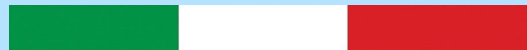




**THE IMPORTANCE OF  
OSTEOPATHIC TREATMENT  
OF THE VAGUS NERVE AND  
THE EFFECTS  
ON THE AUTONOMIC  
NERVOUS SYSTEMS**

**Dr. Christian Vilella PT DO PhD BsC**  
Osteopath and Physiotherapist



**1ST INTERNATIONAL  
OSTEOPATHY &  
MANUAL THERAPY**



# SPINAL NERVES

The **spinal nerves originate in the brain**, form part of the spinal cord, and branch off **into various areas of the body**. The **spinal nerve is a mixed nerve (motor, sensitive or sensory signals)** and autonomous, between the medulla and the corresponding areas of the body.

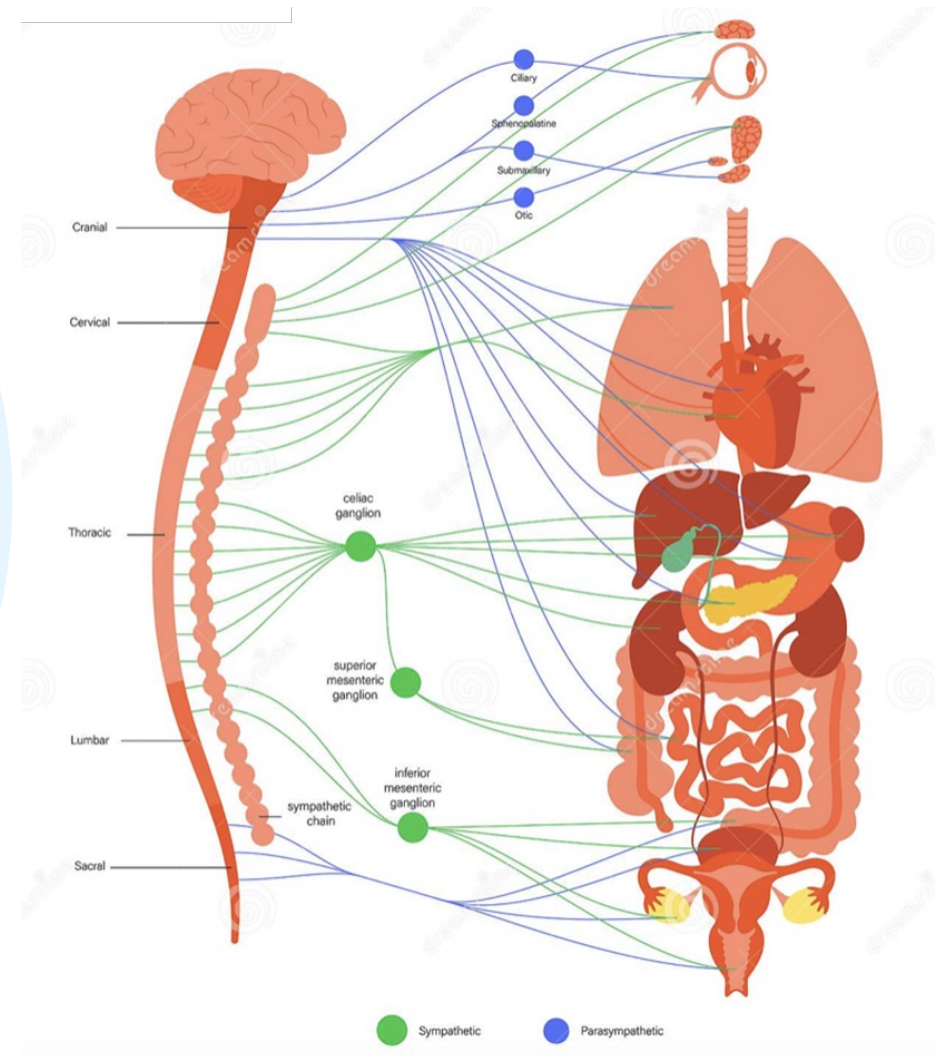
The **sympathetic chain runs along the spinal column from T1 to the L2 vertebra**.

This chain aids the **activity of the internal organs and muscles**, when a person is prompted by a **threat of danger to react according to the fight-or-flight response**.

Branches of the spinal nerves are directed to specific body structures:

1. **Skin (dermatoma)**
2. **Muscles (myotome)**
3. **Visceral organs (viserotome)**
4. **Ligaments, fascia and connective tissue (fascitoma)**

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## Physical Indications of Fight or Flight Response



dilated pupils

pale or flushed skin

trembling

rapid heart beat  
and breathing

# THE 12 CRANIAL NERVES

All cranial nerves have in common that they help **find food, chew, swallow, digest and eliminate undigested waste material**. They are numbered according to their **location and arranged in a half-circle**.

Cranial nerve	Name	Characteristic
NC I	Olfactory	Smell, helps to locate food
NCII	Optical	Sight, makes it possible to see
NCIII	Oculomotor	Sight, controls certain eye muscles
NCIV	Trochlear	Sight, controls some eye muscles
NCV	trigeminus	Chewing and swallowing hearing, tensor muscles of the eardrum
NCVI	Abductive	Sight controls certain eye muscles
NCVII	Facial	Chewing some facial muscles and salivary secretion, hearing: stapedius muscle
NCVIII	Acoustic	Hearing: translates sound waves into nerve impulses
NCIX	Glossopharyngeal	Swallowing
NCX	Vagus	The ventrovagal (recent) branch innervates and controls the upper third of the esophagus, and most of the pharyngeal muscles. In addition, the heart and the bronchi. The dorsovagal (ancient) branch innervates the lower two-thirds of the esophagus, regulates the function of the stomach, the digestive glands and organs such as the liver and bladder. It also controls the movement of food in the intestine (except for the descending colon).
NCXI	Accessory	It innervates the trapezius and sternocleidomastoid muscles, which allow us to rotate the head and expand the visual field
NCXII	Ipoglosso	Moves the tongue

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## VAGUS NERVE

Physical well-being and emotional well-being are intimately linked. In 130 AD, the Greek physician **Galen** noted **certain dysfunctions that occurred when some gladiators had their vagus nerve severed.**

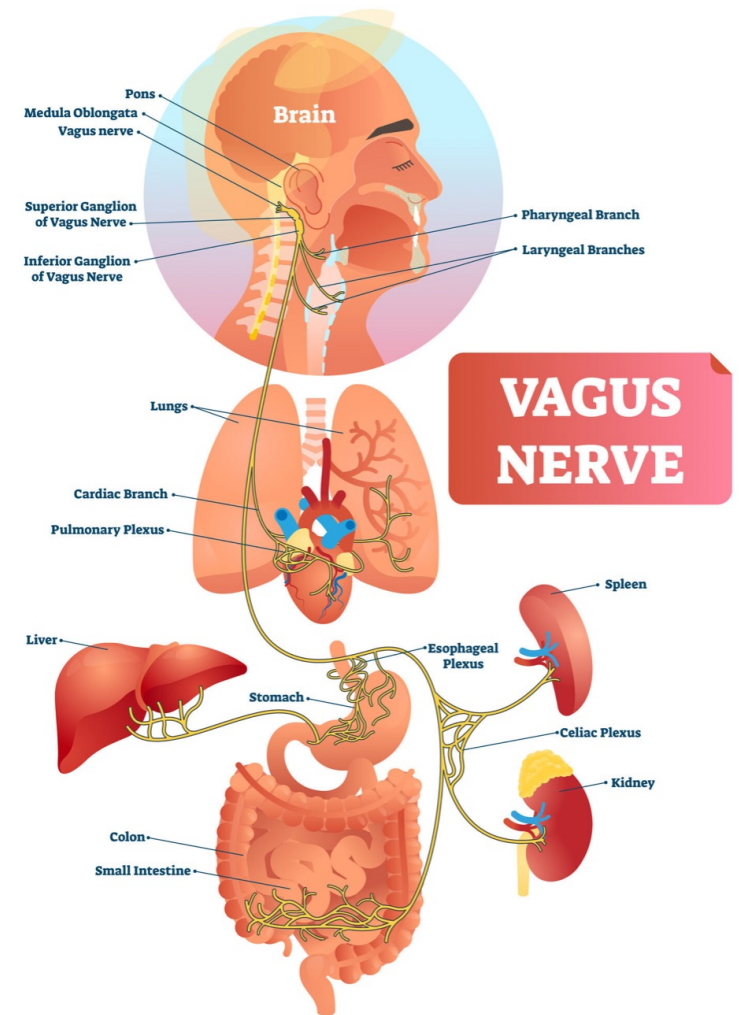
### The 2 branches of the vagus nerve

The dorsal and ventral branches of the **vagus nerve (CN X)** originate at **different locations** in the brain and brainstem, have different pathways through the body, and have very different functions.

The **ventral branch** of the vagus nerve functions **in conjunction with four other cranial nerves (V, VII, IX, and XI)**, which also originate in the brainstem. The ventral vagus is myelinated.

It promotes **rest and restitution**, ensuring that the physiological prerequisites are present for optimal physical and emotional health, friendship, cooperation, mutual support, parent-child bonding, and loving relationships. When we are socially engaged, we can be creative, positive, productive, and happy (**NEW VAGO**).

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## VAGUS NERVE

The **dorsal branch** is the older of the two branches of the vagus nerve (**OLD VAGUS**).

The dorsal vagus, **acting on its own, brings about a state of metabolic shutdown.**

The other state involving the **dorsal vagal circuit is “immobilization without fear,”** which combines activity in the dorsal vagal circuit with activity in the **social engagement circuit → immobilization also conserves energy.**

## SYMPTOMS OF A DORSAL VAGAL STATE

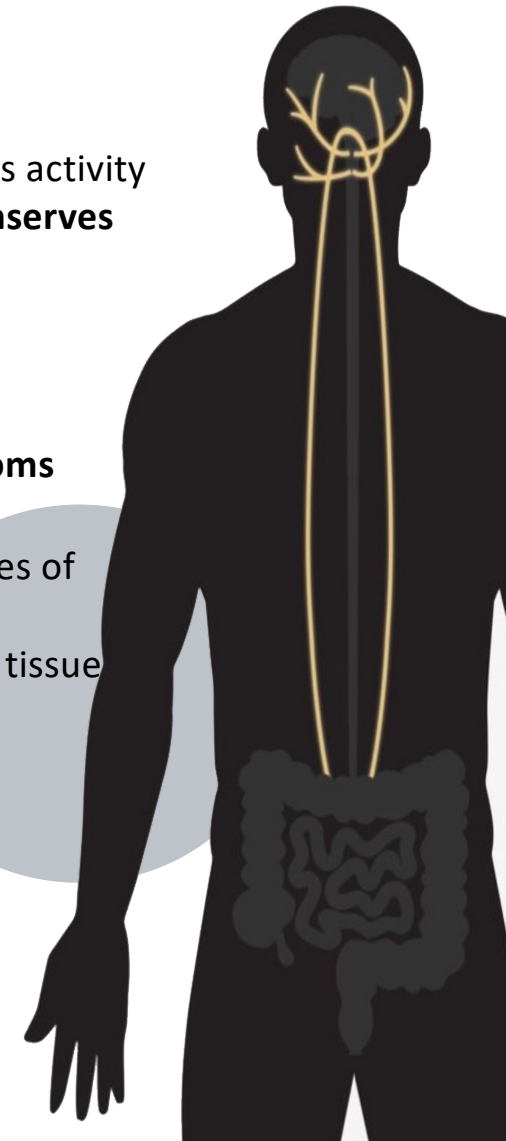
**If we are not socially engaged, we can experience many negative physical and emotional symptoms when faced with adverse conditions.**

One response is the state of mobilization of the spinal sympathetic chain, characterized by activities of fight or flight.

The other response comes from activation of the dorsal vagal circuit: Our muscles and connective tissue lose their normal tonus, soften, and go limp, and our body feels heavy.

- a. **we typically feel helpless, apathetic, and hopeless**
- b. **there are other commonly observable signs when we are in a state of shock or shutdown**
- c. **may also be involved in POTS (postural ortho-static tachycardia syndrome)**
- d. **The blood flow to the frontal lobes of our brain is also reduced by dorsal vagus activation**

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# Dysfunctional states of the 5 cranial nerves of the CS

Cranial nerve	Name	note
NC V	trigeminus	<b>Impassive and unchanged facial expression, inability to communicate visually.</b>
NC VII	Facial	<b>Impassive and unchanged facial expression, inability to communicate visually. The facial also handles stapedium, on may also have hyperacusis.</b>

A dental extraction or orthodontic appliance may lead to a dysfunctional state, as well as a modification of the pterygoid muscles and palatine bone. The dysfunctional state may lead to glandular dysfunction and mandibular dislocations such as overbite, underbite or crossbite.

Cranial nerve	Name	note
NC IX	Glossopharyngeal	<b>He has afferent and efferent fibres from the tonsils, pharynx, middle ear and the posterior third of the tongue. It regulates blood pressure, controlling blood pressure to influence the heart and the tone of muscle tissue cells in the arteries. It monitors oxygen and carbon dioxide levels in the blood to regulate respiratory rate. It also stimulates the salivary and parotid glands.</b>
NC V	vagus	<b>The subdiaphragmatic or dorsal branch has motor fibres that innervate the viscera below the diaphragm. Although some fibres affect the heart, lungs located above the diaphragm. The ventral branch stimulates the contraction of bronchioles, facilitating the extraction of oxygen, innervates many small muscles of the throat and vocal courts and the elevator muscle of the palatine veil and uvula.</b>
NC VI	Accessory	<b>Key factor in musculoskeletal well-being</b>

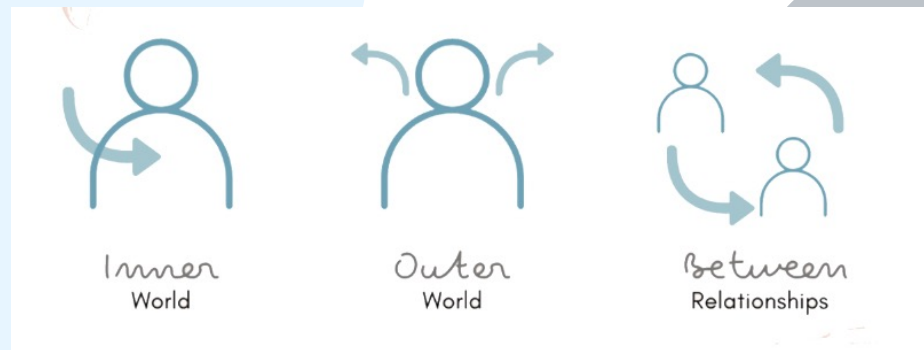
# Neuroception and Faulty Neuroception

**Neuroception is an ongoing process through which our autonomic nervous system evaluates information from our senses about our environment and the state of our body.**

**Neuroception gives us access to information that we do not pick up with the conscious part of our mind.**

Faulty neuroception occurs when the neural circuits from perception to behavior do not function in an appropriate way. A person might react to a safe situation as if it were threatening or dangerous or react to a dangerous situation as if it were safe.

Faulty neuroception can even come from very positive experiences like falling in love and bonding with the partner





# TEST THE VENTROVAGALE

## 1. *Simple Evaluation from Facial Observation*

- a. The first type of **unconscious facial expression** is the pattern of chronic tension
- b. The second pattern, of emotional tension, is less permanent and expresses our current mood.
- c. In the third kind of emotional expression, the facial muscles located in the band between the eyes and mouth change tension rapidly, up to several times a second.

## 2. *The Hydra heads - called comorbidity*

## 3. *The test of the observation of Palatine uvula*

## 4. *The test of observation the Heart Rate Variability*

## 5. The trap Squeeze Test

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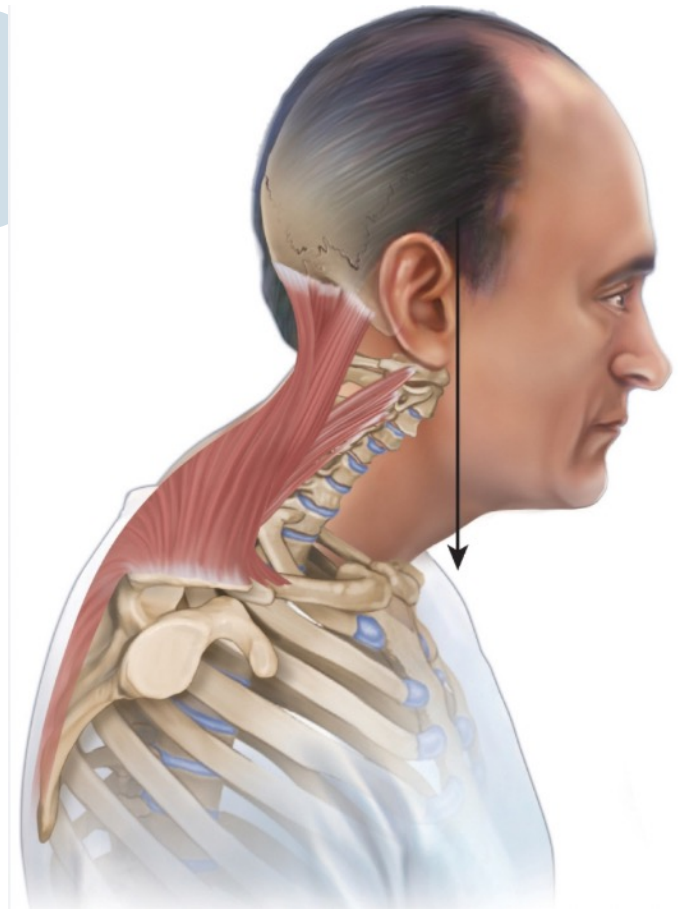
## ***Health Problems Related to Forward Head Posture***

Serious health problems can stem from kyphosis, or forward head posture (FHP), which is related to dysfunctional trapezius and sternocleidomastoid muscles.

Dr. Roger Sperry, Nobel Prize recipient for brain research, “**Ninety percent of the stimulation and nutrition to the brain is generated by the movement of the spine**”.

Mayo Clinic newsletter, “**Forward head posture leads to long-term muscle strain, herniated discs, arthritis, and pinched nerves.**”

**Dr. Christian Vilella PT DO PhD BsC**



# CRANIO SACRAL THERAPY

Sutherland hypothesized that bone movement facilitated cerebrospinal fluid circulation and devised cranio sacral therapy techniques.

He devised therapeutic techniques useful in three areas:

1. **release of membrane tensions,**
2. **release of restrictions between individual cranial bones**
3. **increase in cerebrospinal fluid flow.**

The main intention is the **mobilization of cranial sutures.**

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William Garner Sutherland 1873-1954

Alain Gehin 1934



## Craniosacral Biomechanical Therapy

Its aim was the release of tension in the connective tissue between adjacent cranial bones to allow them to move freely.

**Relaxation of the soft tissues of the skull and spine.** The dura mater that connects the skull and coccyx and surrounds the brain, medulla and fluid. The falx cerebri and tentorium become less flexible with age, as well as due to medication and physical trauma.

**The movement of the cerebrospinal fluid is the goal of the technique.**

# Craniosacral therapy (CST)

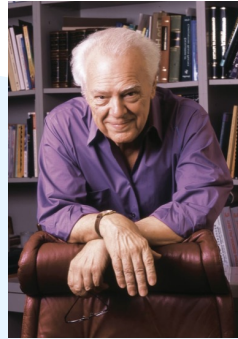
Craniosacral therapy (CST) or cranial osteopathy is a form of alternative therapy that uses gentle touch to palpate the synarthrodial joints of the cranium.

**The aim is to release tension at the membrane level.**

By facilitating the body's natural and innate healing processes, **CST is increasingly used as a preventive health measure for its ability to bolster resistance to disease** and has been shown to be beneficial for people seeking help with a wide range of healthcare challenges and symptoms.

**Dr. Christian Vilella PT DO PhD BsC**

John Upledger



Stephen W. Porges

# Polyvagal Theory

According to Porges, the vagus nerve possesses two separate, distinct and disgusting branches.

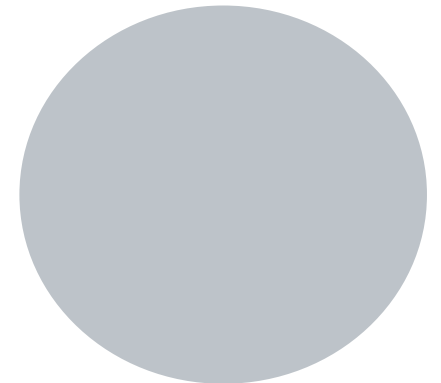
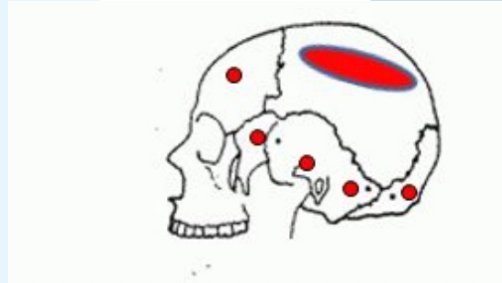
Thus, function is defined by three circuits:

- a. **Vagus nerve ventrovagal branch (positive states of relaxation and social involvement),**
- b. **sympathetic system chain (fight-or-flight reaction).**
- c. **the dorsal branch of the vagus nerve (slowdown, collapse and depressive behavior).**

According to the polyvagal theory, when a person feels safe, the body functions well, and can enjoy a physiological condition that favors spontaneous social interaction behavior. From a neurological point of view, social involvement is a state based on the activation of five cranial nerves: the ventral branch of the vagus nerve (X), and the circuits of cranial nerves V, VII, IX, XI.

# CRANIAL OSTEOPATHIC TECHNIQUE

- a. Vault hold
- b. Frontal-occipital hold
- c. Posterior occipital hold (Becker hold)



**Dr. Christian Vilella PT DO PhD BSc**

# EXERCISE FOR THE CRANIAL NERVES



## Basic exercise

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# EXERCISE FOR THE CRANIAL NERVES



## *The half Salamander Exercises*



## *The Salamander Exercises*

# EXERCISE FOR THE CRANIAL NERVES

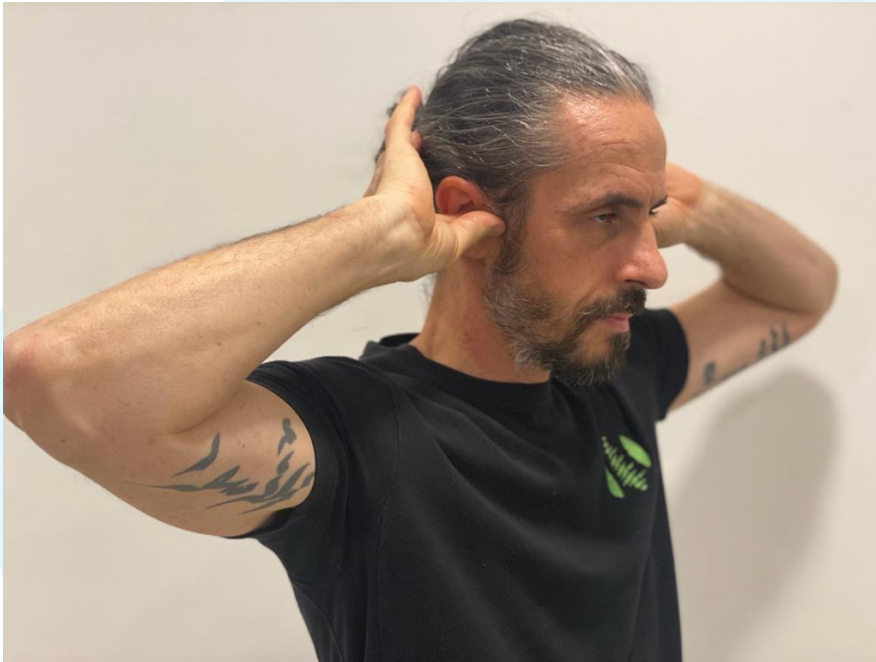


## *SCM Exercise for a Stiff Neck*

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# EXERCISE FOR THE CRANIAL NERVES



## *Manual Technique for the Vagus*

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# EXERCISE FOR THE CRANIAL NERVES



*Twist and Turn Exercise for the Trapezius*

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# EXERCISE FOR THE CRANIAL NERVES



*Massage at LI 20 - FACELIFT*

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*Massage at V2- FACELIFT 2*

# THANK YOU FOR YOUR ATTENTION

Dr. Christian Vilella PT DO PhD BsC  
Osteopath and Physiotherapist

