ÄMKA Ärztegesellschaft für Manuelle Kinderbehandlung und Atlastherapie

Manual medicine in infants

DSMM - Kolding, 01.04.2016

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Physiological development

Target of gross motor development:

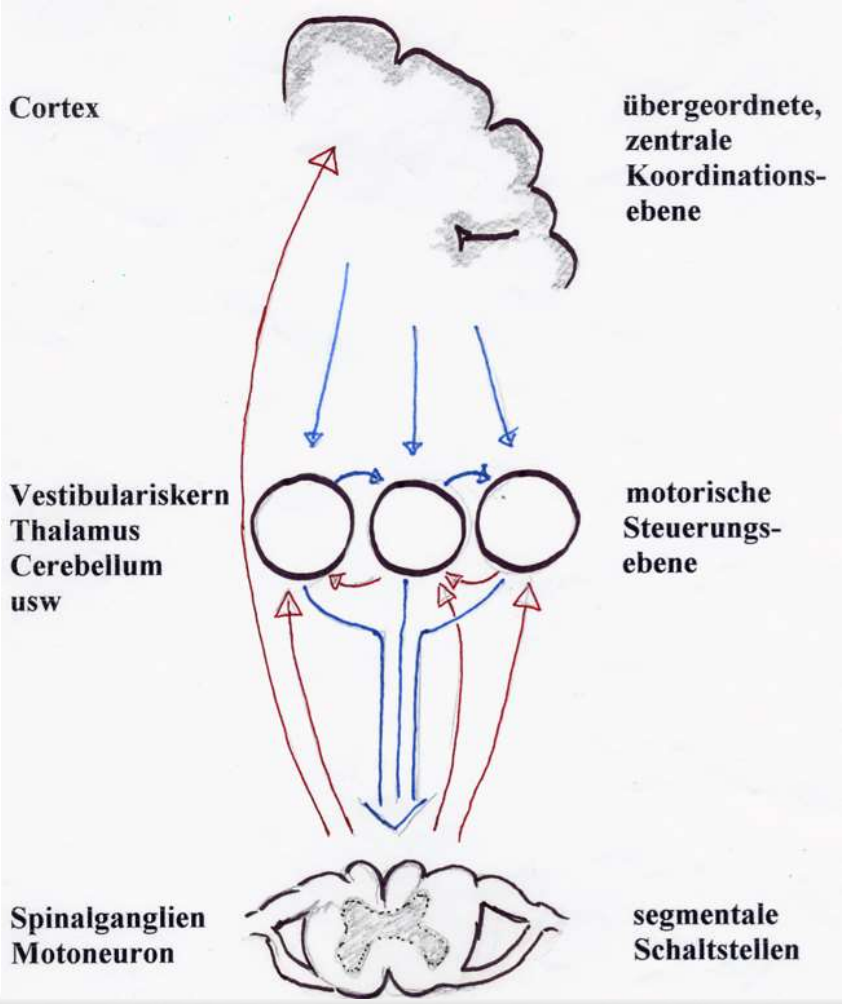
Getting up from the horizontal against gravity and movement in an upright position
-> body control, spatial perception

Target of fine motor development:

Open the hands and develop differentiated motion patterns.

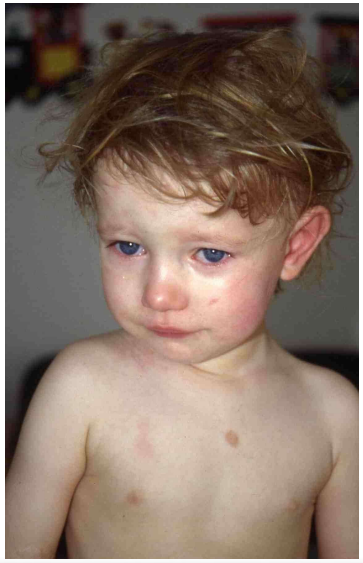
Neurophysiologic theory:

- „Every dysfunction is an origin of a modified proprioception“
- ->(Janda)
- Treatment of motor dysfunction succeed through access to the proprioceptive processing

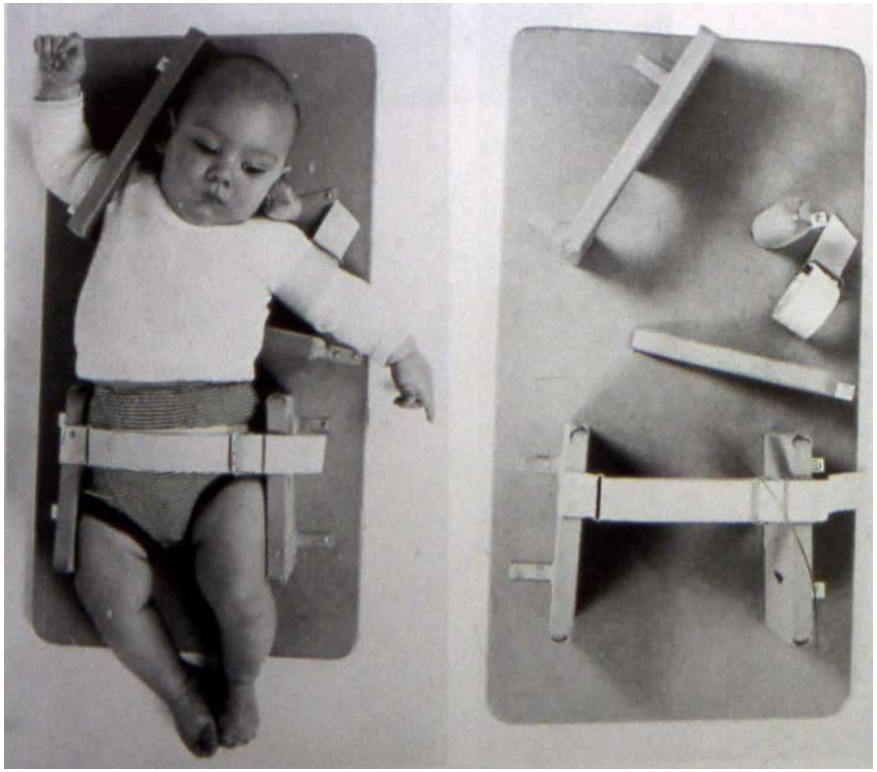


Indications for manual therapy in the infant

- Problems in developmental neurology
- Pain management (crying child)
- Orthopaedics - infantile scoliosis - positional skull deformity

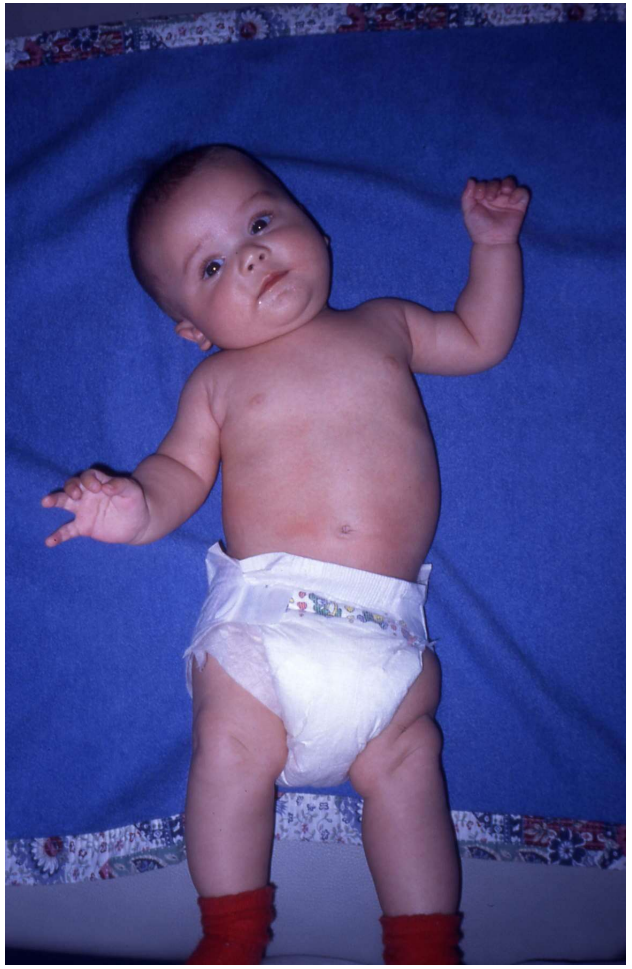


Asymmetrical muscle tone syndrome



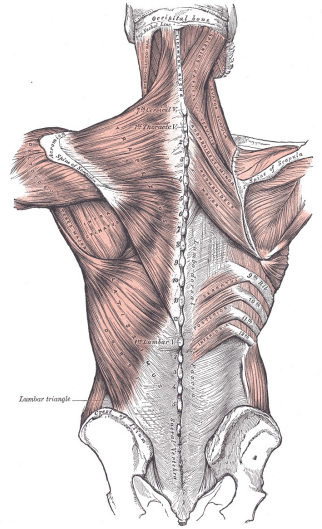
Impacts in adults – late impacts

Differences between adults and infants



Why is the baby asymmetric?

- crooked:
  nocifensive reaction



Gray´s anatomy, 1918

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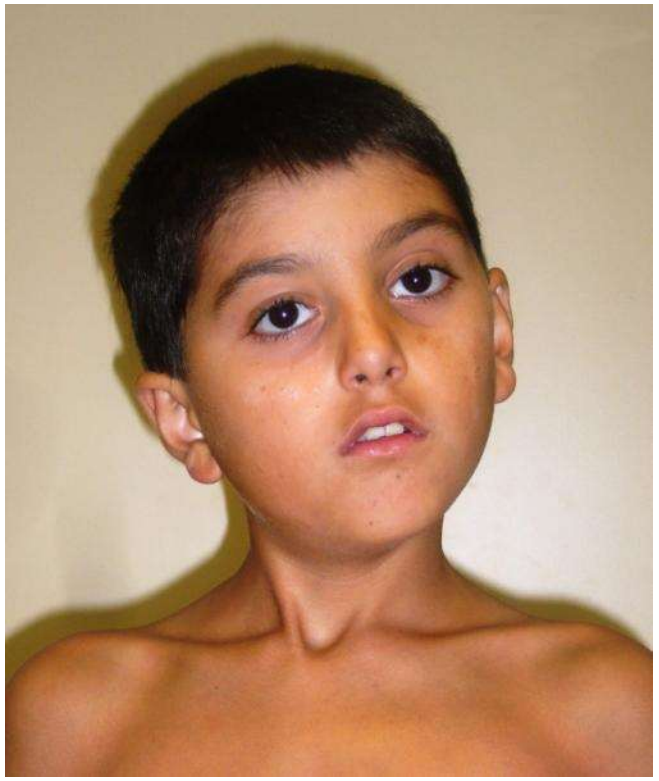
Different diagnosis

- infantile skoliosis
- asymmetric posture
- segmental dysfunctions
- minimal cerebry palsy
- restriction of development
- plagiocephalus

Differential Diagnosis

- cerebral palsy
- craniosynostosis
- congenital skoliosis
- tumors
- Infection (Grisell)
- muscular torticollis



Differential diagnosis: Klippel-Feil syndrome

Frequent symptomes in asymmetrical muscle tone

- Orthopaedic symptoms
- Manual therapy characteristics
- Behavioral problems
- Neuromotor signs

Frequent symptomes in asymmetrical muscle tone:

- **Behavioral problems:**
- Disturbance of the sleep-wake rhythm
- Disruption of feeding (frequent vomiting, poor feeding and suction)
- Jumpiness
- Noise sensitivity
- Aversion to the prone or supine position

Frequent symptomes in asymmetrical muscle tone:

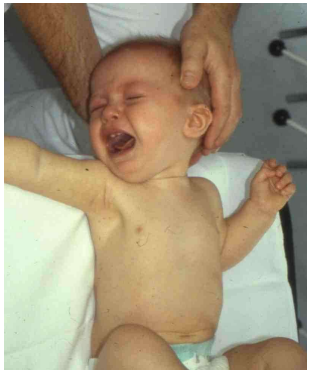
- **Neuromotor signs:**
- Asymmetrical muscle tension
- Unilateral preferential movement
- Persistent infantile reflexes
- Asymmetrical postural automatic reactivity (Vojta)
- Stereotyped head extension

Distinction from centrally caused asymmetry

Asymmetrical tone of muscle

- Study 1998-2001:
- 55 babies with heavy screaming more than 3 hours a day on 3 days a week during 3 months
- 33 had segmental dysfunction of the spine, improvement after manualtherapy

W.Kemlein, Kiel



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TAS, pathogenesis, trauma of birth?

TAS infants (Coenen, 2010)	Total of birth (KBV, 2011)
40 % sectio	32% sectio
24% vacuumextraction	5,5% vacuumextraction
6,5% forceps delivery	0,5% forceps delivery
genetics ?	contrained posture? (oligohydramnion, twins)

TAS, pathogenesis, trauma of birth?

- 2 of 3 babies are born by sectio

Primary dysfunctional pathology in asymmetrical muscle tone

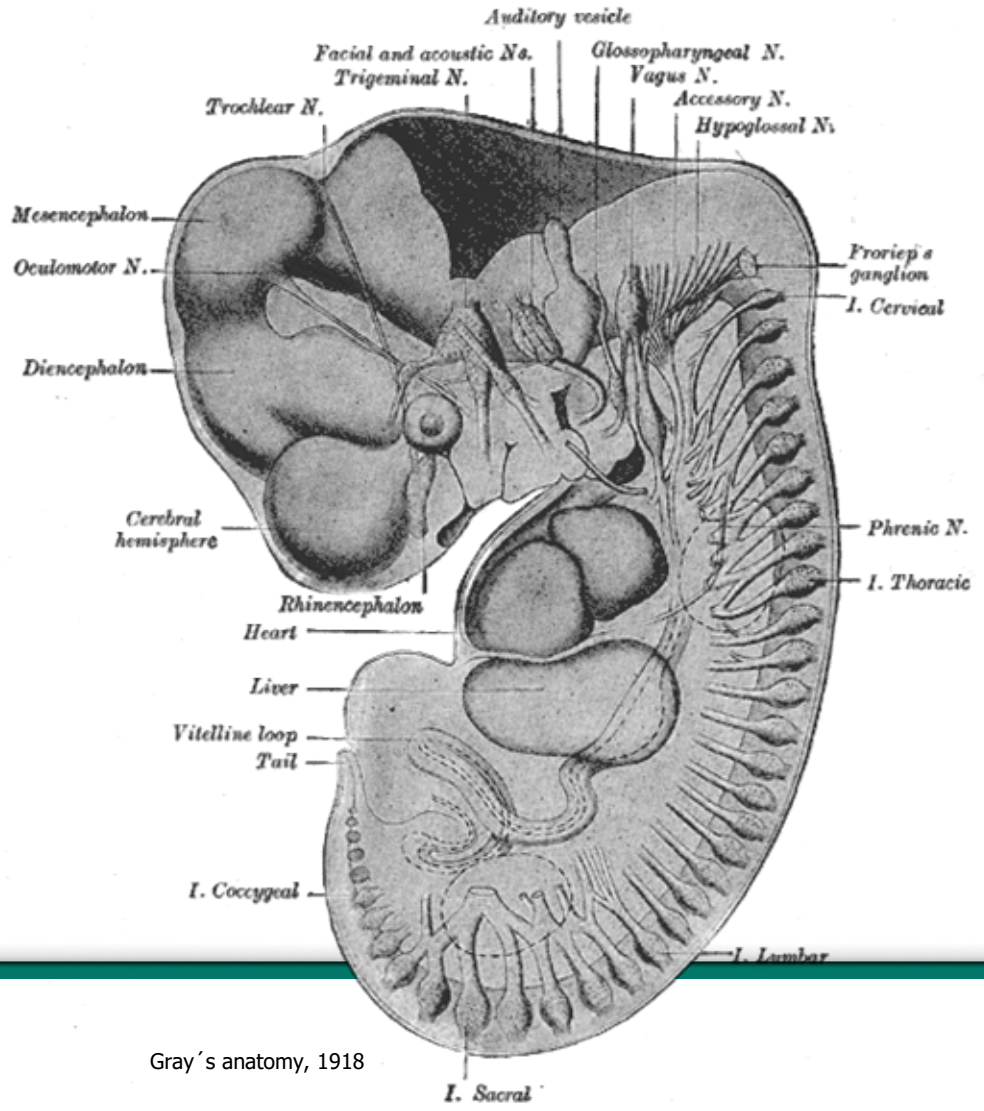
- C0 – C2 42%
- Mid cervical spine (esp. C 2/3) 29%
- Upper thoracic spine (1st rib, D 1 – 3) 6%
- Sacroiliac joint 11%
- Non defined 12%

Frequently associated are segmental dysfunctions at D 5/6, D12/L1, L5 and in over 90% of cases at the sacroiliac joint

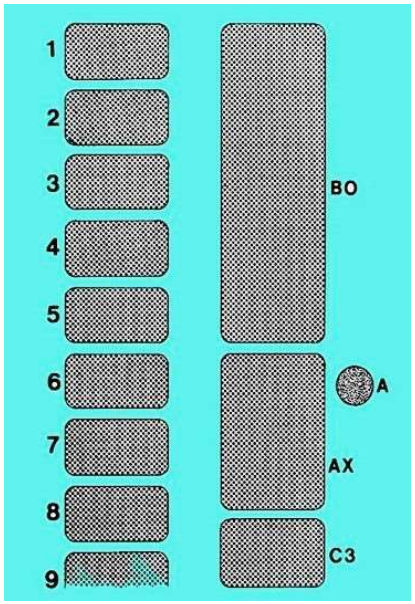
Also: disorders of myofascial viscoelasticity of the head, torso and extremities

(Coenen, 2010)

Occipital somites



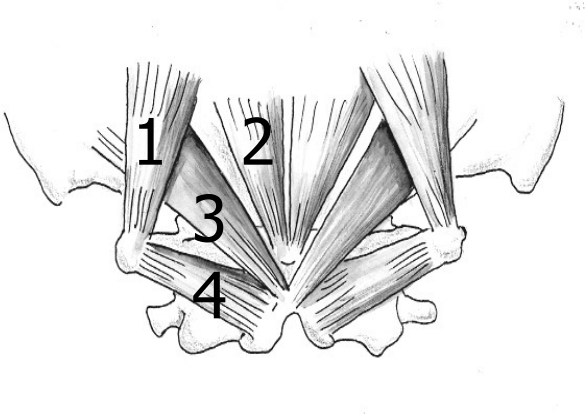
Gray´s anatomy, 1918



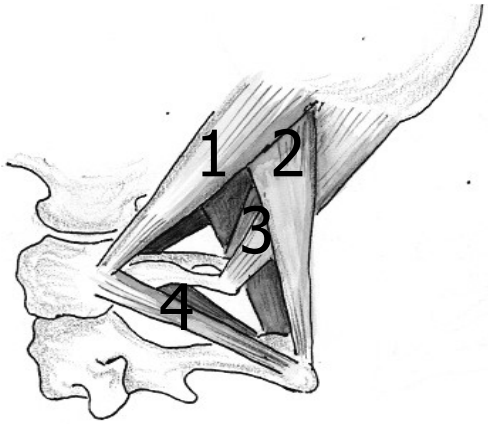
Aus: B. Christ: Entwicklung der cervicooccipitalen Übergangsregion

Suboccipital muscles = sensoric organ

1. M. obliquus capitis superior
2. M. rectus capitis posterior minor
3. M. rectus capitis posterior major
4. M. obliquus capitis inferior

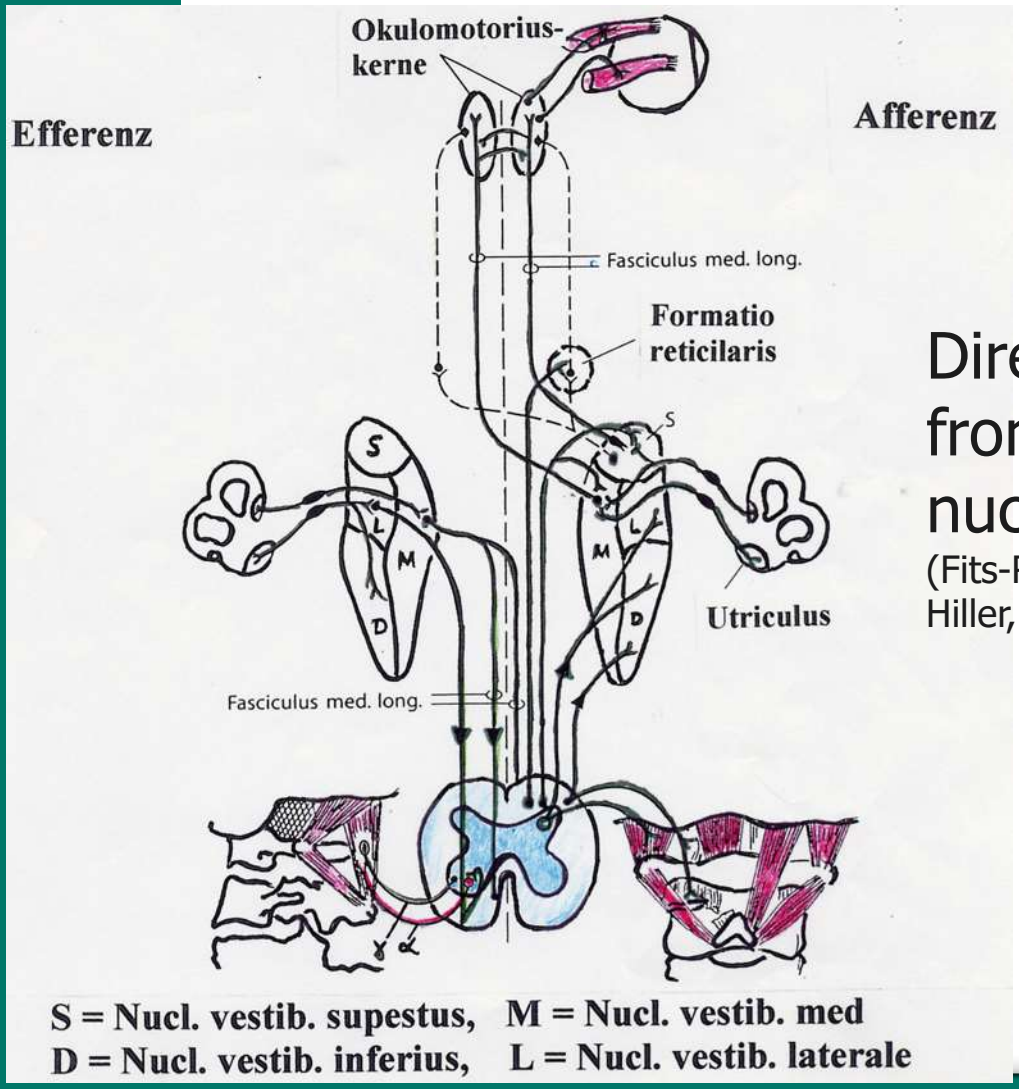


up to 312 muscle spindle/ g muscle tissue



Gray´s anatomy, 1918

Neurophysiology



Direct projections of afferents from the neck to the vestibular nuclei

(Fits-Ritson 1985, Neuhuber, Zenkeer 1989, Prihoda, Hiller, Mayr 1991)

from H.-D. Wolff

Neurophysiology

For orientation in space vestibular and proprioceptive information from the neck will be charged:

Perception of body in space (W):

W (body) = W (head) – W (angle head / torso)

-> Hassenstein formula

Patients from a paedeatric-orthopaedic practice

- 268 childern with asym. muscle tone in 1 year
- age 2 – 9 months

- 56 problems with feeding
- 62 Crying Children
- 43 hyperextension of cervical spine

- 156 1 treatment
- 77 2 treatments
- 35 > 2 treatments

Dr.med.Ruprecht, Münster

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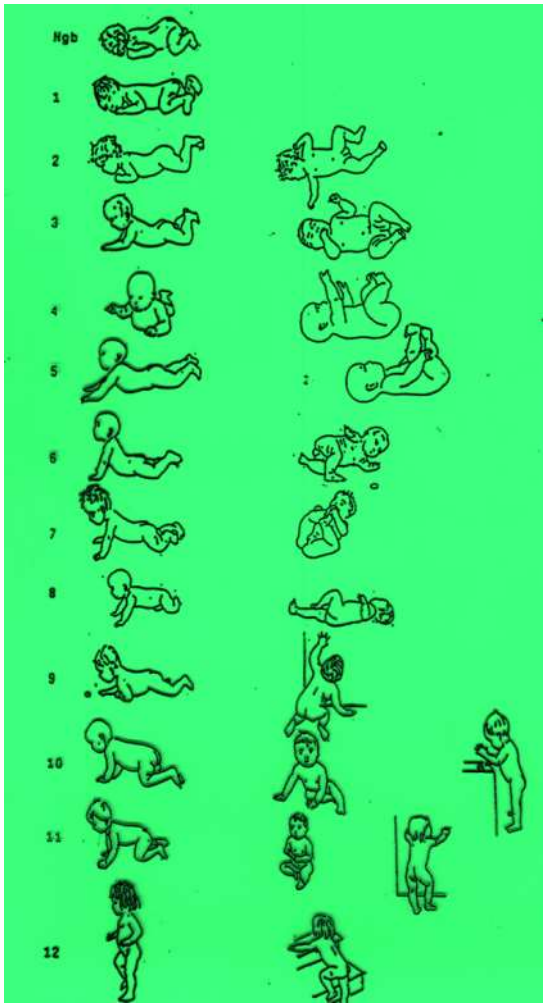
Manual medicine diagnostic in infants

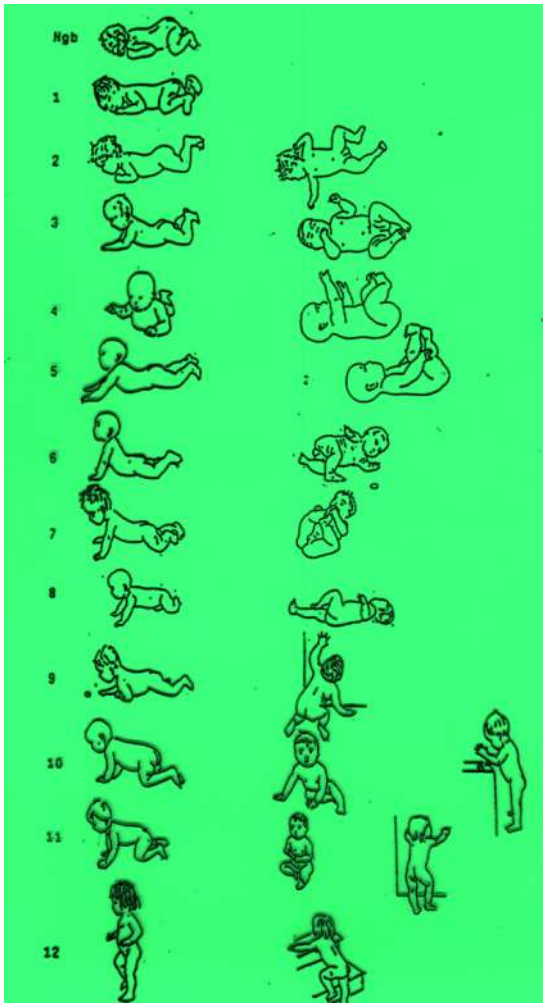
- Neuro-motor functions
- Segmental manual medical examination
- Orthopaedics

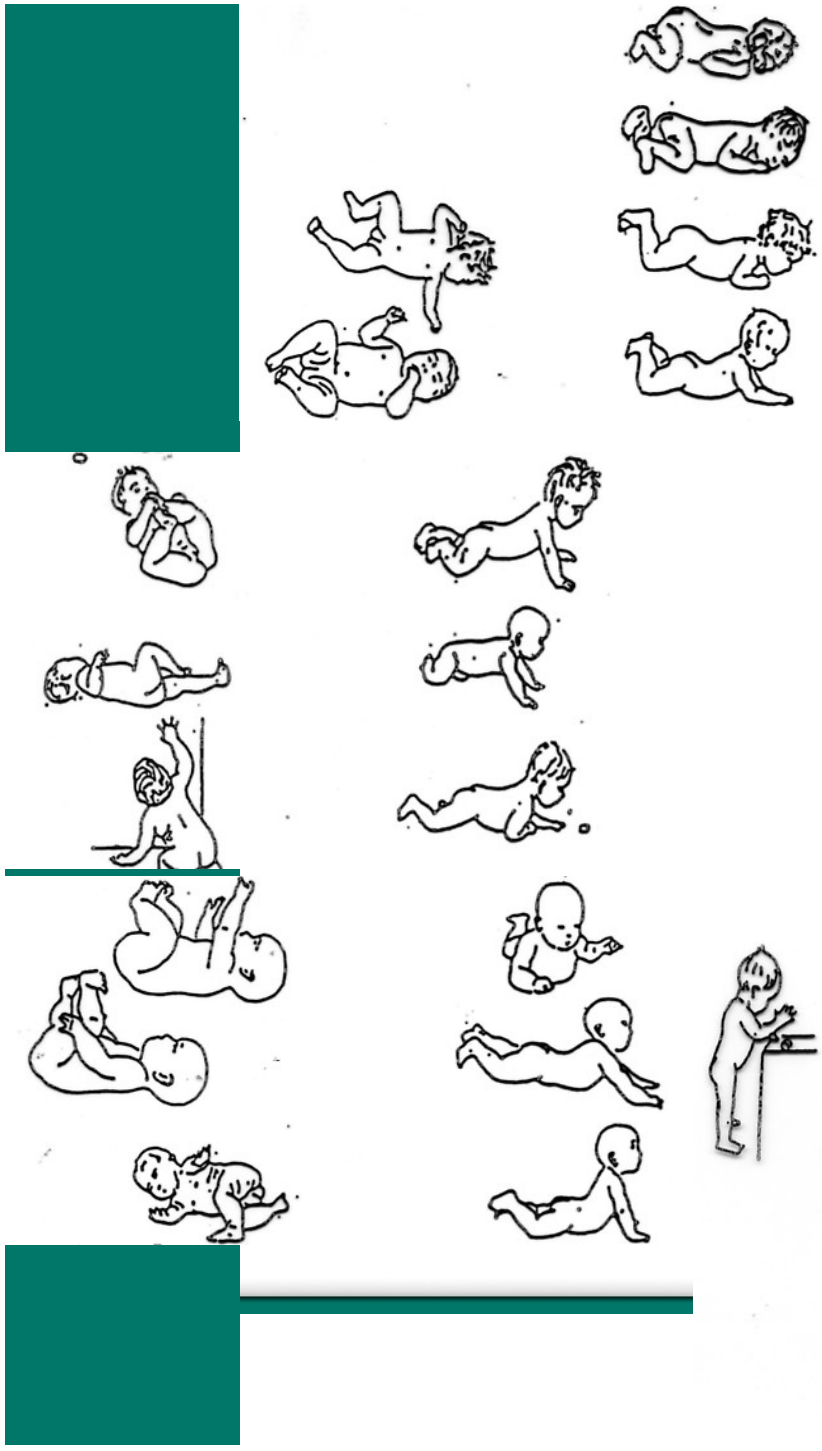


Manual therapy diagnostic – neuro-motor functions

- Assessment of the quality of movement::
  - in prone and supine position according to the developmental milestones
- Assessment of motor development:
  - Assessment of head control
  - Assessing the quality of support
  - Assessment of flexor activity
  - Evaluation of the rotation coordination
- Neuro-kinesiological examination

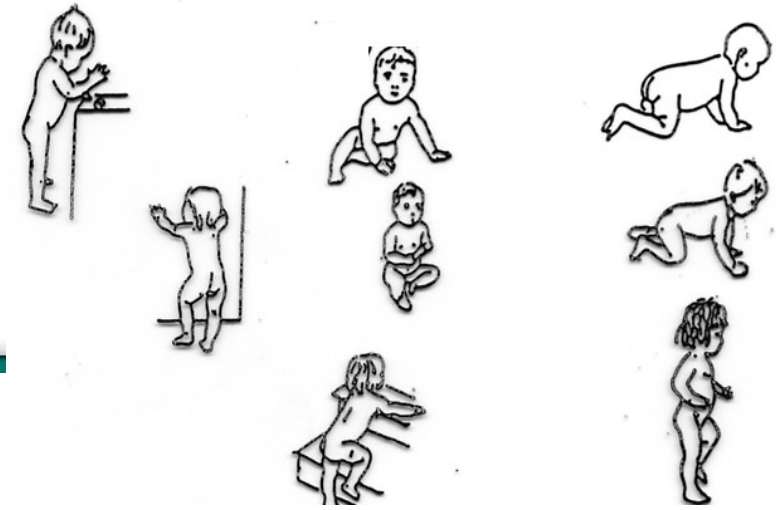
->(VOJTA)





Milestones of motoric development

- successive development of motoric functions of the 1st year:
  - 1. trimenon: flexion
  - 2. trimenon: center line
  - 3. trimenon: rotation
  - 4. trimenon: verticalisation



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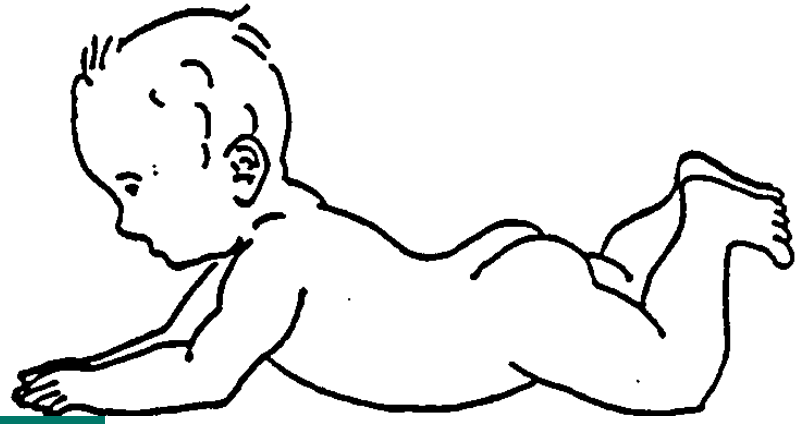
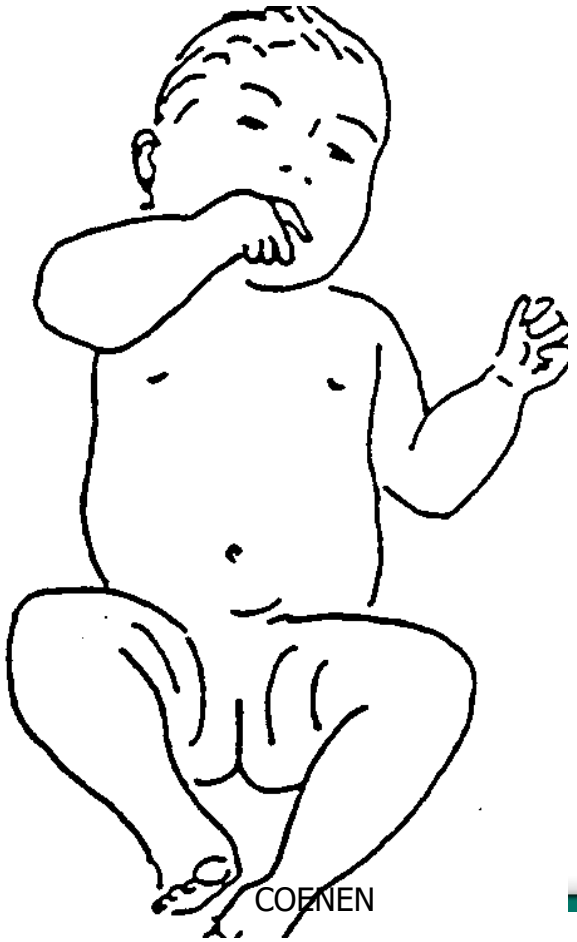
Milestones

End of 3. month

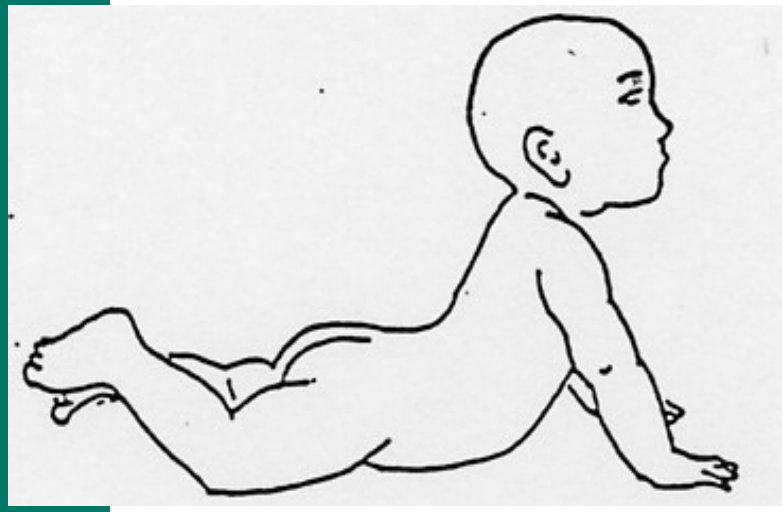




COENEN

Milestones

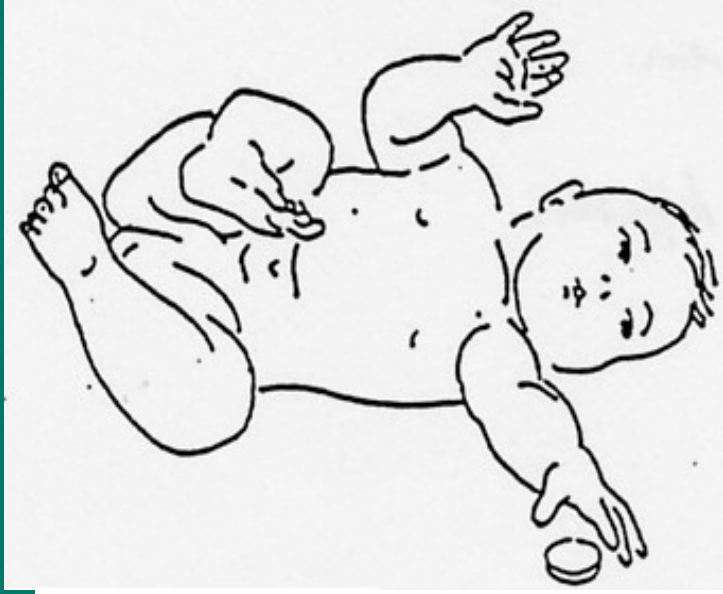
End of 6. month



COENEN

Milestones

End of 6. month



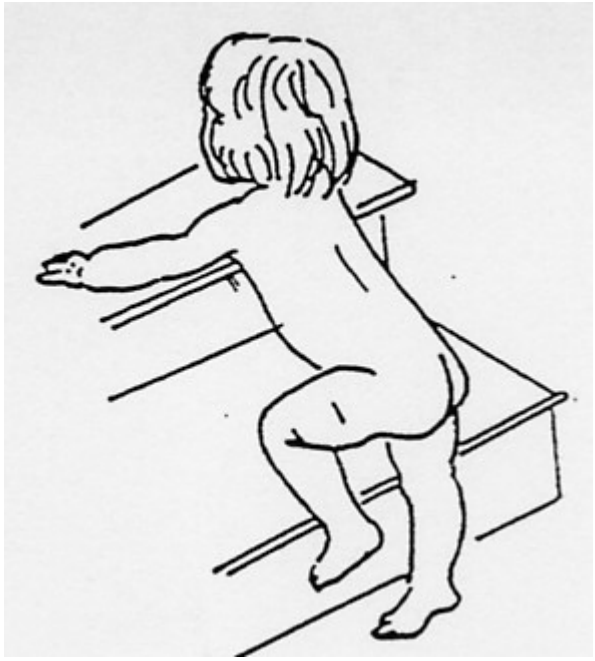
COENEN

Milestones

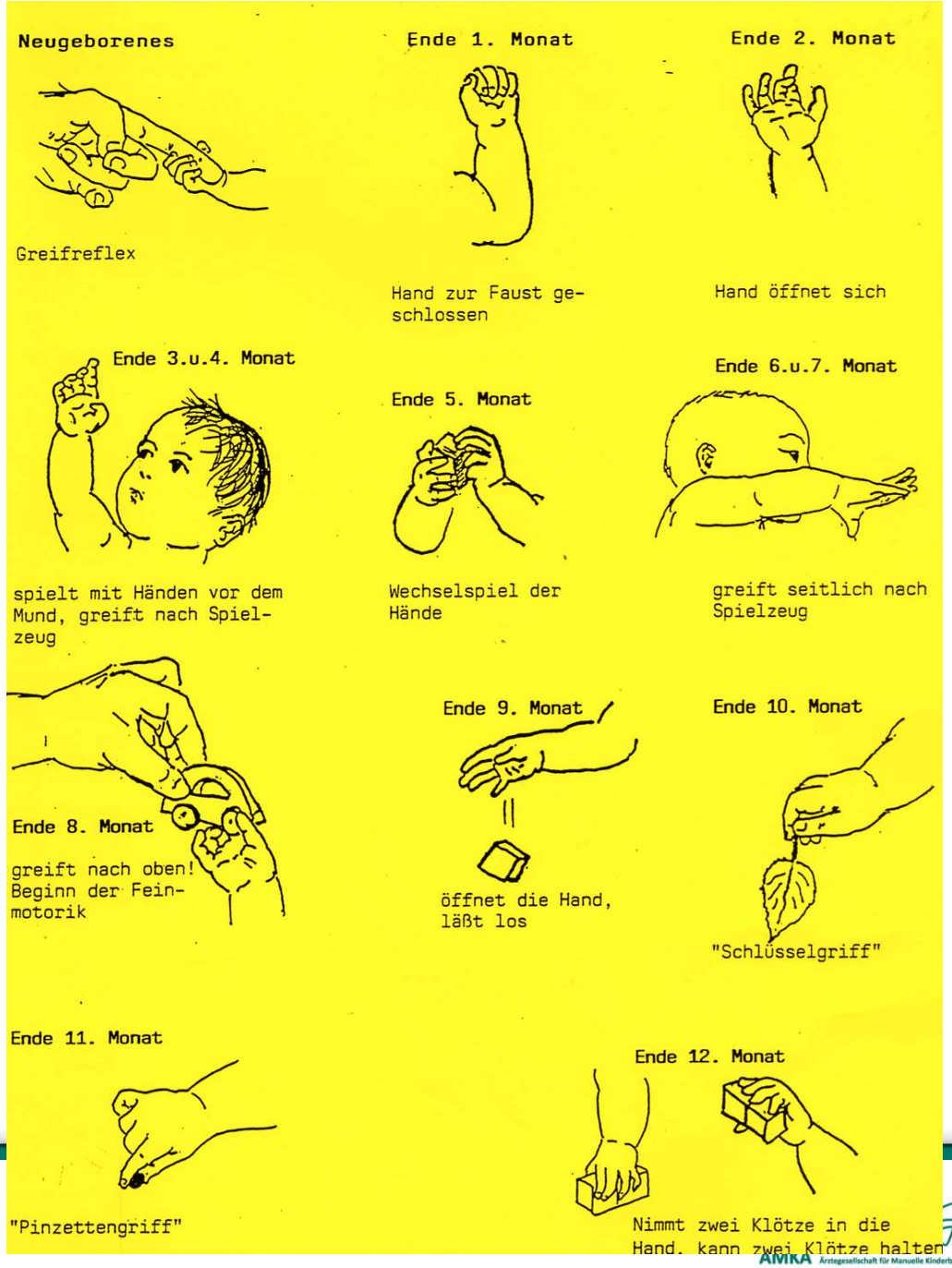
End of 11. month

Milestones

End of 12. month (birthday walk)



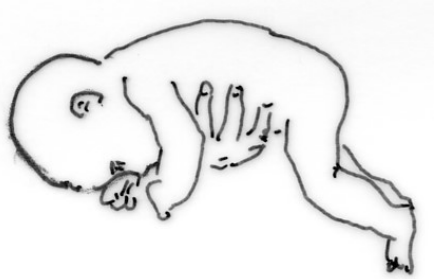
Fine motor skills of the hand



Postural responses (Vojta)

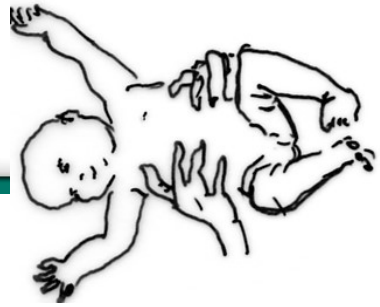
- 1. traction test (Vojta: head control)

- 2. Landau reaction



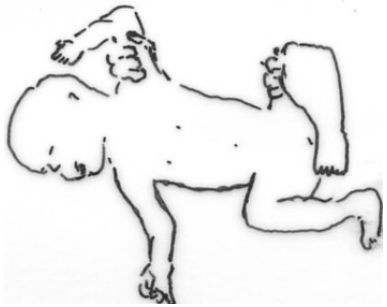
- 3. axillary suspension test

- 4. Vojta reaction



Postural responses (Vojta)

- 5. Collis´ horizontalis suspension test

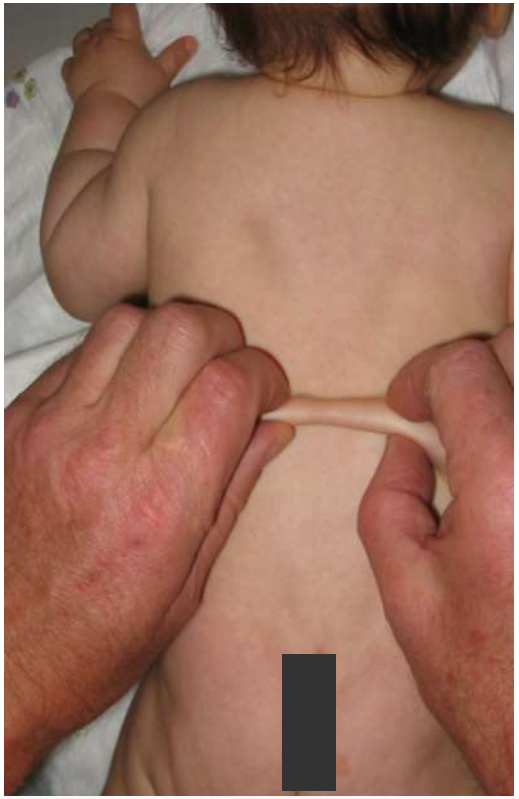


- 6. Peiper-Isbert suspension

- 7. Collis´ vertikalis suspension test

Manual examination of the infant

- Palpation of soft tissue (muscles, ligaments, capsules, fascia)
- Assessment of the mobility of the joints in lateral comparison to assess the end-feeling of the motion
- Kibler Fold Test



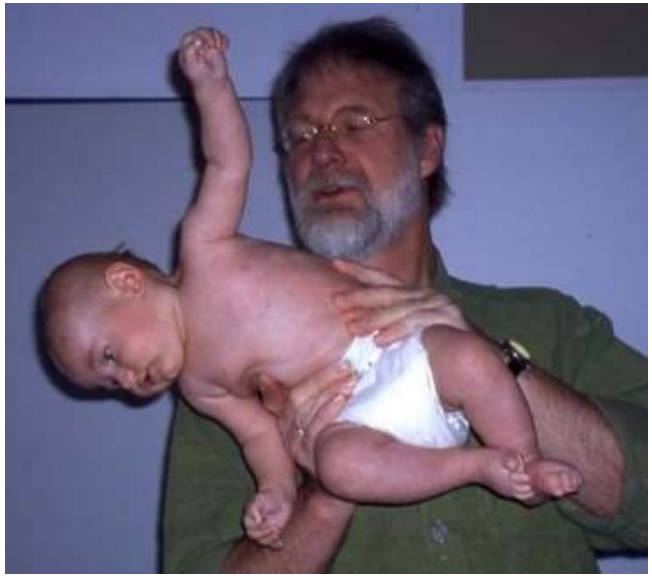
Manual examination of the cervical spine

Rotational test

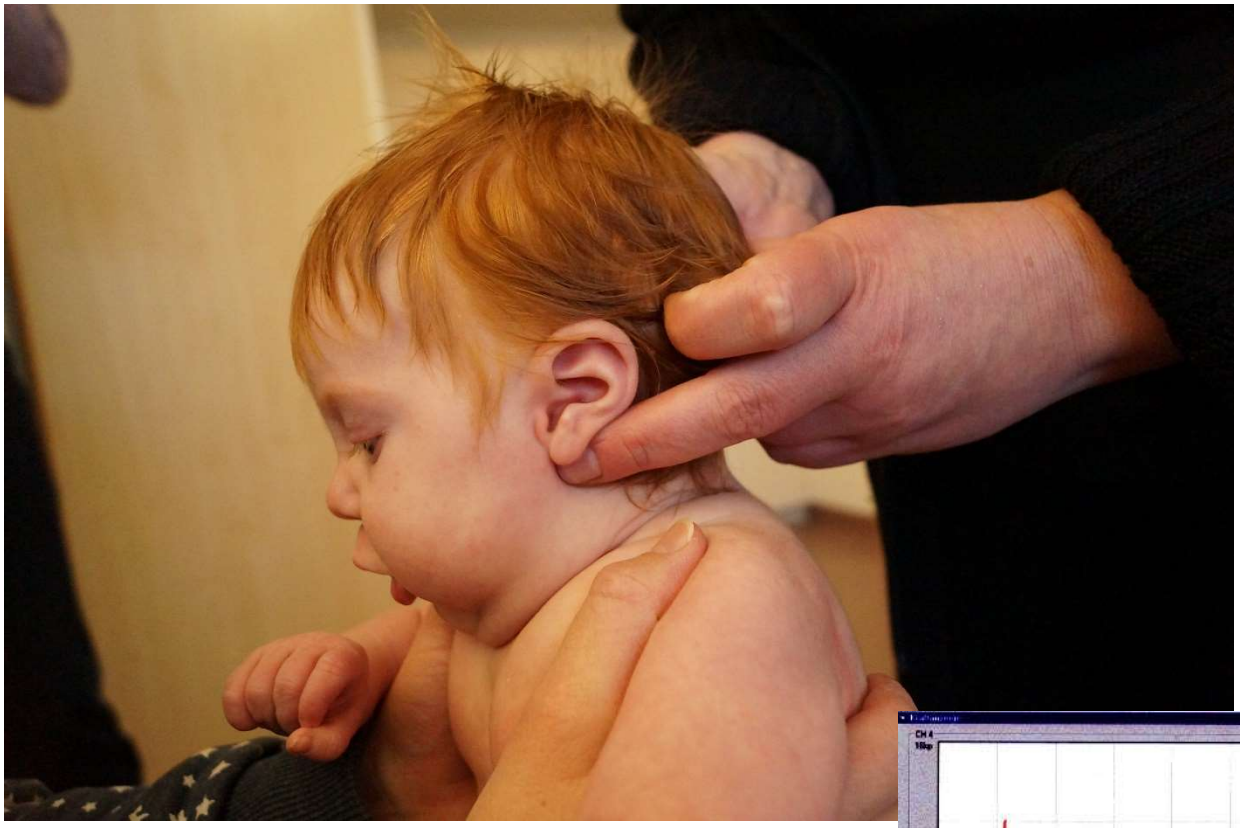
Side-bending test

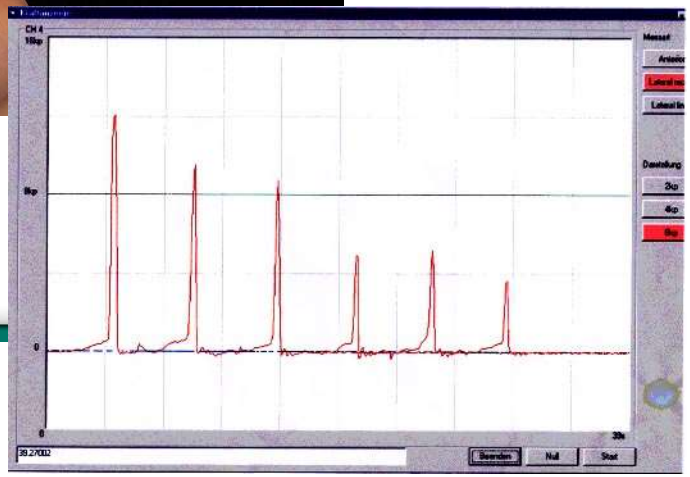
Labyrinth-reaction

- Pelvis fixed
- Slowly side-bending



Atlas-Therapy



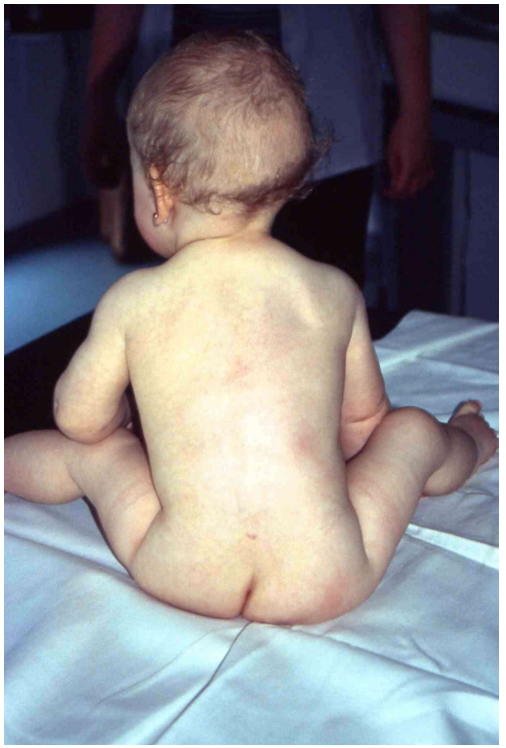


Treatment of motor dysfunction succeed through access to the proprioceptive processing

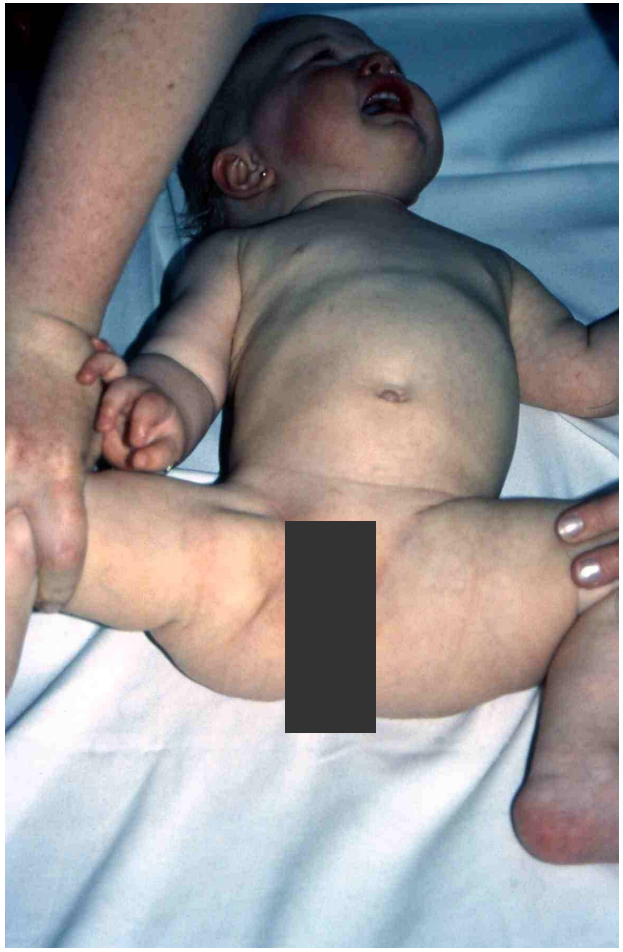
LSR: labyrinth-reaction after Atlas-therapy

Sacroiliacal dysfunction

- Increased muscle tone
  - Adductors
  - Rectus
  - Pirformis
- Decrease of internal rotation in hip flexion
- Increase of internal rotation in hip extension
- Rarely pain in children
- Age adapted manual therapy

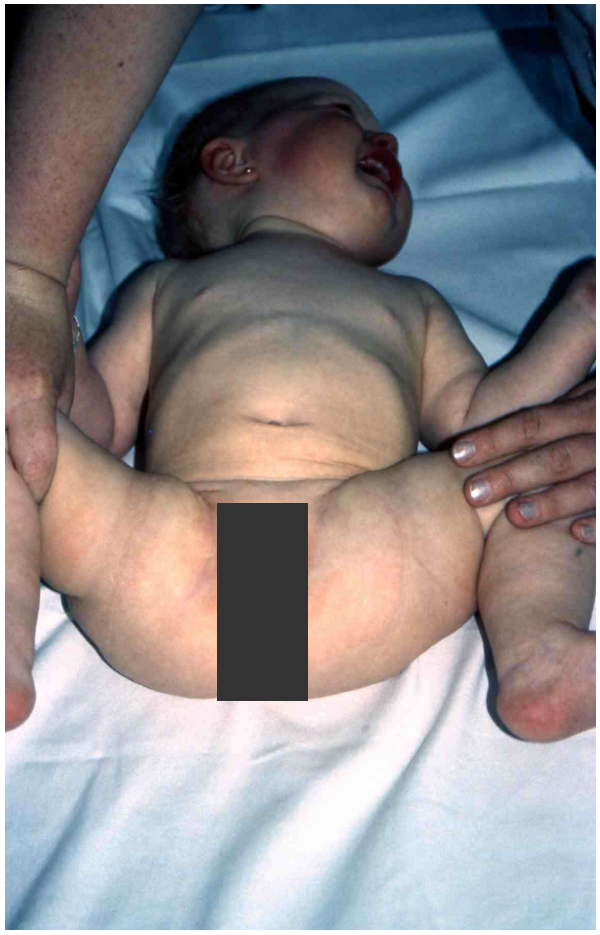


Sacroiliacal dysfunction



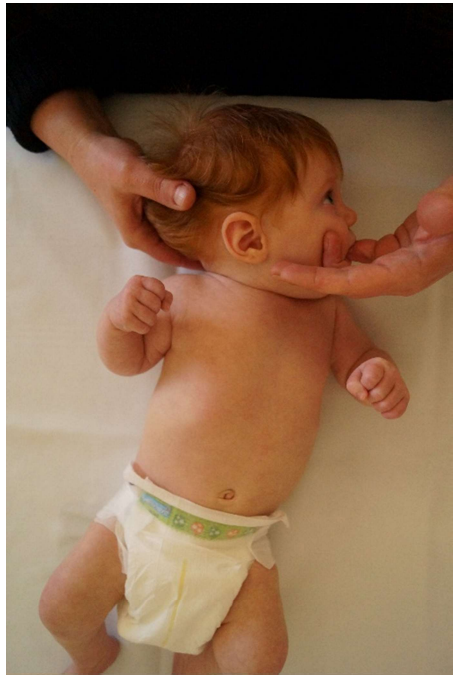
Sacroiliacal dysfunction- test and therapy

Sacroiliacal dysfunction – after therapy

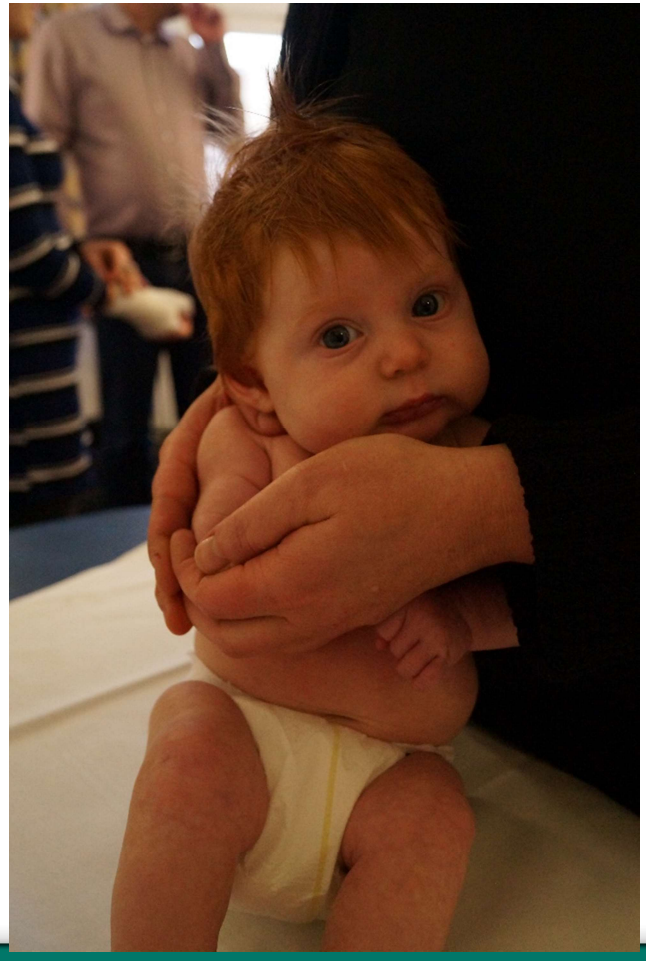


Sucking trick – head joints

wait…wait…



First rip: test and therapy



Basics:
Segmental dysfunction vs. neurological cause

- Mile stones
- Vojta
- Pediatric neurological examination (neonatal and primitive reflexes and reactions)
- LSR, HSR, SNT
- -> for diagnostics and controlling of therapy effects

Concept of treatment

- Manual soft tissue techniques
  - myofascial und craniosacral techniques
  - Osteopathic techniques
- Physiotherapy
- Age – adapted manipulation
- ARLEN´s Atlas Therapy

Remember:

- Every dysfunction is an origin of a modified proprioception
- Treatment of motor dysfunction succeed through access to the proprioceptive processing