

The Therapeutic Pause

The webinar with Louise Tremblay will start at 19.00p
m UK time

The Somatosensory Integration Time

Handspring Publishing

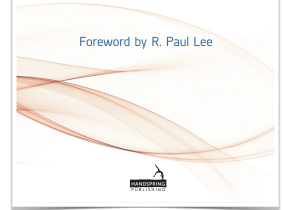
translated from the French
« Le temps d'intégration
somatosensorielle » published at Éditions
Sully, France, in February 2015

The Therapeutic Pause in Osteopathy and Manual Therapy

The Somatosensory Integration Time

Louise Tremblay

Foreword by R. Paul Lee



or « the somato-insulo-sensory integration time »

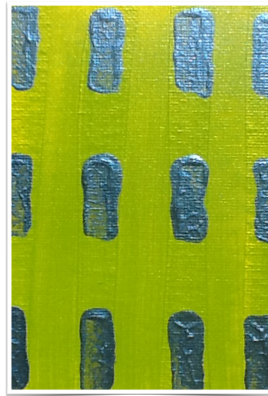
- ❖ Somato-insulo-sensory integration time is a period of time during which the state of apparent immobility of the body allows first the sensory stimuli, however minute they may be, to be sent to higher brain centres, and also allows the central nervous system time to react to these stimuli without risk of interference or inhibition from other stimuli.

- ❖ The manual therapist is therefore required to stop during treatment, to make an integration pause, a therapeutic pause, between consecutive stimuli.
- ❖ « Somato » = some information go to the somatosensory cortex.
- ❖ « Insulo » = some information go to the insular cortex.
- ❖ This depends on which nerve receptors were triggered.

Why such a book?

It started in 2009 as a thesis after the completion of 6 years of osteopathic studies.

It was the opportunity to kill two birds with one stone : explain the « pause » that we do in Bowen and introduce the concept of « therapeutic pause » in other manual therapies.

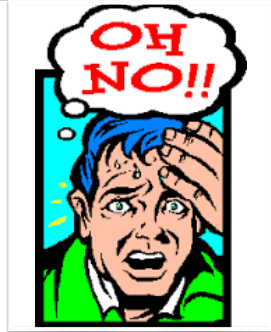


What do we learn from this book?

- ❖ 1- The therapeutic pause is not an exclusivity of Bowen therapy
- ❖ 2- There are physiological principles which explain the importance of making therapeutic pauses
- ❖ 3- Manual therapy may well be a key to homeostasis
- ❖ 4- How and how long to apply a therapeutic pause during a manual therapy treatment
- ❖ 5- If we look around in the scientific world, researches are there to support what we do in manual therapy

1- The therapeutic pause is not an exclusivity of Bowen therapy

❖ Other therapies are using (or have used) therapeutic pauses

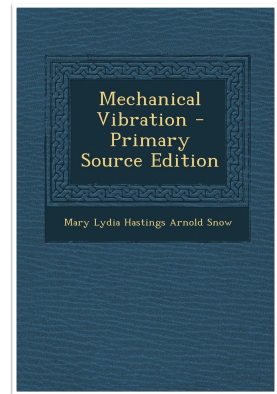


Other therapies using therapeutic pauses

« Mechanical vibration » by Dr Snow

« Mechanical vibration » was a technique developed in 1912 by Dr L. H. Arnold Snow.

In Dr Snow's time, the public and professionals had already turned their attention toward natural treatment methods as a means of avoiding medication.



- ❖ Mechanical vibration or vibrating massage, as defined by doctors at the time, was any type of vibration, whether it be a back and forth movement on one plane or from top to bottom, percussion, oscillation, a reoccurring or gyrating vibration. They produce « waves » that travel in the body.
- ❖ When many waves transmit their pulse signal to a given spot, their impact produces interference. This interference can increase, diminish or inhibit movement.
- ❖ « The pause during treatment has to be as long as or twice as long as the treatment of a specific part of the body. »

« The rest intervals had to be as long as or twice as long as the duration of the contact in order to ensure the perpetuity and permanence of the effects. »

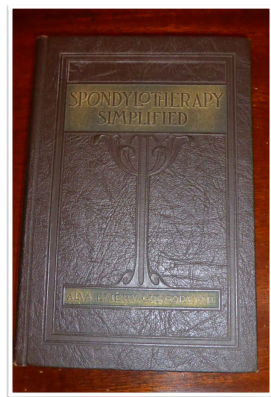
-L.H.Arnold Snow

Other therapies using therapeutic pauses

« Spondylotherapy simplified » by Dr Gregory

Spondylotherapy (which means literally therapy of the spine) was developed in 1922 by Dr Alva Emery Gregory.

Spondylotherapy is a technique of percussion, which consists of stimulating the spine at specific areas using staccato pulses or a current of sine waves.



« The most effective stimulation is achieved using 10 to 20 rapid impulses per second over 30 seconds, followed by a 30-second pause. This is then repeated again for 30 seconds with a 30-second rest and so on for a total of five to 10 minutes »

-Alva Emery Gregory

Other therapies using therapeutic pauses

« Strain CounterStrain » by Dr Jones

This treatment for somatic dysfunctions was developed by Lawrence Jones DO FAAO. He defined Strain CounterStrain as « a passive positional procedure that places the body in a position of maximum comfort, thereby relieving pain by reducing and arresting inappropriate proprioceptor activity which maintains somatic dysfunction. »



- ❖ Lawrence Jones's hypothesis is that an aberrant afferent signal originating in the muscle spindle cells produced a reflex spasm in the muscle.
- ❖ Jones observed that a very slow return of the limb to a neutral position, after having supported the muscle in its shortest position for a while, was key to the resulting positional release.
- ❖ After originally having supported the patient in a position of release for 20 minutes, he was systematically able to reduce this period to 90 seconds.

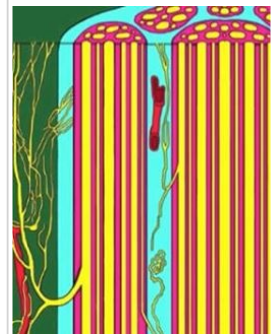
« Any period less than 90 seconds produced incoherent results »

-Lawrence Jones

Other therapies using therapeutic pauses

« Dermo-neuromodulation » with Diane Jacob

« The world dermoneuromodulation simply means **skin/nervous system changes**. It does not imply that the practitioner is the one « doing » something called « change » to something anatomical in another person. »
« We all work on the skin and its receptors; we **inform**, we do not adjust »



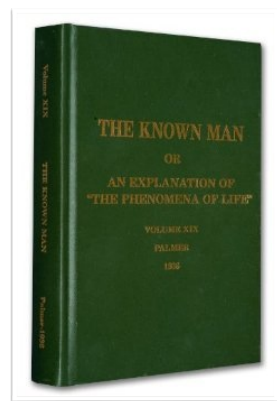
« Time is what your patient needs from you. »

-Diane Jacob

Other therapies using therapeutic pauses

« Chiropractic » by B.J. Palmer

B.J. Palmer (son of founding father of chiropractic D.D. Palmer) was an advocate of the post-treatment pause. In his experience, he found he could not do without it. He had « resting rooms » where patients lay still for « no less than an hour » after an adjustment. The patients had to rest in a small, calm, peaceful room and sleep if possible.



« By failing to lie down, the adjustment has temporary value decreasing its health restorative value. The rest room increases the constant of correction and decreases liability of traumatic variable slipping back to old abnormal position. »

-B.J. Palmer 1936

Other therapies using therapeutic pauses

« Osteopathy » from different osteopaths

Becker
Jealous
Jones
Sutherland
Tricot
Upledger

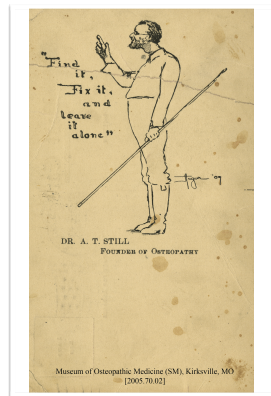
Tide, Long Tide, Stillness, Still Point, Moment of Calm, Induced Still Point, Spontaneous Still Point, Rest, Neutral Point



Other therapies using therapeutic pauses

« Osteopathy » with A.T. Still

Founding father of osteopathy



« Find it, fix it and leave it alone; nature will do the rest. »

-Andrew Taylor Still

- ❖ There are more examples in my book of therapies using pauses :
- ❖ Bowen therapy, of course
- ❖ Niromathe
- ❖ Microkinesitherapy
- ❖ Craniosacral therapy
- ❖ And there probably are many others which we do not mention in the book

PAUSE OF 2 MINUTES MINIMUM

AKS THE PATIENT TO TURN

Pause in Bowen

Why do we make a pause in Bowen?

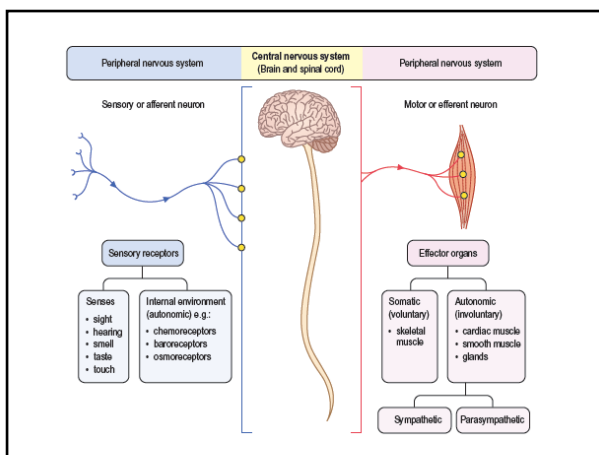
We never explained really why, although we sense it is very important.

2- There are physiological principles which explain the importance of making therapeutic pauses

❖ Learning the physiology of the nervous system is the most important part for understanding what we do in manual therapy.



- ❖ Let's examine one example of each of these step from the stimulation to the response :
- ❖ Characteristic of the nerve receptors
- ❖ How does the stimulation reach the central nervous system (CNS)
- ❖ What are the ways out of the CNS



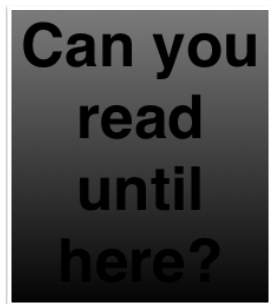
One of the characteristics of nerve receptor

There must be a contrast between two adjacent stimulations in order for them to be perceived.

Regardless of which sensory system is activated.

Pausing between two stimulations allows for this contrast

- ❖ Black is especially visible on a white back ground, not so much on a dark background.
- ❖ Sounds are clear if they are not lost amongst other noise.

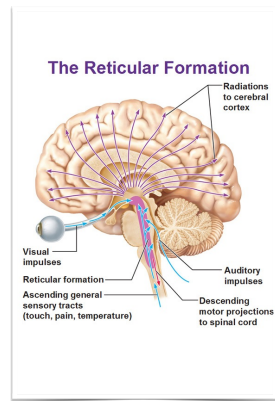


The therapeutic pause could well be the contrast needed for somatosensory inputs

On the way to the CNS

The stimulation will be « perceived » by the CNS if it reaches the perceptive threshold

Discrimination of stimuli occurs at the level of the reticular formation



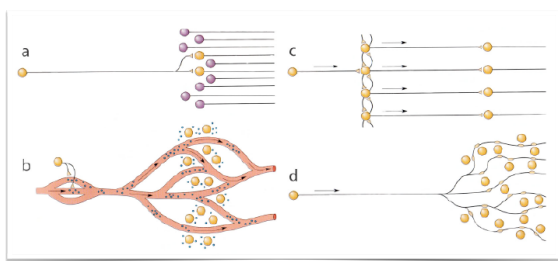
Reticular formation

- ❖ It is the headquarter of afferent impulses from receptors of all kind. The same reticular cell can be activated by auditory, visual and tactile stimuli.
- ❖ The role of the reticular formation is to integrate the intensity of nerve signals which converge there, whatever the origin of these messages.
- ❖ Through inhibition, it weakens repetitive, familiar or weak signals but allows unexpected, important or intense signals to reach the consciousness.

The reticular formation neglects 99% of all sensory stimuli

- ❖ What should we do to make sure that our stimulation goes through the filter of the reticular formation?
- ❖ Make sure it is not repetitive, familiar or weak
- ❖ Make sure it is important, intense or

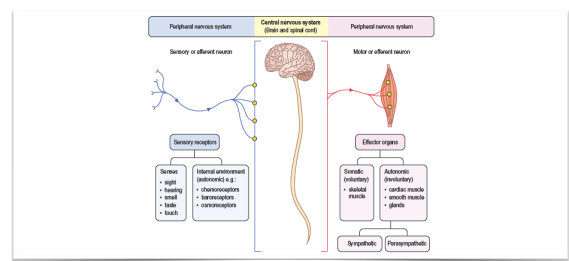
UNIQUE



Patterns of communication of the CNS

Inside and going outside the CNS

We can « decide » what stimulation to do, we cannot « decide » what is going to be done by the CNS



Ways out of the nervous system

All efferent nerve impulse and neurotransmitters fall on skeletal muscles, smooth muscles or glands through the ANS

Or more likely on all of them at the same time.

Because we are not able to control or limit the scope of the response from the CNS

3- Manual therapy may well be a key to homeostasis

- ❖ So what's new?
- ❖ My teacher told me already!
- ❖ Everybody knows!



- ❖but how does it work exactly??...

Homeostasis

- ❖ Homeostasis is the maintenance of constant internal conditions, within a narrow physiological range, in a changing environment.
- ❖ Consider temperature regulation. Biochemical reactions in many cells of the body are fine-tuned to occur at about 37°C. A variation of more than a few degrees in either direction can be catastrophic.
- ❖ Other examples of homeostasis are the tight regulation of blood volume, pressure, salinity, calcium level, water's balance, the blood's acid-base balance, blood oxygen concentration and glucose concentrations
- ❖ But how can manual therapy affect homeostasis?

Neuroscience and Human Health: The Basic Neuroscience of Pain

How can manual therapy affect homeostasis

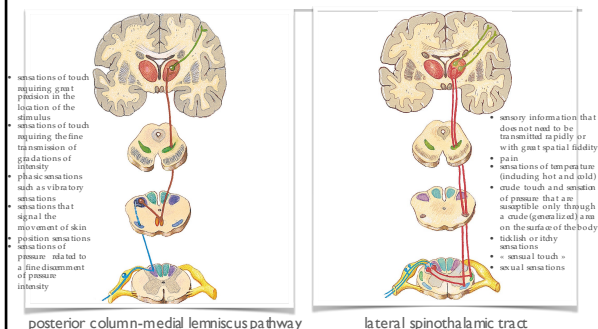
Dr Craig and the insular cortex

Dr. Craig discovered that pain sensations were processed by discrete, separate neurons in the spinal cord and in the brainstem. He revealed that the nociceptive system was intimately connected to interoceptive system which tells us something about our body like taste or hunger or thirst. Neurobiologist Bud Craig has identified an area deep inside the mammalian brain—the insular cortex—as the place where interception or the processing of bodily stimuli generates feelings.

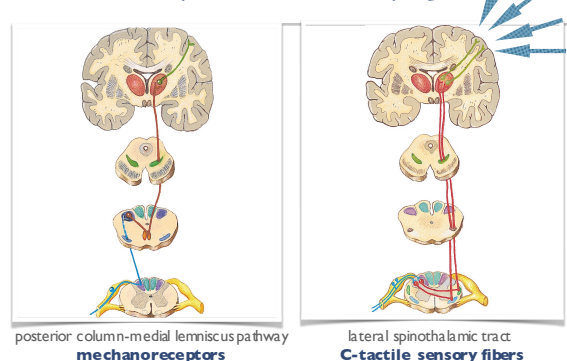


How to give feedback by AD: Craig de Hildebrandt: The neuroanatomical basis for human awareness of feelings from the body

Pathways for afferent sensory signals

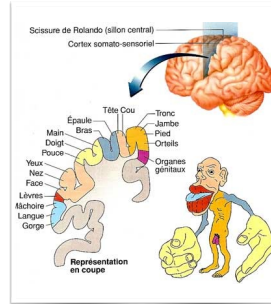


Pathways for afferent sensory signals



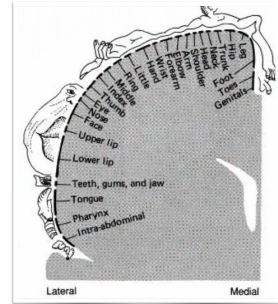
The homunculus

- « We used to think that all the sensory informations were going to the somatosensory cortex, which is represented here with the well know homunculus, a map developed at the Montreal Neurological Institute by Dr. Penfield and his colleagues.



The homunculus

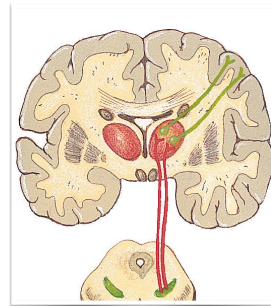
- « Dr. Penfield was able to evoke some visceral sensations on the midline and deep within the lateral sulcus but didn't exactly know how they were organized. »



How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry

The somatosensory cortex

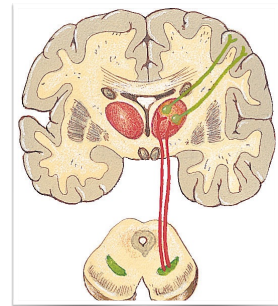
- Dr. Craig : « All textbooks contain a map, like this one, which shows that pain and temperature arises in the spinal cord in the contralateral spinothalamic tract, that is distinguished immediately from touch because it projects up the other side of the spinal cord. »



How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry

The somatosensory cortex

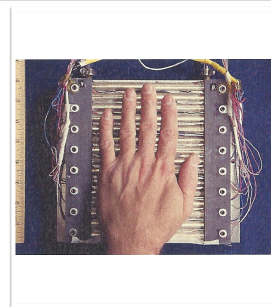
- Dr. Craig : « All textbooks teach that somatosensory cortex is important for pain and temperature even though it is well-known that **stimulation of somatosensory cortex almost never causes pain or a feeling of temperature and a lesion of somatosensory cortex almost never affects pain and/or temperature.** Now, this paradox is something that bothered me when I was a graduate student in the 1970's. »



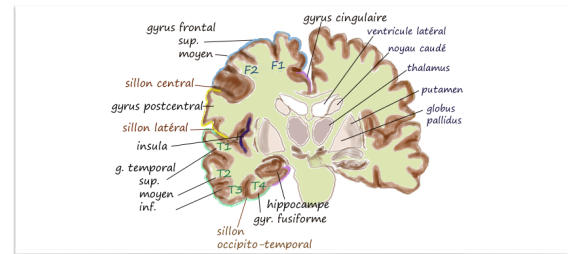
How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry

The insular cortex

- « Research on cooling sensation of the hand shows that the area stimulated in the brain is not the somatosensory cortex, but the insula area. »



How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry



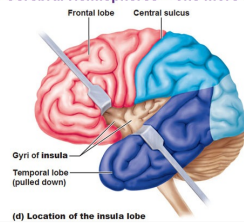
How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry

The insula

« The insula is an island of tissue that hides deep inside the brain that is normally associated with visceral functions. »

How to you feel? Senses by AD Craig & H&S 4th edition. The neuroanatomical basis for human awareness of feeling from the body - Right/Left asymmetry

The Cerebral Hemispheres – one more lobe



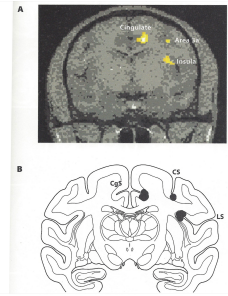
Lozem Ipsum Dolor

The insula

« It hides deep inside the brain; it is the 'hidden lobe'. »

The insular cortex

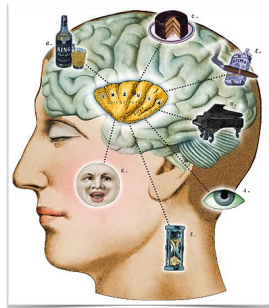
« In the imaging studies that are available, we know that it represents visceral sensations. Distension of the stomach will cause activation of the insula as well as the anterior cingulate. But amazingly enough, activation during anger and sadness and happiness and every human emotion that has been imaged in a scanner will cause activation in the same two places: in the insula and the anterior cingulate. They are associated with autonomic function. »



Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.

The insular cortex

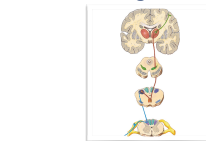
The insula "lights up" in brain scans when people crave drugs, feel pain, anticipate pain, empathize with others, listen to jokes, see disgust on someone's face, are shunned in a social settings, listen to music, decide not to buy an item, see someone cheat and decide to punish them, and determine degrees of preference while eating chocolate



The insular cortex

Fast brushing: mechanoreceptors

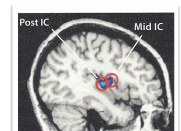
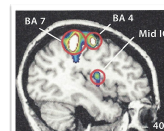
Slow brushing: C-tactile sensory fibers



posterior column-medial lemniscus pathway



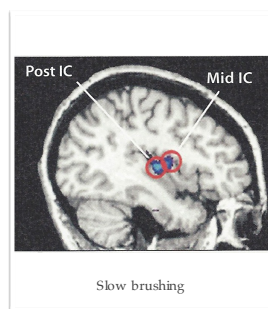
lateral spinothalamic tract



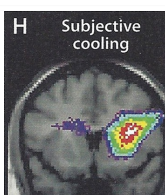
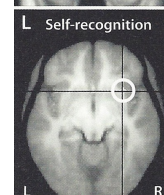
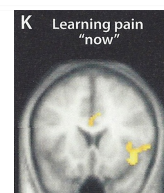
Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.

The insular cortex

- « The insula receives information carried by C fibres.
- « Information of :
 - « Heat or cold
 - « Pain
 - « Crude touch
 - « Ticklish or itchy sensation
 - « Sensual touch
 - « Sexual sensation



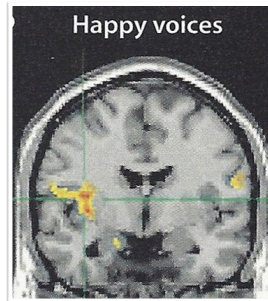
Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.



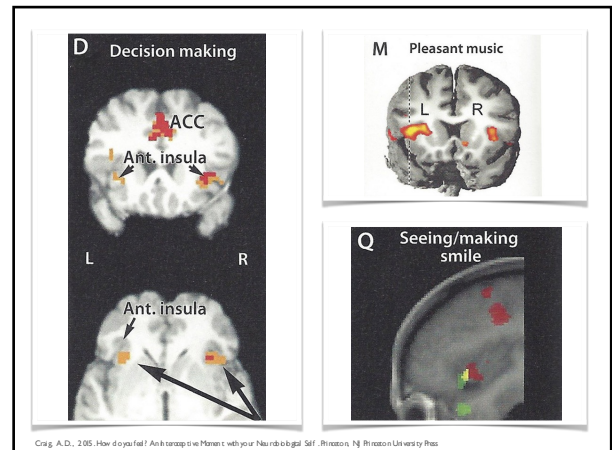
Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.

The insular cortex

- ❖ The insular cortex will also be activated from « emotions » which are called « homeostatic emotions » by Dr Craig
- ❖ happy voices
- ❖ decision making
- ❖ disgust
- ❖ anticipation
- ❖ empathy
- ❖ all what you feel inside



Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.



Craig, A.D., 2005. How do you feel? An interoceptive moment with your Neurobiological Self. Princeton, NJ: Princeton University Press.

« The researches now seem to suggest that the anterior insula and anterior cingulate representation is a representation not only of how we feel, but of how we feel anything.

That is to say our awareness, of ourselves, and our moment, and of others, and of environment: of human consciousness itself. »

Craig, A.D., 2008. How do you feel? The new neuroscience of feeling from the body to the mind. Cambridge University Press.

Let's try to understand

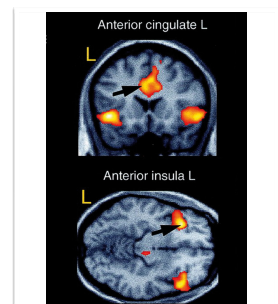
- ❖ 1- When the mechanoreceptors are activated (deep touch, stretching of the skin, proprioceptors, etc), it activates the somatosensory cortex
- ❖ 2- When the C-tactile fibres are stimulated (heat, cold, sensual touch, etc) it activates the insular cortex
- ❖ 3- When I see someone smiling, it activates my insular cortex
- ❖ 4- When I feel sad, it activates my insular cortex
- ❖ 5- When I feel thirst, my insular cortex is activated

Let's try to understand

- ❖ 1- How can you explain the sensation that happens in your body when you are not moving at all and that no one touches you?
- ❖ 2- What happens when you make a pause and that your patient starts feeling something?

Yes, the insula is activated and that is WHY you feel something.

- ❖ AND the insula and cingulate cortices are implicated in emotional, homeostatic/allostatic, sensorimotor, and cognitive functions. (Hum Brain Mapp. 2018 Sep;39(9):278-45. doi: 10.1002/hbm2.4055. Epub ahead of print. PMID: 30186182.)



AND WHAT SHOULD I DO WHILE THE INSULAE ARE ACTIVATED ???

YES, WAIT!!!

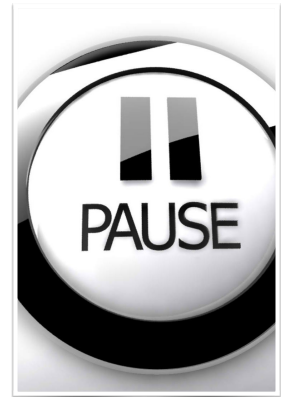
How long?????

2 minutes?

5 minutes?

15 minutes?

20 minutes?



And how should we wait?

Yes, as long as the patient feels something

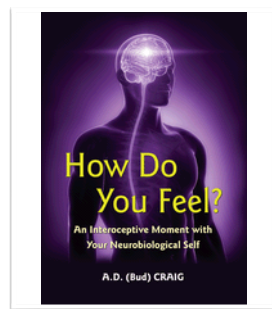
Good!

- We think that at least 2 minutes is necessary
- Optimally as long as the patient feels something, which means that his insulae are activated, even if this takes 15-20 minutes.



Insular cortex vs homeostasis

- ♦ It is the topic of a whole book which I encourage you to read and study.
- ♦ Craig, A.D., 2015. How do you feel? An Interoceptive Moment with your Neurobiological Self. Princeton, NJ: Princeton University Press



letter to Dr. Craig

In one of our techniques, we do one or two « gentle moves » on some muscles or tendon. As if we were stretching them slowly, and activate the type II afferent fibres of the spindle cells. Then, there is a pause, of at least 2 minutes. During that time, the patient will often describe sensations in their body. Sometimes cold, sometimes heat, sometimes tingling or as if things were moving in their body. They also talk about a different state of mind, as if they feel lighter and at the same time sinking in the table. Some even describe a different awareness. I teach to my student that when this happens strongly (sometimes the sensations are quite present), we should wait until it goes before touching again the patient, to avoid any kind of inhibitory process from another stimulation. Sometimes the sensations will last 5, 10 or even 15-20 minutes.

It seems that the moves contribute to activate the insular cortex.

And it seems that the pause leaves the time to the brain to react or adjust to the stimulation. I would like to know if you already have noticed an effect on the body from a waiting time period between adjacent stimulations.

letter to Dr. Craig

Another therapy we use consists on very gentle « line-drawings » on the skin. There is no pressure at all, no stretching of the skin, only a slow continuous touch. The therapist uses both hands, 10 fingers to « draw » the lines. People love this. I think we affect the type C afferent fibres in that case and that this information will reach the insula as well.

In my book I also introduce the notion of allostasis and allostatic load, as describe by professor Bruce McEwen. He proposes 4 ways to reduce the allostatic load and allow better homeostasis regulation. Brain-centered interventions (reduce stress and improve life-style for example), physical activity, medication if necessary, and social support.

letter to Dr. Craig

Here are my questions :

- 1- Do you think we are right to wait until the sensation subsides before touching the patient again? Would there be a place for that kind of parameter in your researches?
- 2- In your conference, I remember that you said that smiling only would stimulate the left insula; does that mean that smiling will stimulate homeostasis regulation? In the same way, touching slowly the skin, as I described, should affect the insula; does that mean that these line-drawings would stimulate homeostasis regulation?
- 3- I think that manual therapy would also be a way to reduce allostatic load by affecting the insular cortex through stimulation of the body thus improving the homeostasis regulation. Am I very far from the reality?

Response From Dr. Craig

Thanks for your email. My answers to nearly all of your questions is **Yes**. I hope you will enjoy the book. It contains many thoughts, ideas and evidence citations that will help you to form a strong conceptual foundation for your approach and your observations. I think you are very definitely on the right track, and I strongly encourage you to continue connecting the dots and building your ideas.

You have your hands on (sorry, an unavoidable pun) a **potentially vital therapeutic approach!**

Researches and references

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