

Ages	
Newborns	Premature (<38 weeks) Term (>38 weeks)
Neonate	0-30 days
Infant	Early (1-12 months), Late (13-24 months)
Young child/-toddler	2-6 years
Child/school child	6-12 years
Adolescent	12-18 years

General MSK in utero conditions	
MSK from intrauterine environment	Pathologies, uterus differences, growth restriction and arthrogryposis
Congenital contra-ctures	AROM + PROM reduced with structural and or functional abnormalities of soft tissues
Congenital anomalies	Malformations, disruptions, deformations, dysplasia
Arthrogryposis: Abnormal contracture of joints - curved joints	

Signs that a child needs manual therapy	
Signs of a neck problem	
Decreased cx ROM	Decreased neck tone + strength
Asymmetric head shape	Difficulty sleeping supine
Palpable lesion in joints/muscles of the cx spine	

Swaddling	
Increases risk of SID - more likely to be prone	Negative effect on mother-infant relationship compared to skin to skin
Later breast-feeding	Developmental hip dysplasia
Acute respiratory infection	Vitamin D deficiency
Decreases pain scores	Decreases spontaneous awakening and arousability, greater quality sleep
Increased risk of hyperthermia	

Pain in later life	
Pain - increased heart rate	Hypothalamic pituitary adrenal axis reprogramming
Higher risk of maladaptive responses to anxiety & stress provoking stimuli	Anxiety, depression, OCD, panic & PTSD
Cognitive functioning	Reduced cognition and visual motor integration

Increased size of amygdala	
Periaqueductal grey	Immediate & permanent changes
Increased endorphin & enkephalin protein	
Prevention:	
Non pharma therapies : Kangaroo care, massage, skin to skin contact, breastfeeding, NNS, oral sweeteners	
Parents:	
Increase emotional sensitivity	
Increase education	
Lower parental stress	

Foetal akinesia	
Lasting >3 weeks:	
Lack of normal muscle stretching	Reduced compliance of the capsule and peri-articular ligaments
Causing:	Fibrosis and contractures of the affected joints
Assessed by:	PROM
Was your baby moving all throughout the pregnancy or staying still?	
Movements are important for normal MSK development	

Risk factors for intrauterine constraint	
Primigravida (first pregnancy)	
Small maternal size	
Uterine malformation	
Uterine Fibromata	
Early Pelvic engagement of the foetal head	
Aberrant foetal positioning	
Oligohydramnios (too much amniotic fluid)	
Multiple gestations	

Birthing injuries	
Forceps + perineal pressure	Nasal septal deviation
Mild injuries	Head Asymmetry
	Facial asymmetry
	Torticollis
	Mandibular asymmetry
	Spinal, rib, clavicular dysfunction
Moderate injuries	Clavicular f#
	Facial nerve injury
	Bruising & tearing spinal nerve root
	Brachial plexus



Birth injuries (cont)

Severe injuries Extra/sub-dural haemorrhages into joint capsules, torn ligaments, dura
Haemorrhages of vertebral arteries

Types of birth interventions + Risks

Vaginal Birth Clavicular f#

Forceps Skull f#

CN palsy

Brachial plexus injuries

Facial nerve palsy

Torticollis

Ventouse Cephalohaematoma

Cranial f#

Risks Male (larger)

First born

Assisted delivery

Ventouse: Cup like suction device, attaches to the baby's head

Non-pharma pain management

Environment	Feeding methods	Other
Skin to Skin contact	Non-Nutritive sucking (NNS)	Acupuncture
Swaddling(?)	Breast Feeding	Sucrose
Tucking		
Touch, massage		
Music		

Non-Nutritive sucking:

Sucking not for the purpose of feeding

Benefits:

Improved digestion

Behavioral organization (able to settle down after crying)

Pain management

Prevention of aspiration

Decreased risk of SIDs

NNS if baby resists

Consider: Because of early breast weaning?

Shortened breast-feeding duration? Nipple confusion

Otitis media Dental malocclusions

Suffocation Allergies

Poisoning Infection

Recommended:

Minimise pacifier use

Delay introduction up to 1 month of age

Limit use for soothing

Wean from pacifier from 2-6 months of age

NP & NC pain

Type of pain	Origin	Localisation	Character	Referral pain
NC – superficial somatic	Skin, mucosa	Well localised	Sharp May be burning or pricking	None
NC – deep somatic	Bone, joints, muscles, CT	Well localised, tenderness to palpation	Dull Aching Throbbing	May refer over skin
NC – visceral	Internal organs	Poorly localised, Palpation may create pain	Vague dull, achy, cramping, tightness, deep pressure, spasms, squeezing	May refer over skin May be radiation of visceral pain
NP	Various sites, not always stimulus dependent	Poorly localised, diffuse + Sensory dysfunction	Difficult to describe Burning, pricking, needle like pain Sharp, shooting	Within nerve territory May be abnormal radiation

Neuropathic (NP)

Nociceptive (NC)



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