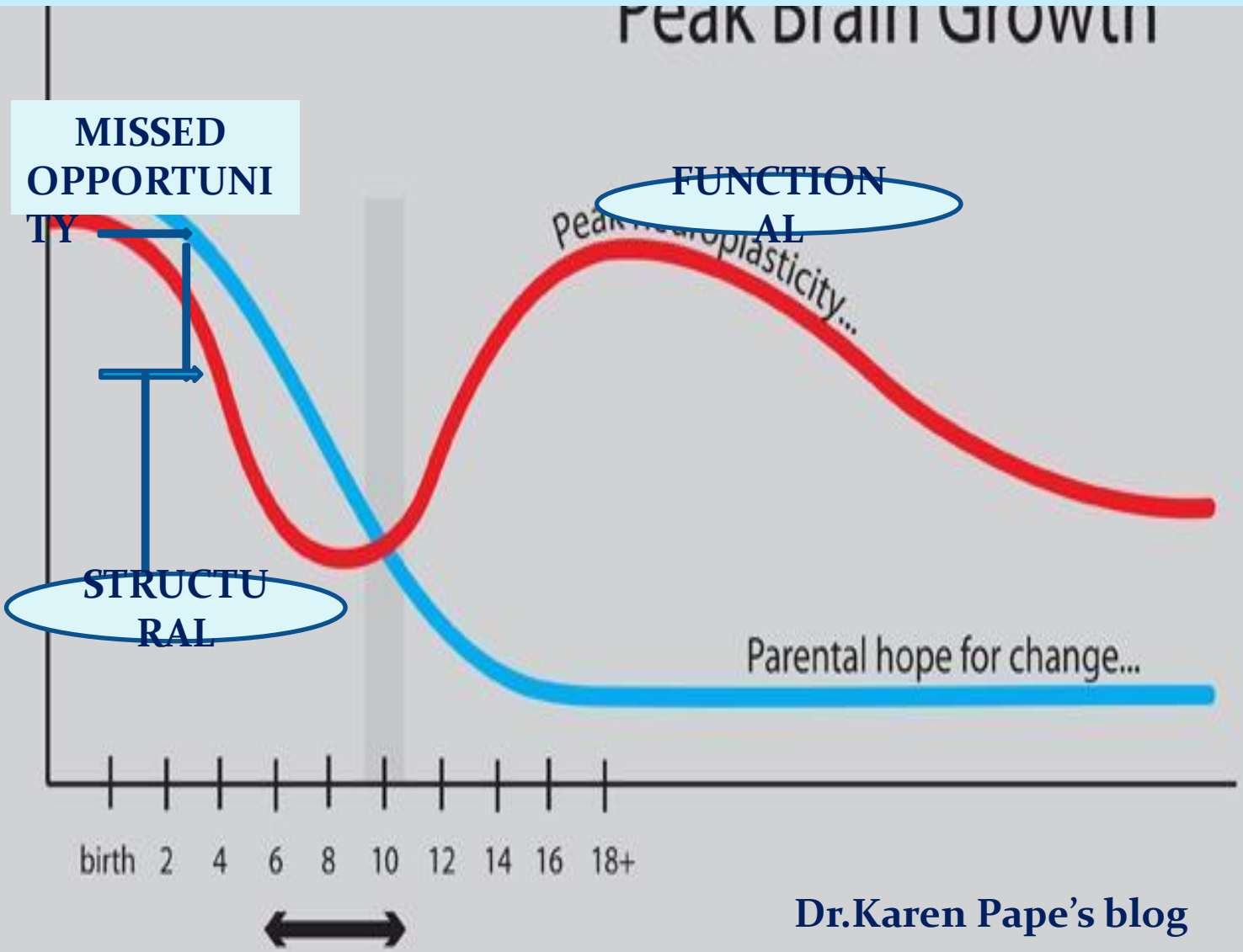
New York Times on the web. Science/Health, August 28, 2001. Therapies Push Injured Brains and Spinal Cords Into New Paths. *This article describes new rehabilitation therapies, which promote brain reorganizing. Currently, these therapies are being used to treat patients who have suffered from strokes, individuals with cerebral palsy, and paraplegics. (Indirectly related to HD.)*

Seven patients who had lost the ability to walk, placed on a treadmill with a parachute and harness.

They were given as much physical support as possible, but the treadmill forced the movement of their legs

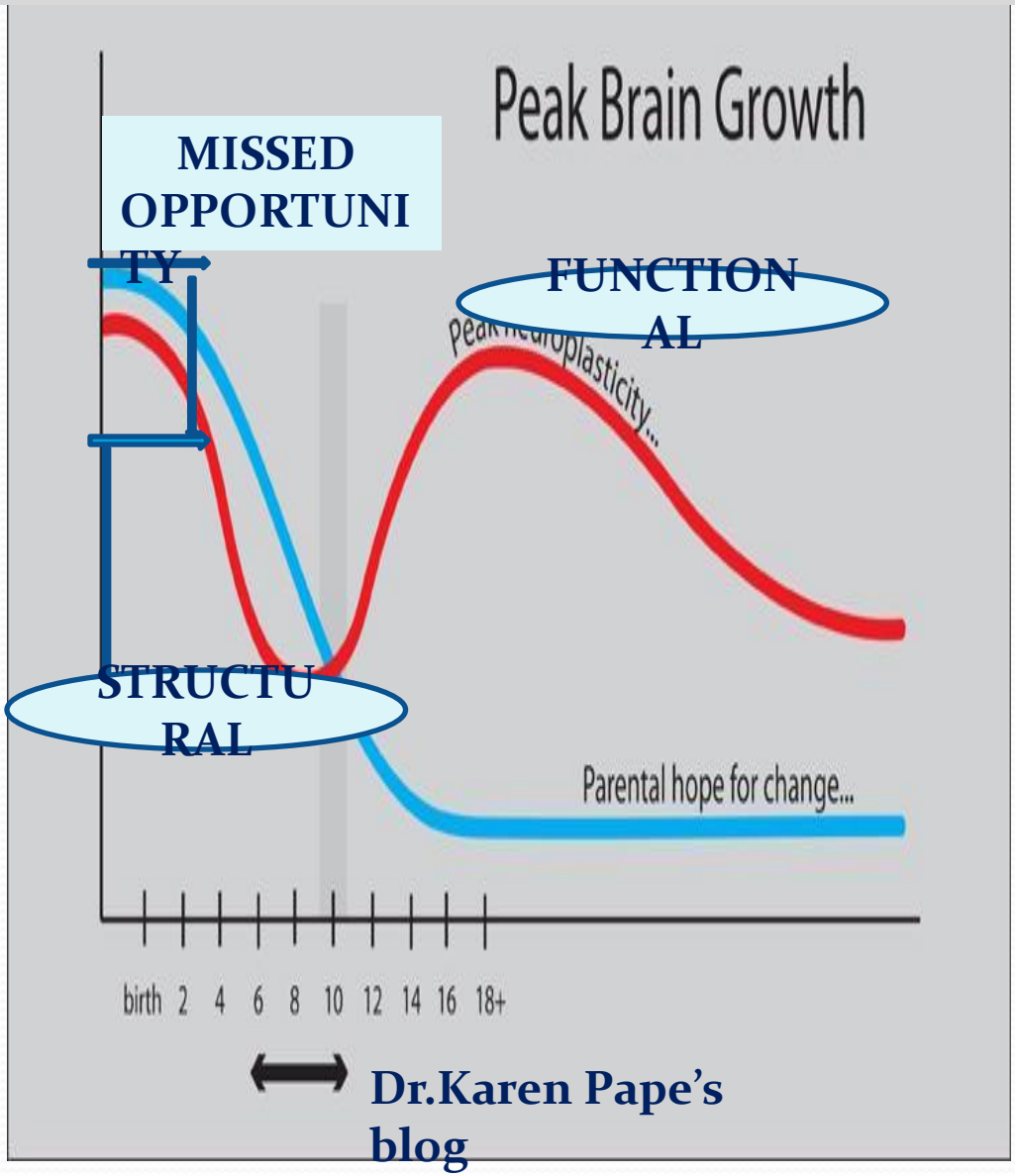
Forced movement enabled some of the intact neurons in the damaged area of the brain to form new connections, which in turn enabled **three** of the patients to walk independently

Let us not loose the first 15 months on our name dithering!

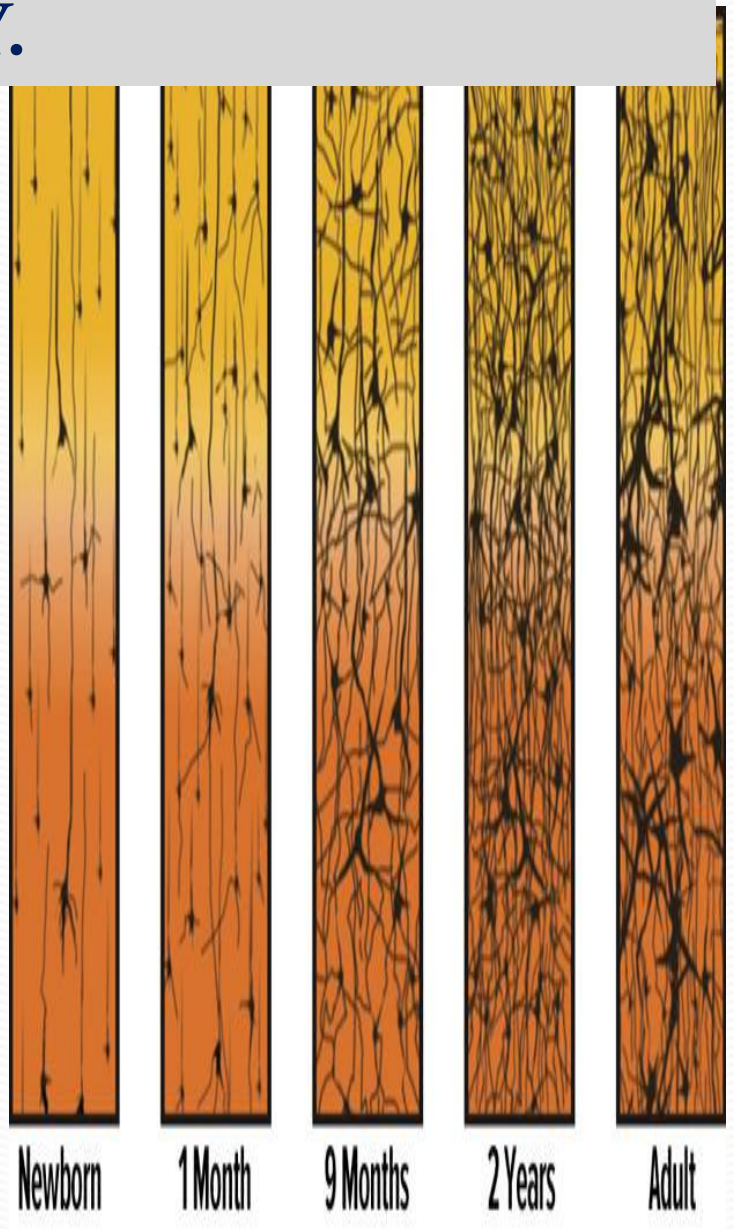


Dr.Karen Pape's blog

NEUROPLASTICITY ACROSS LIFESPAN-ADULT PLASTICITY.



Dr.Karen Pape's blog



Assessment tools

- Structural imaging – MRI – density, morphometry, DTI
- Functional imaging – fMRI – older children, needs comprehension
- Molecular imaging – PET- radioactive tracers

Cramer S et al: Harnessing neuroplasticity for clinical applications: brain 2011: 134: 1591-1609

Ten important features of neuroplasticity

1. **Use it or lose it**

If you do not drive specific brain functions, functional loss will occur

2. **Use it and improve it.**

Therapy that drives cortical function enhances that particular function.

3. **Specificity**

The therapy you choose determines the resultant plasticity and function.

4. **Repetition matters**

Plasticity that results in functional change requires repetition-kindling phenomenon

5. **Intensity matters**

Induction of plasticity requires the appropriate

6.Time matters

Different forms of plasticity take place at different times during therapy.

7. Salience matters

It has to be important to the individual.

8. Age matters

Plasticity is easier in a younger brain, but is also possible in an adult brain.

9.Transference

Neuroplasticity, and the change in function that results from one therapy, can augment the attainment of similar behaviors.

10. Interference

Plasticity in response to one experience can interfere with the acquisition of other behaviors

Neuro-modulation techniques

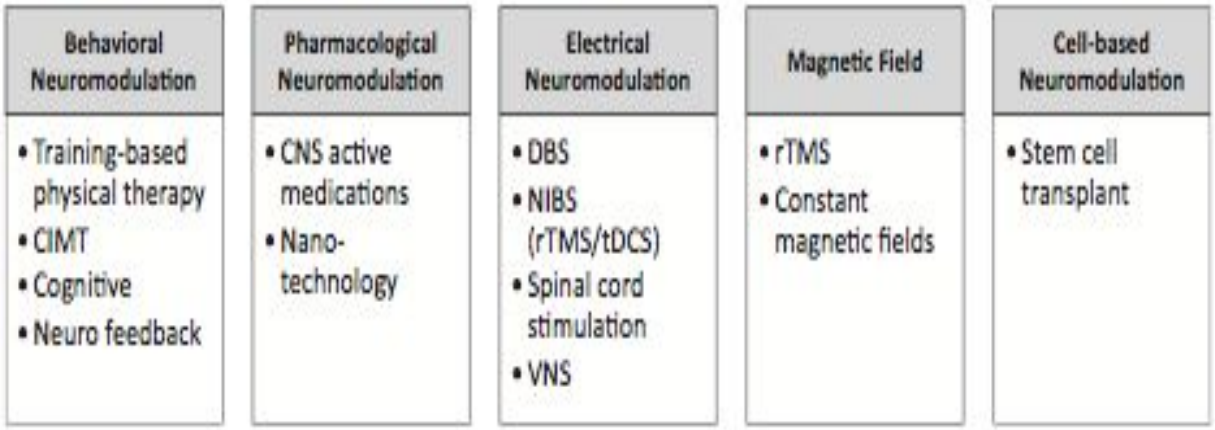


Fig. 5 – The spectrum of neuromodulation techniques. CIMT: Constraint-induced movement therapy; DBS; deep brain stimulation; NIBS: non-invasive brain stimulation; rTMS: repetitive transcranial magnetic stimulation; tDCS: transcranial direct current stimulation; VNS: vagal nerve stimulation.

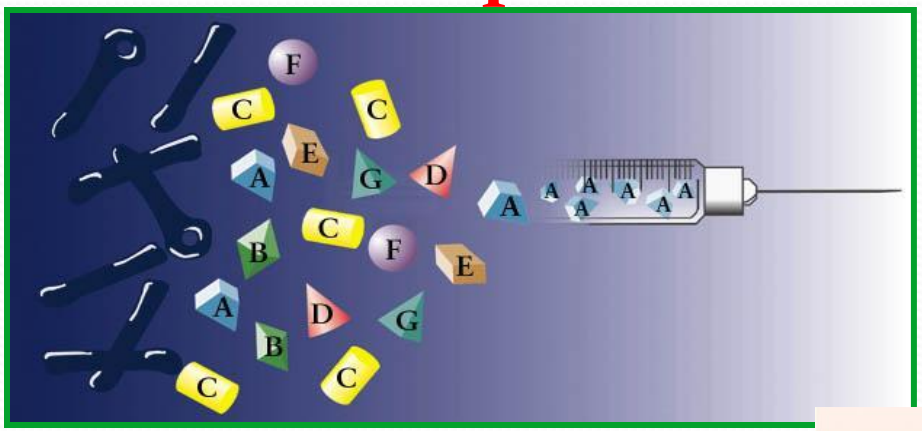
Therapeutic approaches to the management of CP

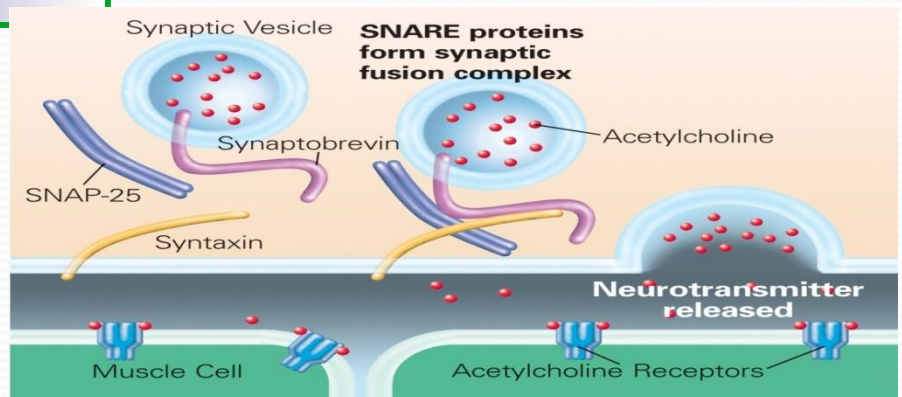
Bobath/NDT
Conductive education
Sensory integration
Vojta
Adeli suit
Aim-oriented management
Advance neuromotor rehabilitation
Biofeedback
Dohsa-Hou
Electrical stimulation

Early intervention (Portage)
Functional PT
MOVE
Patterning (Doman-Delacato)
Pelvic positioning
Physical activity training
Strength training
Targeted training
Training by Phelps (15 modal)
Recreational (hippo-, hydro-)
Alternative (hyperbar, acupunct)

Botulinum Toxin Type A

- Under anaerobic conditions *Clostridium botulinum* produces 7 different serotypes of botulinum toxin, designated A-G.
- **Type A is the most potent serotype and use in treatment of patients with spasticity.**

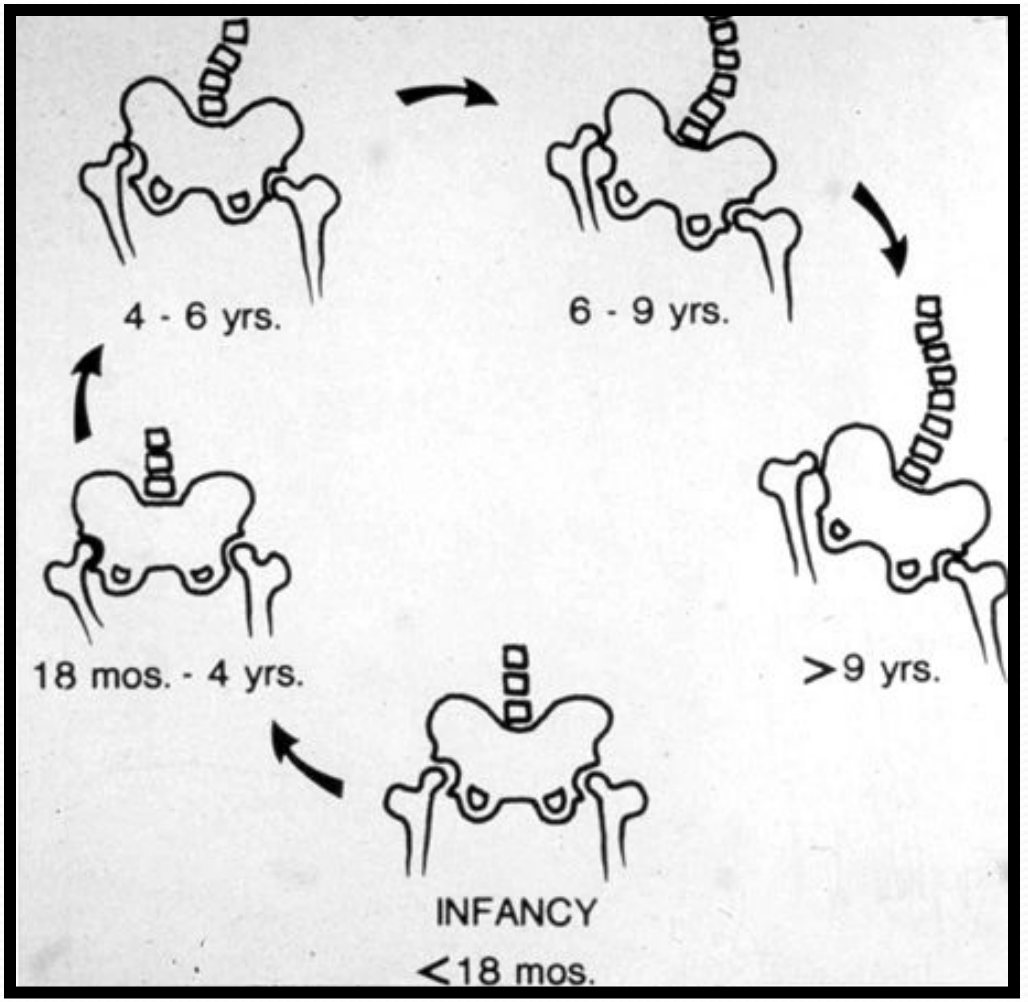




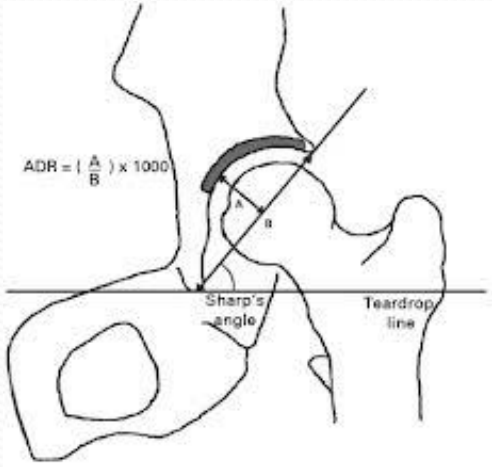
SEMLS

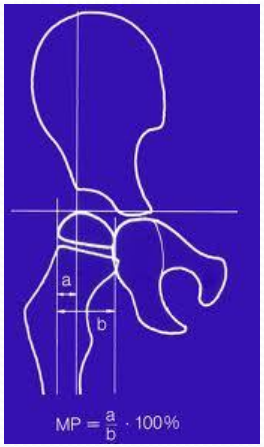
UNILATERAL HIP DISLOCATION

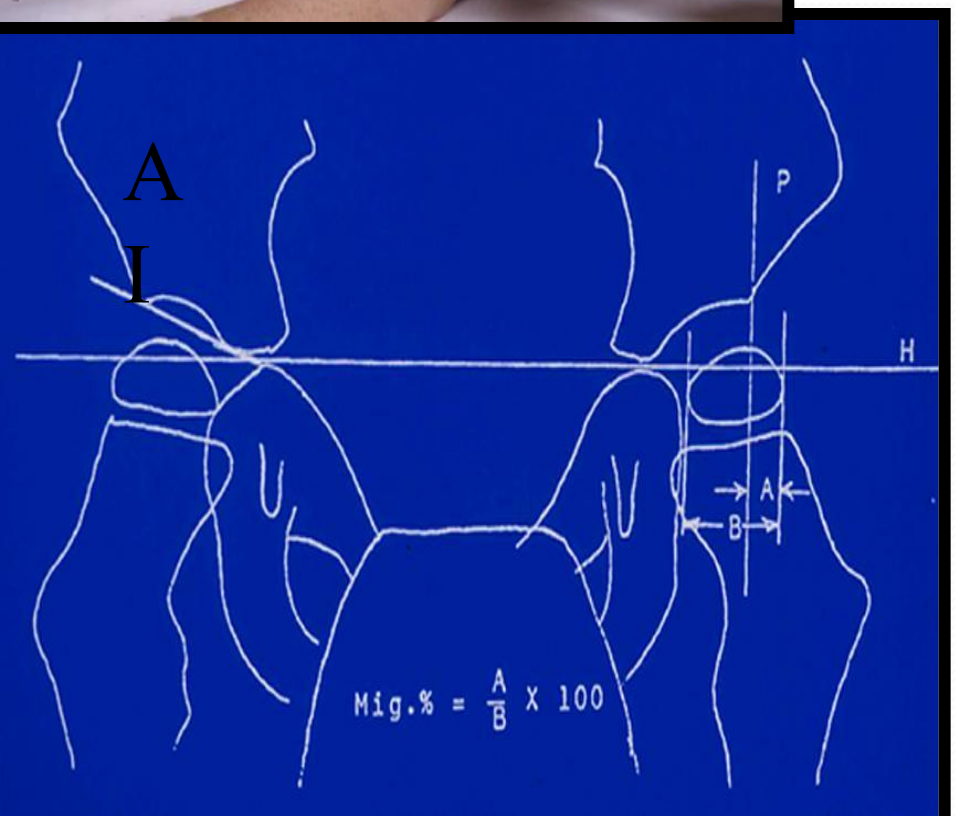
Progressive changes



RADIOLOGICAL ASSESSMENT







Hip Surveillance

Many of the things we need can wait .
The child cannot.
Right now is the time !
His bones are being formed, his blood is being made & his senses are being developed.

To him, We cannot answer "TOMORROW"
His name is today!
-Gabriela

Team effort

GYNAECOLOGIST

PAEDITRICIAN

EARLY INTERVENITION SPECIALIST

OT

PT

P&O

SPECIAL EDUCATOR

PSYCHOLOGIST

SPEECH THERAPIST

NEURO/ ORTHO/REHAB SURGEON


07/03/2014 11:54

- IT IS THE DUTY OF ALL TO REDUCE CHILDHOOD DISABILITY

- TO MAKE THEM STAND & WALK SO THAT WE CAN SEE THE SMILE ON THEIR FACES


Thank you