

## Stomatognathic system — a 12 step programme!



### ONLINE CPD SERIES

#### Module One

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClined



Session One: Posture and the STS.....and?



.

#### Session One:

#### OMT

7



But also: Stomatognathic system

.

8



And uses or affects a wide range of structures

9



So: Themes

10



Patterning – part of all the functions..

.



11  1) Posture, Head position and the TMJ



12 TMJ is final 'balancing' point for whole body patterns



13 Global positioning reflexes



14 2) Review of cranium



15 Dura and membranes



16  Dura and membranes

17



'Parachutes'

18



Falx



19 Membranes - falx



20 The tentorium



21 Tentorium

.



- 22 **Membranes - tentorium**
- 23 **Falx Cerebelli**
  -
- 24  **Diaphragma sella**
  -
- 25 **Hypothalamus -pituitary**
- 26 **Infra-tentorial space**
- 27 **Brain Stem**
- 28  **'Water-beds'**
  -
- 29 **Physiological integration and homeostatic balance**
- 30 **Sympathetic and parasympathetic integration / feedback loops with endocrine immune system**
- 31 **Mediated in large part through the ANS**
- 32 **Stress and immune system pathways**
  - 1 •
- 33  **Vagal components – vagal brake on sympathetics**
  -
- 34 **Vagal projections to brainstem and higher centres**
- 35 **Psychoneuroimmunology**
- 36  **What psychosocial factors weaken or strengthen the immune system?**
  -
- 37  **Implications for better patient treatment and public health**
- 38  **Triad of visualisations**
  - 39 **Social engagement system – has an inhibitory effect on (adverse) sympathetic action**
  - 40 **Vagus**
  - 41 **Classification of cranial nerves**
    - 
    -

42  **Facial muscles**

•

43  **Speculative benefit of botox?!**

•

44  **Brain activation....**

45 **Different groups**

46 **How do you work on these muscles then, when they don't have muscle**

**spindles**

**(or even fascial casings?)**

47 **Platysma**

48 **Facelifts?**

49 **Facial nerve**

50 **Facial palsy**

•

51  **OMT**

52  **The Trigeminal Nerve (V)**

53 **Trigeminal Nerve, Sphenopalatine Ganglion**

54 **Intimate relationship with the Maxillary Branch of the Trigeminal N.**

57 **Treatment of the Sphenopalatine Ganglion**

58  **Trigeminal pains**

59  **OMT – evidence really poor! Absent!!**

61

62 **Autonomic ganglia in head and neck**

63 **Cervical sympathetics**

64

67 **Superior cervical ganglion**

•

68 **Pineal and superior cervical ganglion link**

69 **Middle cervical ganglion**

•

70  **Inferior cervical ganglion**

- 
- 71  **Jugular foramen irritation**
- 1  • 72 **Juggling the foramen**
- 73 **Spheno-pterygoid (pterygo-palatine) ganglion**
- 74 **Thyroid and other neck viscera**<sup>75</sup>
- 76 **The cranial nerves and their peripheral relationships**
- 80 **General structures in the neck and throat**<sup>81</sup>
- 82 **TMJ and thyroid????**
- 
- 83 **TMJ and thyroid????**
- 84 **Thyroid and speech?**
- 85 **Locating the glands and working in the ventral neck**
- 86 **Links into: throat and cervical fascia**
- 87 **Anatomy - Spaces**
- 88 **Sublingual**
- 89 **Submandibular**
- 90 **Thymus**
- 91  **Palpation**

1  **THE STOMATOGNATHIC SYSTEM. 12 MODULE SERIES.**

• MODULE TWO

2  **Session Two:**

3  **Neck orientation, spinal inclination, posture and cervical**

**biomechanics**

8**Cranial, cervical and dural inclination**

9**Spinal nerves....**

10**Occipital Headaches**

11  **Occipital Headaches**

12

13**Neck Muscles – must be in balance for stomatognathic system to be efficient:**

14**Intermediate muscles**

15**Ligaments within cervical spine**

•

16**Upper cervical spine mechanics from the beginning!**

17**Muscle-dural bridge at C1-2**

18  **Myodural bridge**

1 • • •

19  **Cervical link to dural sensitivity – see more later**

1 •

20  **KISS**

•

21  **Practical**

22  **Circulation**

23**Cerebral circulation**

24

25**Does head movement change cerebral perfusion?**

••

## Dynamic vascular mechanics

•

### Why is all this interesting?

So, practical assessment of the ventral cervical spine

Mind the gap! Accessing ventral cervical column

### Links into: throat and cervical fascia

- 32 **Anatomy - Spaces**
- 33 **Even in the upper throat there are spaces– buccopharyngeal extensions, link prevertebral fascia to mandible via parotid fascia and space....**
- 34 **Ventral cervical spine techniques**
- 35 **Balance – more in later talks**
- Posture and alignment – changes over time – balance and the neck –**
- postural reflexes – a higher order dynamics than the primitive reflexes –**
- more later....**

### 39 **Bony, ligamentous and sensory changes**

- 40  **The tentorium**
- 41 **Coiling:**
- 42 **Falx Cerebelli:**
- 43  **Tentorium Cerebelli:**
- 44  **Also, think 'Parachutes'**  
(‘around tissues’)
- 45  **The infra-tentorial space (you are being watched)**

•

- 46 **Intra-cranial circulation**
- 47 **Other contents of jugular foramen**
- 51 **Pterygoid plexus**
- 52 **Drainage techniques for local tissues**
- 
- 53  **Oral motor disorders**
- 
- 54 **Cerebrospinal fluid and nasal and cervical lymph interconnections**
- 55 **MDB?**
- 56 **Global lymphatics**
- 57 **Basi-occiput contacts for practical (Carreiro pics)**
- 58 **Whiplash and the stomatognathic system**
- 
- 59  **Romberg's Test...60**
- 61 **Expanding the balance dynamics.....to understand the cervical spine is to understand the trigeminal nuclei!**
- 
- 
- 62
- 63 **Understanding the trigeminal system**
- 
- 65
- 66 **Oral reflexes – mediated in relation to trigeminal system – really important to get your head around inter-relationships**
- 68
- 69 **But, the airway trumps everything!**
- 70  **Mastoid air cells**

# 1 Stomatognathic system — a 12 step programme!

## ONLINE CPD SERIES

### Module Three

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

- 
- 2  **Airflow / moisture health / respiratory pressures**
- 4Speech and respiratory coordination**
- 5Breath support and the voice**
- 
- 6  **Observation and global treatment required to consider relationship between posture and voice**
- 7Understanding the upper airway spaces...**
- 8Nasal Cavity – shapes and anatomy influences upper airway air flow...**
- 9Maxilla**
- 10 **Palatines**
- 11  **Anatomical Differences Between Modern and Prehistoric Man**
- 12  **Studies by Weston Price**
- 13  **Articulations of the viscerocranium to the neurocranium Mandible**
- 1 •14
- 15  **Practical (remember this is for anything oronasal and throat related, AS WELL as anything to do with cranial base / occiput / jugular foramen / vagus etc that is being maintained by facial and nasal tensions**
- 16Face practical**
- 17Ethmoid, palate, zygomas, frontals, vomer, palatines (then you can link back to sphenoid, temporals and occiput etc!)**
- 18Airways – open or closed?**
- 19Airway dilators – hugely important – and we can say more in terms of sleep, arousal, apnoea etc etc later.....**
- 20Airway dilators - anatomy**
- 21Omohyoid – overlooked, but not without influence in airway control and swallowing stabilisation....**



- **Mouth breathers – asymmetry in tone**
- 
- 22  **Airway dilators - reflexes**
- 
- 23  **The nasal cycle**
- 24  **Nostril Breathing**
- 26 **Nasal Cycle**
- 27 **Nasal valve**
- 
- 28  **Air-Control System – turbinates and sinuses**
- 29 **Sinuses and turbinates**<sup>31</sup>
- 32 **Aeration and mixing!**
- 33 **Nitrous oxide**
- 
- 34 **Drainage / opening of sinuses etc**
- 35 **Blood supply**
- 36 **Drainage**
- 37 **Innervation**
- 38 **Nerves**
- 39 **Location of accessible parts of trigeminal – helps to mobilise sphenoid**
- also**
- 40 **Spheno-pterygoid (pterygo-palatine) ganglion**
- 41 **Sinuses, tonsils, adenoids - the first point of distress in the respiratorystomatognathic model...**
- 
- 42 **Eustacian tube**
- 43 **Eustachian tube stuff**

- 44 **Mastoid air cells**
- 45 **Pharyngeal space: supraglottic function, dependant on many factors: e.g. upper airway, oral relationships<sup>8</sup>**
- 49 **Normal TM**
- 50  **Otitis Media**
- 
- 51  **Tympanostomy Tube**
- 52 **Changing position of ear, and length of mandible; practical - ear contact**
- 53 **Check out all bones around temporal – zygoma, links to frontals, sphenoid, occiput, parietals**
- 54 **Temporal contacts, and TMJ**
- 55 **Other face contacts – older children**
- 57 **Other references**
- 58  **Intra-oral work**
- 
- 59  **Practical:**
- Temporal techniques (not just for otitis media.....)**
- 60 **Controlled breathing**
- 61 **Breath holding – brings us to arousal, sleep and apnoea**
- 62  **Breathe and interoception**
- 63  **Slow breathing**
- 
- 64 **The Senses – hearing, vision, movement sensation, taste, smell**
- 65 **Development of interoception**
- 66  **Adrenals – arcuates and 12<sup>th</sup> ribs**
- 67  **Breathworks Mindfulness**
- (Stiofan MacSuibhne)**
-

68 **3 Emotional Control Systems – osteopaths should support patients to work in this way**<sup>69</sup>

70 **Breathlessness..**

•

71  **A matter of life or breath.....**

72  **Anxiety, stress, perception, allostasis, attention....dissociation....homeostasis and regulatory impact....**

•

74  **Gait and breathing**

75 **Prolonged breath-walk**

76 **Spinal column changes in pregnancy – in relation to gait**

•

77  **Gait changes – and breathing (remember the ankles??!!)**

78 **Sleep**

79 **Sleep Architecture**

**Normal sleep histogram of healthy young adult**

**Sleep apnoea**

**CPAP treatment (Continuous Positive Airway Pressure)**

**OSA Airway Dilator**

• **And so back to the lungs and diaphragm....**

**Lobar mechanics**

**Lung releases**

95 **Paed skeletons – look at chest cartilage**

96 **Look at reduced slope of ribs and clavicle and relative posterior position of gleno-humeral joint**

97 **Chest differences**

- 98 **Need to treat lung tissue and mediastinum rather than just 'diaphragm'**
- 99 **Chest and axillae**
- 100 **Torso contacts**
- 101 **Thoraco-abdominal dys-synchrony**
  - 102 **Appositional dynamics**
  - 103 **Blood supply to the diaphragm**
- 104  **Regional innervation of diaphragm**
  - 105 **Embryological components of the diaphragm**
  - 106 **Intercostal-phrenic reflex**
- 107  **Intercostal to phrenic nerve reflex - Central tendon dynamics**
- 108  **SUMMARY so far, stomatognathic functioning:**
  - 1 •
- 109  **What are your 'diaphragms' for airflow purposes though??**
  - 1 •

1  **Stomatognathic system — a 12 step programme!**

**ONLINE CPD SERIES**

**Module Four**

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

2  **Session Four:**

- 3Soma in equilibrium – sense of self is bodily change, vestibular interaction, autonomic integration and visual, verbal and non verbal communication system**

4**Another major theme of my lecture...**

- 1  **Beyond the vestibular system, and why is vestibular function DISORIENTING?**

•

5  **VESTIBULAR SYSTEM AND EARTHQUAKES**

•

6  **Vestibular system**

•

7  **Oscillation and vestibular function?**

- 1 •

8  **Buzzing bones**

- 1 •

9  **Temporal Bone**

- 11Check out all bones around temporal – zygoma, links to frontals, sphenoid, occiput, parietals**

- 12Further issues relating to the Occipito-mastoid suture**

- 1  **13Basi-occiput contacts for practical (Carreiro pics)**

- 14Other factors – and not forgetting pain, inflammation, swelling, tissue states, need for drainage.....when managing TMJ and its tissues and the nerves etc that serve the area....**

- 15Also remember:**

**Feeding and suckling - Infant perspective on balance!**

- 16SUCKING IS A VESTIBULAR FRIEND!**

- 1  **Posture control and the ST system**

17  **Vestibular stimulation and motor control** 19 **MOTION AND PERCEPTION** 20 **Posture control and the ST system** 21 **MOTION AND PERCEPTION** 22 **Ocular abnormal head posture**

•

 23 **VWT** 24 **VWT 2** 25 **VOT** 26 **VOT 2**27  **Vestibular Function and VOR Exercises** 28 **EYES** 29 **Insertions of eye muscles**• 30 **Lacrimal drainage**31 **Eye Problems In Children 1: Excessive Tearing** 1 •  **Eye Problems In Children 2: Strabismus**32  **An Aside: Spacial complications of plagiocephaly**33  **Deformational plagiocephaly**34  **Plagiocephaly, torticollis and other issues for the OM suture / vagus**

•

35  **Plagiocephaly – most of relevance is what's going on inside, as explained earlier** 37 **Positional Head Deformities** 38 <http://www.scipress.org/e-library/sof2/pdf/0147.PDF> 39 **Examination: face is a key component:****Oro-nasal issues:****Changing relations between vault and face – also relevant for ears, see later**40  **Tentorial angle** 1 •41  **Osteopathic approaches**

•

42  **Relationship to birth process**

43  **Postural reflexes**

44 **Can you name them all?**

45 **Postural reflexes**

46  **Righting reflexes**

•

47  **Does birth strain or motor irritability stall these reflexes?**

48  **Equilibrium reflexes**

49  **Equilibrium reactions (better term than reflexes)**

50  **The Parachute Reflex**

51  **The Baby Liv videos**

52

# 1 Stomatognathic system — a 12 step programme!

## ONLINE CPD SERIES

### Module Five

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

#### 2 Session Five:

#### 3 Stomatognathic system maturation

1 ••

4 Facial growth in childhood

5 Examination: face is a key component:

**Oro-nasal issues:**

Changing relations between vault and face – also relevant for ears, see  
 later<sup>9</sup>

10 Falling on faces...and other dental strains

11 Teeth eruption – note: osteopathic dentistry is also a fascinating  
area, and individual teeth can be 'unwound'!

#### 12 TMJ - mouth and teeth relations

#### 13 practical

#### 15 Teeth eruption – note: osteopathic dentistry is also a fascinating area, and individual teeth can be 'unwound'!

#### 16 practical

#### 17 Dental syndromes

18 Changing anatomy

19 MOULDING – BONY ADAPTATION – CHANGE WITH TREATMENT?

**Osteoblasts – bony siblings of fibroblasts – similar properties**

20 Muscular distortion



- 1 • 23 **Tongue stretch**
- 24  **Slight aside!**
  -
- 25  **Dynamic anatomy – the osteopathic dimension**
- 26  **Biodynamic Embryology:**
- 27  **Fundamental Concepts:**
- 28  **‘Embryology’ and ‘biodynamics’**
- 29  **For example: Stretch of mesenchyme leads to membranous ossification – if membranes and bones get stretched one way versus another, then the suture alignment will adapt and eventual movement patterns will differ....**
- 30  **Relevance....(‘within tissues’)**
- 31  **Continued...**
  -
- 32 **Coiling:**
- 33 **Falx Cerebelli:**
- 34  **Tentorium Cerebelli:**
- 35  **Also, think ‘Parachutes’ (‘around tissues’)**
- 36  **Embryology and biodynamics continues in the extra-uterine domain**
  -
- 37  **Normal versus traumatised**
- 38  **Fascia and receptors - what has been known for ages:**
- 39  **Bones and sensations**
  -
- 40  **More sensations**
- 41  **Periosteum – more than an in series connective tissue**
- 42  **Pancinian corpuscles in periosteum**
  - 1 •  **‘Osseoperception’**
    - 
    -
- 43  **Continued...**

45 **Sub-parts of bones – impact of moulding AND also later infant movements and positioning**

46 **Sensorimotor**

**Development** 47 **Note:**

**Pain is a major ‘problem’ for appropriate sensory processing and integration**

**Freedom from pain aids development Periosteum**

**is pain sensitive**

**Treatment premise: osseous unwinding decreases periosteal irritability and reduces pain signals**

**(amongst other things) myofascial and visceral vascular care helps balance autonomic tone and aids motor coordination / stability (by providing a stable interoceptive base for motor activity....)**

48  **Infant pain – versus direct anatomical function – impacts indirectly on sensorimotor coordination and getting right state control for feeding / suckling**

•

49  **Pain and adapted sensation is at the root of every paediatric problem we see....**

•

50  **Aetiology – why the sphenoid is less important than we might think**

•

51  **Insights from paediatric osteopathy study in NZ**

52  **Allostatic load, pain and movement function**

•

55  **Integration of primitive (motor) reflexes requires.....**

56 **Pain interferes with sensory processing.....**

57 **Note: Periosteal innervation – PAEDIATRIC / BIRTH STRAIN RELATED – more in next lecture too:**

58  **The vagus and pain signalling**

•

- 59  **Pain processing**
- 60  **Further notes on paediatric pain – making use of this in practice**
- 61  **Pain measurement in infants and children**
  - 62 **FACES pain rating scale (3-7 years)**
  - 63 **Sutures, plus pain assessment etc (Frontal parietal video)**
  - 64 **Paediatric migraine**
- 65  **Continued**
- 66  **Cranial nerve convergence – pain links – and upper cervical strain onto these areas**
- 67  **Further convergence – C1-2 somatic**
  -
- 68  **Infant pain – a few comments, then more in a moment....**
  - 
  - 69 **Vagal and trigeminal convergence**
  - 70 **Convergence....**
  - 71 **Trigeminal nerves and vagal interaction**
  - 72 **Cranial nerve convergence – pain links**
  -
- 73  **Trigeminal Ganglion and branches**
  - 74 **Juggling the foramen**
  - 75 **View of the OM suture**
  - 76 **Looking at environment of OM suture...**
- 77  **Pain impacts on maturation and ongoing development.....**
  - **KEY THEME TO LECTURE**
  - 1 •
- 1  **Foetal motion and neuromuscular development**

## 2 Stomatognathic system — a 12 step programme!

### ONLINE CPD SERIES

#### Module Six

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

#### 3 Session Six:

•

#### 4 Foetal motion and neuromuscular development

#### 5 Gaze dynamics

•

#### 6 Blood volume changes - neonatal transition physiology

•

#### 7 Respiration – or, for babies – OMG where is my placenta!

•

8 Breathing effects on the stomatognathic system were outlined in a separate module

9 Biosphere – lets start big!

10 Biosphere depends on exchange....Exchange in animals:

•

#### 11 Most animal respiration involves four steps:

#### 12 Cellular respiration

13 Cellular respiration

14

#### 15 We are charged beings!

•

16 Respiratory Homeostasis

17

18 **Pressure differences between cavities is influenced by**

- 
- 
- 

20 **INTERNAL AND EXTERNAL RESPIRATION**

21 **Is there a problem?**

22  **Global fascial manipulation and mobilisation**

23 **Ventilation and perfusion – further details**<sup>25</sup>

26 **Respiratory Regulation of  
Acid-Base Balance**

- 
- 
- 

7

28 **Dorsal vagal complex – settling into being**

29  **DORSAL VAGAL COMPLEX / NUCLEUS INFLUENCES THIS...**

30 **How do we get a handle on the vagus?**

31 **Parasympathetic :**

**Visceral Tube**

32 **REMEMBER THIS IS A FLUID STORY – IMPACTING ON RESPIRATION.....**

33 **State of your states – arousal , maturity, versus anatomy and  
constriction dynamics in osteopathy**

34 **Developmental Subsystems in Neonates**

**(pain pathways may interfere with homeostatic regulation and learning and  
patterning)**

35  **Maturity**

•

36  **Smallest baby in the world born  
At just 21 weeks and 6 days, in USA, 2007.**

- 37 **This little one had a miracle ending...**
- 38 **Examination and ongoing monitoring issues in clinic**<sup>41</sup>
- 42  **Theoretical Perspective**
- 43 **Infant States of Consciousness**
- 44 **Sleep and alertness**
- 45
- 46 **Sleep and Newborns**
- 
- 

#### 48 **Continued**

#### 49 **Apnoea**

- 50 **OSAS (obstructive sleep apnoea syndrome)**
- 51 **But, we have stayed a little from cardio-respiratory cycling!**
- 52 **HOW DOES THIS RELATE TO INFANT SUCK, SWALLOW, BREATHE?**
- Orthostatic suckling**
  - 1 •  **Notes on cardiorespiratory cycling – arm and leg movement needs vascular activity to stabilise blood pressure and also respiratory effort to affectively metabolise**

#### **building interoception with movement – PAEDIATRIC JOURNEY**

#### 53 **Axial and appendicular linkages ONTO CORE TRUNK**

#### 54 **Motor destabilisation affects ans balance**

#### 55 **Sympathetic**

#### **NS 1**

#### 56 **And also:**

**More suckling and feeding issues – exploring the autonomic nervous system drive in sucking behaviours**

1 •

#### 57 **Sensorimotor integration –**

#### **Non nutritive suckling**

- 
- 
- 58  **Autonomic responses**
  - 1 •
- 59  **Chewing and attention**
  - 1 ••
- 60  **Oral defensiveness**
  - 62 **Bonding – and autonomic stability – influences of the stomatognathic system (in both parties!)**
  - 63 **Stomatognathic system – a sensory and a communicative system – one that has to be IN BALANCE....and for the mother and baby dyad – in sequence / mutual integration....**
- 64  **Maternofoetal relationship**
- 65  **Visual cues**
  -
- 66  **Maternal behaviours**
- 67  **Other assessments using Vagal reflex**
  - 
  - 68 **And the ongoing consequences though life....**
  - 69 **Vagal components IN COMMUNICATION**
  - 
  - 70 **Branches of vagus**
  - 71 **DORSAL VAGAL COMPLEX / NUCLEUS**
- 72  **BRIDGING THE GAP:  
Dorsal and Ventral Vagal complexes**
  -
- 73  **Ventral vagal complex**
- 74  **Mammilian, myelinated, and primitive unmyelinated**
- 75  **Evolution of the  
Autonomic Nervous System**

- 
- 
- 

***“The Ultimate Survival Machine”***

76 **Social engagement system –  
Vagus has an inhibitory effect on (adverse) sympathetic action**

77 **Communicative**

78  **EVALUATION**

79  **Vagal continuity into the anterior neck and throat and face / head**

80  **Mediastinal components of ventral / core link fascias**

81  **How is all this brought together?**

1 •

82  **When people won't let go**

1 •

83  **Somatic experiencing**

84 **Sympathetic NS First Aid: BLSL**

85 **Verbalisation though fascial / soft tissue unwinding**



- 
- 1  **Stomatognathic system — a 12 step programme!**

## ONLINE CPD SERIES

### Module Seven

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClined

- 2  **Session Seven:**
- 3  ***Infant reflexes and stereotypies are very important in the process of development.***

*They must be integrated.*

- 4  **Reflexes – you will learn more about these later too**

- 
- 5  **Primitive reflexes....recap**

- 6  **Testing tools**

- 
- 7  **Primitive Reflexes**

- 8  **Stereotypies**

- 9  **Reflexes may be 'retained'**

- 10  **Learning the first A,B, C...**

- 11  **Osteopathic case history considerations – older children**

- 12  **Retained primitive reflexes linked to:**

1•

- 
- 13  **Example retained reflex:**

**Asymmetrical Tonic Neck Reflex**

- 14  **Example retained reflex: Palmar reflex**

•

- 
- 15 **Testing primitive reflexes in children not**
- infants**  16 **Testing primitive reflexes in**
- children not infants**
- 17 **More testing**
- 18 **More testing**
- 19 **More testing**
- 20 **Recap - What is Sensory Processing?**
- 21 **Golgi tendon organs..**
- 22 **ADHD, autism spectrum, learning difficulties...**
- 
- 23  **Problems with sensory integration in autism present as:-**
- 24 **Also linked with hemispheric balance and integrated function**
- 25 **Older children**
- 
- 26 **Leaky guts – ‘toxicity leading to NS irritability’ – support gut function through gentle mobilisations**
- 
- 
- 27
- 28 **Osteopathic relevance of these developmental stages**

-

- 29 **Materials – aids to tolerance of treatment?**<sup>6</sup>
  - 37 **Osteopathic accompaniments to brain gym...**
  - 
  - 38  **Practicals for brain gym - routine**
  - 39 **The birth process and reflexes** 40 **So, back to movement.**
  - Normal fetal motility: an overview**
  - 41       **'Primitive' Reflexes**
  - 
  - 42       **Reflexes**
  - 43       **Foetal motor development**
  - 44  **Brain Development**
  - 45 **Brain Development**
  - 46 **Note: Vestibular lateralisation**
  - 47  **Reflexes – you will learn more about these later too**
  - 48
- Initial examination concepts.**

**So, birth – what's it all about?**

**Heads and holes**

**Materno-fetal ejection reflex**

Spiral movements of fetus are reflexive  Sally Goddard

49  **References**

50  **Sensory experiencing versus moulding?**

54 **MRI live birth**

55 **Reflexes – post natal – a couple of examples - survival**

56 **Reflexes -**

57 **Relevance of these reflexes**

58  **Shoulder dystocia often leads to brachial plexus injuries**

•

59 **Effects – eg use asymmetric tonic neck or moro to detect level / extent**

60 **Other reflexes – a few examples – kick in a few months after birth**

61 **Movement implications for joint development / osseous development also**

62 **But, remember maturation and physiologic transition at birth, and**

**afterwards?**

63 **Visual cues**

•

•

64  **Maternal behaviours**

65  **And.....Torticolis**

66  **Many call birth the**

**“First Subluxation”.**

67 **Parents – the second subluxation!!!**  
**Bucket Babies: Developmental Consequences and their Prevention**

68 **Preferred Position continues...**

69 **More Associations with Bucket Babies**

70  **Treatment of Positional Plagiocephaly**

71 **Coordinating Torticollis Treatments-**  
**TOT Collar and Taping, parental home stretching and physio direct**  
 **stretching**

72 **Plagiocephaly, torticollis and other issues for the OM suture / vagus**

•

73  **Is there something else?**

**Torticollis as a pharyngeal arch disorder**

1  • 74

75 **Plagiocephaly, torticollis and other issues for the OM suture / vagus**

•

•

76  **Plagiocephaly**

77  **So, back to the reflex aetiology of torticollis**

78  **Reflexes – remember the sensory field for the trigeminal system that really interfered with motor patterning throughout the spinal trigeminal field and head turning muscles??**

79  **Motor dominance or vestibular asymmetry will lead to favored positions, and therefore motor (SCM etc) development – stronger tone one side, easier for baby....**

80  **Withdrawal reflexes**

81  **And also – in relation to asymmetric tonic neck reflex and vision....**

82  **More causes of torticollis:**

**Ocular abnormal head posture**

1  **Stomatognathic system — a 12 step programme!**

**ONLINE CPD SERIES**

**Module Eight**

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

2  **Session Eight:**

3 **Swallowing...**

4 **Why do we swallow?**

5  **NB: Swallowing – uses many of the same structures as the voice...**

6  **Feeding versus swallowing**

7  **Cervical spine disease and dysphagia**

1  • 8

9 **Dysphagia**

10  **Reflex and transit nature of peristalsis**

•

11  **Enteric nerves – as many neurones ( $10^8$ ) as the spinal cord**

• **A gut with a mind of its own**

•

12  **Motility (peristalsis) – pacemakers and rhythmicity**

13 **'Pacemaker' centres in gut**

14 **Reflex relationships**

15 **Intestinal reflexes – between parts, not just pacemakers**

16 **Plexi and sphincters**

17 **Sphincter Locations**

18 **More on the oesophagus and sphincters later!**

19 **The tongue**

20 **Tongue Muscles**

- 21 Paediatric swallow
- 22 Paediatric swallow
- 1 •
- 23  How vault relates to key-stone of ethmoid and upper jaw hangs off that.....(note position of vomer also):  
**Tongue mobilises this mechanism – or does it.....?**
- 24  Dispelling myths – vacuum is the key
- 25 **Suckling action on the cranial base**
- 26 Infantile colic is a pain syndrome
- 27 Infant pain – versus direct anatomical function – impacts indirectly on sensorimotor coordination and getting right state control for feeding / suckling
- 
- 28  Osteopathy and lactation consultants
- 29 TMJ and temporal holds, including throat dynamics
- 30 Genioglossus and Related Muscles
- 31 With bottle
- 32 Tongue positioning
- 33 Intra-oral and out-takes!
- 34 TMJ - supra and infra hyoid muscle links
- 35 **Top and bottom of pharynx**
- 36 Clavicle and sternum links
- 37 Sub mental contacts
- 38 Differences Between Infant & Adult Larynx
- 40 **Pediatric versus adult mouth and pharynx...links in tongues and hyoids etc to suckling and swallowing (also relevant for ears – see later)**
- 41 **Proximity of infant soft palate and epiglottis**
- 42 **Epiglottis and base of tongue – don't push too hard!**
-

- 43  **Pharyngeal space: supraglottic function, dependant on many factors: e.g. upper airway, oral relationships**
  - 44 **Pharyngeal Muscles**
  - 45 **Throat and cervical fascia**
- 46  **Feeding Examination - check for:**
- 47  **Neural considerations – trapped nerves and feeding!**
  - **Infant laryngo-pharyngeal sensitivity**
    - 1 •
    - 49 **Symptoms of tongue tie**
    - 50 **Lip, tongue and nipple relationships (correct placement encourages nipple stretch – important)<sup>51</sup>**
    - 52 **Submental ultrasound**
    - 53 **Assessment & Classification**
- 54  **Kotlow's Criteria – posterior tongue tie**
- 55  **Styloid process and tongue, occipital somites**
  - 56 **Class 1 and 2**
  - 57 **Class 3 and 4**
  - 58 **Procedure**
  - 59 **Post release massage**
  - 60 **Upper lip**
  - 61 **Lip tie and latch**
  - 62 **Oesophageal anatomy**
  - 63 **Pharynx and oesophagus attachments**
- 64  **Mediastinal bridge between head and abdomen**
- 65  **Oesophageal Shape**
  - 66 **Cardiac and oesophageal relations**
  - 67 **Mediastinal neck indicator test**



68  **Stomach anatomy**

•

69  **Greater and lesser omentums**

70 **Liver and stomach 'swing'**

71 **Global stomach release**

72  **Lesser omentum**

73  **Stomach balancing**

74  **Upper oesophageal balancing**

75  **Practical:**

**Pyloric release – include DJ-J release and sphincter of Oddi**

76  **Swallowing disorders**

1  **Stomatognathic system — a 12 step programme!**

**ONLINE CPD SERIES**

**Module Nine**

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClinEd

2  **Session Nine:**

•

3  **Speech and Language Development**

•

4  **Speech and anatomy**

•

5  **Hearing Impairment**

6  **Differences between Speech/Language disorders**

7  **Differences between Speech/Language disorders Continued**

8 **Receptive and expressive language**

11 **From our previous sessions:**

**Other face contacts – older children**

13 **Practical:**

**Temporal techniques (not just for otitis media.....)**

14  **Maturation**

15  **Fig. 3.7 Motor development. Most infants follow an orderly pattern of motor development. Although the order in which children progress is similar, there are large individual differences in the ages at which each ability appears. The ages listed are averages for American children. It is not unusual for many of the skills to appear 1 or 2 months earlier than average or several months later (Frankenberg & Dodds, 1967; Harris & Liebert, 1991). Parents should not be alarmed if a child's behavior differs some from the average.**

16  **Maturation continues**

17  **Fig. 3.8** Psychologist Carolyn Rovee-Collier has shown that babies as young as 3 months old can learn to control their movements. In her experiments, babies lie on their backs under a colorful crib mobile. A ribbon is tied around the baby's ankle and connected to the mobile. Whenever babies spontaneously kick their legs, the mobile jiggles and rattles. Within a few minutes, infants learn to kick faster. Their reward for kicking is a chance to see the mobile move (Hayne & Rovee-Collier, 1995).

18  **Sensorimotor coordination**

19

**We also mentioned (although we didn't explore it much):**

**Global neurological development:**

**Cognitive Skills – higher order development**

20 **Development of the whole child**

21 **Stages and sequence of development**

22

23  **Language development...**

•

24  **Communication and language**

25 **Emotions – developing enteric and microbiome dynamics links to emotional development...**

26 **Intellectual development**

27 **Emotional, social and behavioural**

**development (1)** 28 **Emotional, social and**

**behavioural development (2)**

29 **Emotional and Social Development**

30  **Fig. 3.9** The traditional view of infancy holds that emotions are rapidly differentiated from an initial capacity for excitement. (After K.M.B. Bridges,

**1932. From "Emotional Development in Early Infancy." Reprinted by permission of the Society for Research in Child Development.)**

31  **Testing tools**

32  **The cerebellum and language skills....**

33  **Oscillatory balance – axial and appendicular integration**

•  
•

34  **Axial respiratory muscles**

**(remembering the axial / appendicular vascular dynamics as well, we mentioned earlier)**

35  **Dynamics of Speech Production**

36  **Dynamics of speech production**

1 •

37  **Co-articulation**

38  **Dynamics of Speech Production**

39  **Omohyoid is the proprioceptive handle for speech!**

40  **8 to 12 months milestones**

41  **15 months milestones**

42  **18-24 month Milestones and Warning signs.**

1 • •

43  **18-24 month Milestones and Warning signs.**

44  **Terrible Two's**

45  **Terrible Two's**

46  **Terrible Two's**

47  **Age Three to Five**

48  **Age Three to Five**

49  **Four years old**

•

50  **Four Years Old**

- 
- 51 **Visual, spatial and social development, and language**
- 55 **The tongue**
- 56 **Articulation – TONGUE is very important**
- 57  **Developing Sounds**
- 1  **Age Level** **Phonemes**
- 58  **Pharyngeal articulations**
- 59  **Articulations and valves**
- 60 **Valves**
- 61 **Valves and voice / speech characteristics**
- 62 **Tongue and tmj**
- 63  **Innervation of the tongue**
  - **Therapeutic Exercise**
- 1 •
- 64  **Techniques: Tongue Proprioception and Control**
- 1 •
- 65  **Techniques: Control of  
Jaw Muscles**
- 66  **TMJ - mouth and teeth relations**

- 1  **Stomatognathic system — a 12 step programme!**

## ONLINE CPD SERIES

### Module Ten

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

- 2  **Session Ten:**



### 4OMT

•

- 5  **4 Processes in Speech Production**



6 **Respiration**



7 **Respiration: Power Mechanism**

- 8  **2 Phases of Breathing**

- 9  **Breathing for Speech vs Breathing for Life**



10 **The Fascial Being – SEEING VOICE AS A WHOLE, breathing through the**



**body**

- 11 **The Voice**

### Revision of some specifics



12 **Some videos**



13 **Another**



14 **Muscle actions – in general / in vocalisation**



15 **General external layers – use 4 finger placement (video) to position**

### yourself

- 16  **Laryngeal manipulation**

- 17  **Before we get to it!**

- 18  **Overview**

- 9Global biomechanics impacts locally

20**MTD – how can you tell?**

21**Muscles – used in speech and singing - variations**

22**Patterns in dysfunction**

23**Some muscle actions and aims of assessment / treatment**

24**LMT versus MCT**

25**Laryngeal repositioning / stabilising**

1 • •

26  **Examination and treatment**

27  **Observation**

•

28**Exploring the throat and anterior neck**

29**Unique suspension of the voice**

30**Movements**

31**Practical - Local laryngeal structures**

32  **Assessment of swallow**

1 •

33  **Remember: Epiglottis and base of tongue**

34  **Palate, rear view – superior constrictors – protrusion of jaw engages these attachments to mandible and buccopharyngeal raphe etc, and thyroid / larynx inferior pull engages the middle constrictors – VIDEO ON COURSE PAGE**

35  **The larynx**

36  **Local muscles and membranes**

37  **Crico-thyroid mobility**

38  **Step by step**

1 • **Overview of the Larynx The Larynx**

**1. The Cricoid Cartilage**

**2. The Thyroid Cartilage**

## Thyroid Graphic

### Thyroid Angles

### 3. The Arytenoid Cartilages

### The Vocal Folds

### Vocal Fold View

### Things Start to Happen

- The Upshot General external layers – use 4 finger placement (video) to position yourself
- 
- 
- 
- Local muscles and membranes
- 
- 
- 
- 
- 55  Crico-thyroid mobility
- 56  Cricoid and thyroid hinging and torsions / approximations, will affect vocal ligaments
- Cricovocal membrane and vocal ligaments, thyro-arytenoid muscles, quadrangular membrane....
- 
- 57  Cricovocal membrane / ligament
- 58  Palate, rear view – superior constrictors – protrusion of jaw engages these attachments to mandible and buccopharyngeal raphe etc, and thyroid / larynx inferior pull engages the middle constrictors – VIDEO ON COURSE  
PAGE
- 59  Epiglottis and base of tongue
-



60  **Tongue and epiglottis**

1 •

61  **Assessment of swallow**

1 •

62  **Focused local biomechanical evaluation**

•

63  **Practical -  
Laryngeal mechanics – combined movements**

- 1  **Stomatognathic system — a 12 step programme!**

## ONLINE CPD SERIES

### Module Eleven

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

- 2  **Session Eleven.**

•

- 3  **Various treatments**

- 4D. Biomechanics

- 5Anatomy of the TMJ and intra-oral space and palpation practice

- 6II. Temporomandibular Joint (TMJ)

- 7Synovial Membrane, and jaw muscles eg pterygoids

- 8Temporomandibular Disorders

### (TMDs)

- 9  **Signs/Symptoms**

1 •

- 10  **Additional Symptoms**

- 11  **Causes**

1 •

- 12  **Therapeutic Exercise**

1 • •

- 13  **Techniques: Tongue Proprioception and Control**

1 •

- 14  **Epiglottis and base of tongue**

•

- 15  **Articulation – TONGUE is very important**

- 16Back to the face....

- 17Techniques: Control of

### Jaw Muscles

- 18  **Strengthening Exercises**

19  Rocabado's 6x6 Program

•

20  Rocabado's Program

21  Rocabado's Program

22 TMJ disc

23 Development of intra-articular disc

24 Temporalis and masseter

25

26 Development of intra-articular disc•

27  Practical  Jaw opening  29 Pterygoids closed

30 Open – it is the lateral pterygoid that brings jaw into protraction (and can attach to articular disc of TMJ)

31 Pterygoids (note we will do anatomy first then palpation later)

32 Pterygoids – another view

33 Pterygoids and V3

34 Ligaments of TMJ

35 Alternative view

36 Ligaments, and other attachments in the jaw

37 Recesses / pouches and tonsils

38 See hamulus of pterygoid plate

39 Pharyngeal Muscles<sup>40</sup>

41 Lets start some palpation

42 Intra-oral considerations and tongue

43 Intraoral temporalis tendon and masseter, and then onto pterygoid

1  **Stomatognathic system — a 12 step programme!**

**ONLINE CPD SERIES**

**Module Eleven**

March 2020. Caroline Stone. D.O.(Hons), MSc(Ost), MEd, MClInEd

2  **Session Eleven.**

•

3  **Various treatments**

•



4D. Biomechanics



5Anatomy of the TMJ and intra-oral space and palpation practice



6II. Temporomandibular Joint (TMJ)



7Synovial Membrane, and jaw muscles eg pterygoids



8Temporomandibular Disorders

(TMDs)

•

9  **Signs/Symptoms**

1  •

10  **Additional Symptoms**

11  **Causes**

•

12  **Therapeutic Exercise**

1  •

13  **Techniques: Tongue Proprioception and Control**

1  •

14  **Epiglottis and base of tongue**

15  **Articulation – TONGUE is very important**



16Back to the face....



17Techniques: Control of

## Jaw Muscles

- 18  **Strengthening Exercises**
- 19  **Rocabado's 6x6 Program**
  -
- 20  **Rocabado's Program**
- 21  **Rocabado's Program**
  - 22  **TMJ disc**
  - 23  **Development of intra-articular disc**
  - 24  **Temporalis and masseter**
  - 29  **opening Pterygoids closed**
  - 30  **Open – it is the lateral pterygoid that brings jaw into protraction (and can attach to articular disc of TMJ)**
  - 31  **Pterygoids (note we will do anatomy first then palpation later)**
  - 32  **Pterygoids – another view**
  - 33  **Pterygoids and V3**
  - 34  **Ligaments of TMJ**
  - 35  **Alternative view**
  - 36  **Ligaments, and other attachments in the jaw**
  - 37  **Recesses / pouches and tonsils**
  - 38  **See hamulus of pterygoid plate**
  - 39  **Pharyngeal Muscles**
  - 40
  - 41  **Lets start some palpation**
  - 42  **Intra-oral considerations and tongue**
  - 43  **Intraoral temporalis tendon and masseter, and then onto pterygoids**
  - 
  -

1 **THE STOMATOGNATHIC SYSTEM. 12 MODULE SERIES.**

- MODULE TWELVE

- 
- 

2  **Session Twelve.**

- 

3 **Continuity into the anterior neck and throat**

4 **Cervico-mediastinal bridge**

1 •

5  **Fetal anatomy of the lower cervical and upper thoracic fasciae with special reference to the prevertebral fascial structures including the suprapleural membrane**

6 **Alar fascia layer of deep cervical fascia continues down to diaphragm**

7 **Prevertebral – links right down to fibrous pericardium**

8 **TMJ - supra and infra hyoid muscle links**

9  **Relationship of the oesophagus to the heart / aorta**

- 

10 **Links into: throat and cervical fascia**

11 **Anatomy - Spaces**

12 **Even in the upper throat – buccopharyngeal extensions, link prevertebral fascia to mandible via parotid fascia and space....**

13 **Pharyngeal Muscles**<sup>14</sup>

15 **Omohyoid to mylohyoid expressway**

16 **Brachial plexus / omohyoid and thoracic inlet / scalenes (NB did you know you could palpate the voice through omohyoid?!)**

17 **Where does the head and neck end?**

18 **Lateral view of mediastinum**

- 
- 19  **Ligaments of the heart**
  - 
  - 20 **Broncho-pulmonary ligament (see later)**
  - 21 **Sterno-pericardial ligament**
  - 22  **Vertebro-pericardial ligament**
  - 23  **Vertebro-pericardial ligament 2**
  - 24 **Sterno-pericardial-vertebral complex, broncho-pulmonary ligament**
    - 25 **Cervico-laryngeal – mediastinal balancing**
    - 26 **Cardiopulmonary (mediastinal pleural interface version) balancing**
    - 27 **Cardiopulmonary (pleural interface version) balancing 2**
    - 28 **Broncho-pulmonary-diaphragm – inferior pleural interface unwinding**
    - 29 **Links via pulmonary to central tendon AND INTO LIVER / PERITONEUM DYNAMICS ETC**
    - 30 **Pulmonary ligament**
    - 31 **Pulmonary ligament**
    -
  - 32
- 33 **Breathing and the neck**
- 34  **Thoracic inlet**
  - 35 **Neurovascular bundle to arm and axilla**
  - 36 **Vascular continuum + visceral column between head and chest**
- 
- 37  **NEUROVASCULAR STRUCTURES**

- 38 **Baylor University Medical Center Proceedings 2007**
- 39 **Brachial plexus / omohyoid and thoracic inlet / scalenes (NB did you know you could palpate the voice through omohyoid?!)**
- 40 **Superior view thoracic inlet and scalenes / omohyoid etc**
- 41 **Shoulders and clavicles**

#### **ACCESSORY RESPIRATION**

- 42 **Scapulothoracic joint**
- 43 **Techniques for scap thoracics, axilla**
- 44 **Axilla (lymph and venous considerations, as well as mobility and neuro-arterial)**
- 45 **Axillary fascia and releases**

46

#### **The Axilla, and:**

#### **Introduction to vascular unwinding**

47  **Intersegmental Arteries:**

•

- 48  **Limb Supply:**  **Limb Growth: - with thanks**  **Limb Flexion:**  **Musculoskeletal Structures:**  **Main Arterial Paths:**  **3**
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 
-