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To Acu or not to Puncture?

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... This is the mind-body question by Alexandros Senarelis-Sinaris, Mind-body interventions researcher
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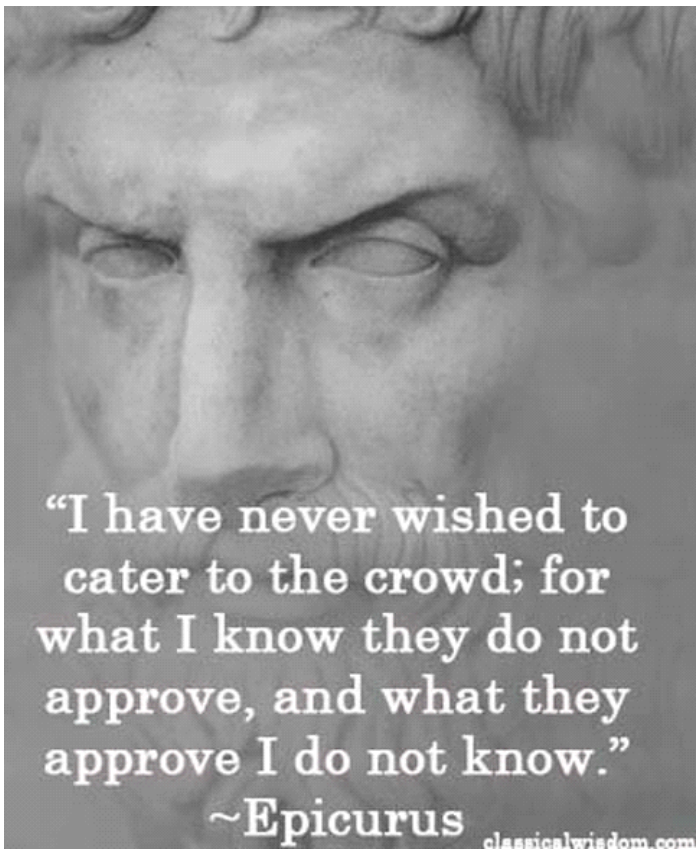


Abstract

Even though acupuncture and its reputed role in Traditional Chinese Medicine appears as a true value in East & West, from heart's "perspective" it feels really as a false value. Acupuncture behaves as a stressor. Its way of approaching the skin, and especially the sensitive mechanoreceptors, fits more in challenging the nociceptors (pain receptors), rather than any other kind of basic skin receptors, such as haptic-stretch-pressure & vibration. This kindling mechanism, this external source of algorithmical conglomerative stress onto the skin, and consequently to other biological systems of the organism which are connected/entangled with it from the embryological phase of the three germ layers, has inevitably a direct link with the autonomic nervous system; the hypothalamic-pituitary-adrenal (HPA) axis with cortisol production, and the sympathoadrenal medullary (SAM) axis which activate the sympathetic nervous system, which dedicates energy to more relevant bodily systems to acute adaptation to stress. The above-mentioned neurobiological mechanisms are the basic major systems that respond to stress, and by extension they can affect through it (stress caused by acupuncture) the immune system.

Consequently, the "magical qi soup" of local endorphins, immune system cells, opioids, neurotransmitters, and neurohormones stimulated by the application of acupuncture, is no more than just a forceful biological respone to the violation and the permeation of skin's highly complex ecosystem from it. Stressing one organ or system to "help" another organ or system, intuitively is logic of deceit.

Keywords: Intuitive Thinking, Analytical Thinking, Acupuncture, Natural Anamorphosis Process

"The intuitive mind is a sacred gift, and the rational mind is a faithful servant. We have created a society that honours the servant, and has forgotten the gift." - Albert Einstein

Adjective: intuitive using or based on what one feels to be true even without conscious reasoning; instinctive; based on feelings rather than facts or proof; perceiving directly by intuition without rational thought, as a person or the mind.

Noun: intuition direct perception of truth, fact, etc., independent of any reasoning process; immediate apprehension.

A Deeper View of Intuition (the gift)

"As more of humanity practices heart-based living, it will qualify the 'rite' of passage into the next level of consciousness. Using our heart's intuitive guidance, will become common sense — practical intelligence." - Doc Childre, HeartMath founder

We often hear ourselves or others say, "My mind thinks one thing, but my heart feels another." Through many generations, we have heard and been told to listen to our heart when discerning the things that matter. As parents, many of us have advised our children to listen to or follow their heart when life's meaningful decisions pop up. So, a lot of people feel the heart is a far more effective source of guidance than what our minds alone can offer us. Heart Math calls this the intuitive heart.

More and more people sense the heart is connected to a higher-capacity guidance system for creativity, clearer decisions and choices and especially for deeper, more caring relationships with others. Evidence for this is the many thousands of people in a variety of cultures who are benefitting from this deeper heart connection. While science can help show us the way, science does not make the ultimate decisions on how we live our lives. We make those from within our intuitive hearts. The heart is the source of wisdom, higher intelligence and intuition.

"The heart actually sends more information to the brain, than the brain sends to the heart. If we look within the nervous system at the parasympathetic branch, 90% of the nerves are carrying information from the heart to the brain. What the heart is sending to the brain, profoundly affects brain function." - Rolling McCraty PhD

Even now, intuitive thinking is a mystery to the world of science. However, we have managed to make some progress and get a better understanding of this fascinating, unpredictable part of our brains. It is somewhere between emotions and rationality, which is exactly why it is so mysterious.

Intuitive thinking is basically the kind of thinking that helps you understand reality in the moment, without logic or analysis. There is no language involved in it, either. It is entirely about signs and sensations. Most of the time, it goes against whatever we might think of as "rational".

According to science, intuitive thinking happens in a region of our brain close to the pineal gland. In other words, it lines up with the middle of your forehead, between your eyebrows. You cannot use intuitive thinking whenever you want, though. It only shows up in "moments of inspiration". Plus, it really works. It is what some people call doctors' "clinical eye" or being a "visionary".

"Intuition is seeing with the soul." - Dean Koontz

Analytical thinking is historically quite recent, whereas intuitive thinking has been mankind's chief possession since the dawn of time. As far as Western civilization is concerned, the classical Greeks "invented" analytical thinking; the Romans built really straight roads with it, the Dark Ages lost it, and the Enlightenment rediscovered it. We can partly attribute the triumphs and perils of our modern civilization to the relative imbalance in the importance afforded to analytical versus intuitive skills over the last four hundred years.

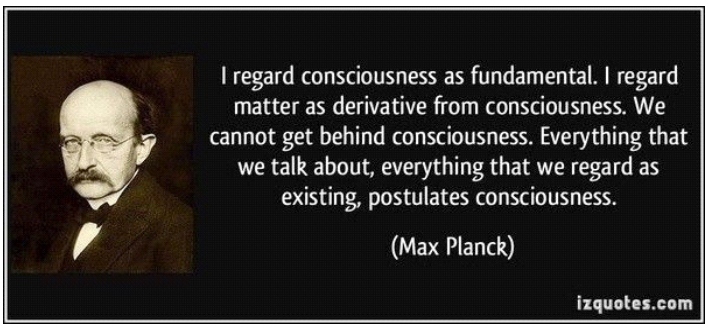
Overly analytical people are to a large extent "blind;" what our society needs is people who can "think" with a whole eye, which is called holistic thinking – only those who are out of touch with feeling call this 'touchy-feely.'

Analytical thinking is powerful. It is focused, sharp, and linear, deals with one thing at a time, contains time, is deconstructive, contains no perspective, is subject to disorientation, is brain centered, and tends to the abstract. Analytical thinking is efficient in the following conditions – sufficient time, relatively static conditions, a clear differentiation between the observer and the

observed. It is best suited for dealing with complexities, and works best where there are established criteria for the analysis (for example, rules of law). It is necessary when an explanation is required, seeks the best option, and can be taught in the classroom to beginners.

Intuitive thinking has contrasting qualities: it is unfocused, nonlinear, contains "no time," sees many things at once, views the big picture, contains perspective, is heart centered, oriented in space and time, and tends to the real or concrete. Intuition comes into its own where analytical thinking is inadequate: under time pressure, where conditions are dynamic, where the differentiation between observer and observed is unclear. It works best where the observer has experience in the particular situation, is difficult to teach in the classroom, eschews seeking the 'best' option in favour of the 'workable,' and is prepared to act on feelings or hunches where explanations are either not required or there is no time for them. Intuition is experience translated by expertise to produce rapid action.

When analytical and intuitive abilities are combined, the result is 'holistic.' In order to effect settlements and resolutions, it is necessary to move people out of a rights/obligations/win-lose mindset into a needs/interests/mutual gain mindset, which is what mediation is all about – this requires holistic thinking abilities.



In his book, The Astonishing Hypothesis, Crick examines the understanding of consciousness. Just as Edelman, he claims that comprehension of the behaviour of humans hinges on the understanding of the behavior of neurons, both individually and in groups. Crick claims that the best way to begin our exploration of consciousness is first to understand how we interpret visual information (eg. the sight of needles all over being stucked in living flesh). This process is, in itself, fairly complicated, however, and will demand much research before knowledge of the matter will in any way be definitive. First, to understand consciousness (either visual or general), we must determine where the cells responsible for determining consciousness are located. While the idea that consciousness may be clustered within either one or multiple areas of the brain may seem preposterous, this conjecture is certainly much more efficient than each cell carrying within itself the instructions for consciousness. Once we have determined the location of those cells dictating consciousness, we can then determine how the decisions on what objects (or thoughts) we are aware of at any point and which are relegated to the subconscious. It seems almost impossible, though, to know either one without first understanding the other. Deeper than knowing how we determine of which object we are conscious at any period of time is the understanding of how we can determine what the object to which we are attending actually is. Clearly, one cell cannot be responsible for recognizing one object; there are far more objects possible in the world than there are cells in the human brain. Therefore, the cells must work in combination to recognize objects; the possible combinations of cells in the brain are nearly infinite and certainly sufficient for perceiving any object that one could ever encounter. The question is what cells are working together to identify an object and how do they know they are working together, a dilemma known as the binding problem.

Crick's astonishing hypothesis about consciousness has four main ingredients. In what Crick calls his Processing Postulate, he argues that each level of visual processing is coordinated by a single thalamic region, thus making the thalamus a key player in consciousness**.**

For the successful completion of any task, some sort of recognition, identification and organisation is needed. Imagine what would happen if employees in a team would just start working aimlessly, without having some sort of direction or goal in mind. For a group to be focused on its goal, it needs a manager who can identify and organise all the extraneous information sent to the team.

The brain is no different. This intricate anatomical structure needs a manager to filter, relay and group incoming information accordingly in order to perform its job properly. This little saviour is the thalamus.

The thalamus is one of the major components of the limbic system, the other components being the anterior cingulate, the basal ganglia, and the amygdala. The thalamus is located deep within the brain beneath the cortex and serves a number of important functions. It is a relay station, collecting and sending information (ears, eyes, mouth and skin) to the cortex and other parts of the brain for processing. The thalamus is involved with bonding, appetite, sleep, pain conditions, and sexual desire. It colors your emotional mind and provides the filter through which you interpret life experiences. The thalamus is thus key for attachment, and bonding and mood regulation. It also plays a role in cognitive behaviours, such as making decisions and staying focussed.

The "Brain" is a "Biological Tool" that has been designed by millions of years of evolution to navigate an external world full of complex nonlinear dynamics.

The Brain mirrors Nature in that it is also a complex adaptive system, and it is constantly adapting its own internal "neural" network to the available data from the external world. This neural network is, in effect, an "abstract model" – effectively, "a map of what is connected to what"…

So the "Brain" is basically a complex connectivity map, and the "Emergent Mind" simply a reflection of how the brain is wired up.

"Consciousness" bubbles up from this emergent mind. And at its most fundamental, "Emergent Consciousness" is nothing more than the "surface representation" of a subconscious "Library of Instincts" and "Laboratory of Intuitions"…

So emergent consciousness is simply the "surfacing" of a biological process of "abstract modelling and pattern recognition". But over many millions of years "The Conscious Mind" has developed way beyond mere pattern recognition. This development is most obvious in modern humans. Over long periods of time Mankind slowly turned recognizable patterns of cause and effect into technology and engineering by a gradual process of trial and error. And in the last 400 years or so, human consciousness took things a step further by actually teasing out the underlying mathematics that governs the linear dynamics of cause and effect. But despite all this incredible evolution of conscious and rational linear thinking, we can still struggle badly when it comes to dealing with "the dynamics of feedback and nonlinear complexity"…

The Brain has been designed to deal with a nonlinear world, and complex nonlinear pattern recognition is actually it speciality. The subconscious mind is a library of instincts, and a laboratory of intuitions. Essentially we can think of instincts as simply hard-corded intuitions, but intuitions themselves are better thought of as soft-coded works in progress…

Some time ago Daniel Kahneman wrote a book called "Thinking, Fast and Slow" in which he basically suggested that we cannot rely on our fast thinking intuition; that generally speaking while our intuition works well when dealing with simplicity, it tend to lets us down when dealing with even the smallest amount of complexity.

This however need not always be the case. The reality is that, in an ever more complex interconnected world, our fast "nonlinear" thinking can be a much more valuable, and "insightful" tool than our slow "linear" thinking – but in order for this to be so, we do need to train it correctly…

Acupuncture

Acupuncture is an age-old technique, which became part of modern medicine in the 1970s. In modern medicine, traditional forms of acupuncture, based on the ancient Chinese concept of qi and meridians, have been superseded by acupuncture based on a neurophysiological model. The unique identity of acupuncture lies in the process of inserting needles ('acu') in the skin ('puncture'), although a modern definition should include the need to do this at specific points in accordance with known physiological or anatomical rationale.

Acupuncture was and still is based on the concept of qi in traditional Chinese medicine, the needles being stuck into specific sites on specific "meridians" (or channels for the mystical magical life energy known as qi) supposedly "redirecting" the flow of that energy, to healing effect. Doctors who believe in acupuncture have twisted themselves into knots trying to come up with seemingly plausible physiologic mechanisms by which acupuncture could "work," ranging from the local release of adenosine, to local opioid release, to interactions with connective tissue, to even a whole new "organ."

Around 90 years ago a Chinese pediatrician named Cheng Dan'an (承淡安, 1899-1957) proposed that needling therapy be resurrected because (he thought then) its actions could be explained through neurology, which is why he also proposed moving the needling points away from blood vessels. He also replaced the previously used coarse needles with the fine filiform needles in use today, in part because he wanted to do acupuncture on children and babies.It's amazing how even scientists who are skeptical that acupuncture has any value don't know its true history and how that history has been extensively retconned.

Most acupuncture studies are poorly designed and prone to bias, particularly studies carried out in China, which are never negative. However, one thing we do know: The larger the study, the more well-controlled the study, the more rigorous the design, the less of an effect is seen, to the point where in the largest, best controlled studies, "true" acupuncture is indistinguishable from sham acupuncture.

If there are hundreds of studies for an intervention for a variety of indications, and we still can't conclude confidently that it's effective for any of them, then it's almost certainly ineffective and the "positive" studies are nothing more than random statistical noise that will produce a few seemingly "positive" studies by random chance alone, more if bias is present. Add to the mix the observation that there is no physiologically plausible mechanism for acupuncture to "work", and the most reasonable conclusion is that acupuncture is nothing more than an elaborate theatrical placebo with no specific effects on pain.

Neurobiological effects & mechanisms (the faithful servant)

Stress, either physiological or biological, is an organism's response to a stressor such as an environmental condition. Stress is the body's method of reacting to a condition such as a threat, challenge or physical and psychological barrier. Stimuli that alter an organism's environment are responded to by multiple systems in the body. In humans and most mammals, the autonomic nervous system and hypothalamic-pituitary-adrenal (HPA) axis are the two major systems that respond to stress.

The sympathoadrenal medullary (SAM) axis may activate the fight-or-flight response through the sympathetic nervous system, which dedicates energy to more relevant bodily systems to acute adaptation to stress, while the parasympathetic nervous system returns the body to homeostasis. The second major physiological stress-response center, the HPA axis, regulates the release of cortisol, which influences many bodily functions such as metabolic, psychological and immunological functions. The SAM and HPA axes are regulated by several brain regions, including the limbic system, prefrontal cortex, amygdala, hypothalamus, and stria terminalis.

Through these mechanisms, stress can alter memory functions, reward, immune function, metabolism and susceptibility to diseases. Disease risk is particularly pertinent to mental illnesses, whereby chronic or severe stress remains a common risk factor for several mental illnesses.

One system suggests there are five types of stress labelled "acute time-limited stressors", "brief naturalistic stressors", "stressful event sequences", "chronic stressors", and "distant stressors". An acute time-limited stressor involves a short-term challenge, while a brief natural stressor involves an event that is normal but nevertheless challenging. A stressful event sequence is a stressor that occurs, and then continues to yield stress into the immediate future. A chronic stressor involves exposure to a long-term stressor, and a distant stressor is a stressor that is not immediate.

A stressor is a chemical or biological agent, environmental condition, external stimulus (eg. electro-acupuncture, acupuncture) or an event seen as causing stress to an organism. Stressors can cause physical, chemical and mental responses internally. Physical stressors produce mechanical stresses on skin, bones, ligaments, tendons, muscles and nerves that cause tissue deformation and (in extreme cases) tissue failure (eg. puncture; a puncture wound is a forceful injury caused by a sharp, pointed object that penetrates the skin). Physical stressors may produce pain. Stressors may also affect mental function and performance.

Early on, we talked about the thalamus as one of the major components of the limbic system. Excessive activity in the thalamus is often at the root of serious mood disorders like depression, bipolar disorder, and even premenstural problems. We feel and function better when the thalamus is at a lower level of activity. Individuals with mood disorders have a busy brain because the excessive activity in their thalamus cannot be checked or reined in adequately by the PFC. Many forms of depression do not occur because our brains are going too slowly. Rather, it is because our thalamus is going double time.

The thalamus is the gateway to the cerebral cortex. All cortical-bound somatosensory inputs relay through the thalamus. One major group of these somatosensory inputs is the nociceptive input. Nociceptive inputs from the skin, deep structures, and visceral organs converge in the thalamus en route to the cerebral cortex. A hundred years ago, Head and Holmes designated the thalamus the essential organ of the affective side of our sensation, especially pain.

Based on its specific reciprocal connection with the cerebral cortex, and the strong nociceptive responsiveness, the thalamus may hold the key to pain consciousness.

The most common side effects of acupuncture include bleeding, soreness, or bruising at the site of needle insertion. Other risks of acupuncture include dizziness fainting convulsions (vasovagal responses), local internal bleeding, hepatitis B, dermatitis, nerve damage, increased pain, and very rarely injury to an internal organ.

Western medicine explains acupuncture's effects within a different framework. Some Western scientists believe that acupuncture stimulates the central nervous system, signalling the body to release various substances including endorphins, immune system cells, opioids, neurotransmitters, and neurohormones. These may help control pain, change how the body experiences pain, and promote physical and emotional well-being. Some research also indicates that acupuncture influences involuntary central nervous functions, such as blood pressure, blood flow, and body temperature regulation.

Cortisol -- often referred to as the "stress hormone" because it is released into the bloodstream during stressful situations -- helps regulate the body's levels of sugar, salt and fluids. The hormone helps reduce inflammation and is essential for maintaining overall health.

Inflammation and inflammatory conditions in general => Pain & immune system entanglement.

By treating the organism with inserted needles (stressor) as a no pharmacologic treatment for pain => kindling => physical stress => mechanical stress => skin tissue deformation => skin tissue failure => micro wounds (injury) at the insertion area => activation of nociceptors => pain => stress => activation of the sympathetic nervous system => fight -or- flight, HPA axis & cortisol release => anti-inflammatory process => pain reduction => the organsism's intrinsic self-repair mechanisms responding to an external stressor with released cortisol, reduce the pain => cortisol acts as a natural painkiller => stress though can alter memory functions, reward, immune function, metabolism and susceptibility to diseases => the immune process provides protection against infection, but also its impairment seems to be involved in the development of autoimmune disorders, malignancies and the acquired immunodeficiency syndrome (AIDS).

Pain is a hallmark of tissue injury, inflammatory diseases, pathogen invasion and neuropathy. It is mediated by nociceptor sensory neurons that innervate the skin, joints, bones, muscles and mucosal tissues and protects organisms from noxious stimuli.

Pain is a big problem. If you read about pain management centers, you might think it had been solved. It has not. And when no effective treatment exists for a medical problem, it leads to a tendency to clutch at straws. Research has shown that acupuncture is little more than such a straw.

Nociceptors undergo sensitization, first in peripheral tissues then in the central nervous sytem, via neuroimmune interactions linking neurons, glial cells (microglia and astrocytes), and immune cells. These interactions may either exacerbate or attenuate the pain and inflammation, which normally reach a state of equilibrium. With more powerful or longer lasting stimuli, specific profiles of microglial and, subsequently, astrocytic activation in the dorsal horn play a key role in neuronal plasticity and transition to chronic pain.

Neuronal stimulation for physiological control is a recent field with major clinical implications for inflammation, infectious diseases, colitis, diabetes, obesity, hemorrhage, pancreatitis, quadriplegia, resuscitation, endotoxemia, septic shock, and sepsis. However, most of these studies have been performed with surgical isolation of a given nerve for direct electrical stimulation. Given that surgical anesthetics inhibit neuronal signals to decrease pain, they also interfere with neuromodulation; consequently, the need for surgery to achieve direct nerve stimulation precludes repeating the treatment in chronic disorders (e.g. arthritis or colitis).

The National Institutes of Health estimate that acupuncture has been used by over 15 million Americans. The use of electro acupuncture is now endorsed by the American Pain Society, the National Center for Complementary and Alternative Medicine, the National Institutes of Health and the World Health Organization. Transdermal nerve stimulation with acupuncture is used to control pain, inflammation, and organ function. Transdermal nerve stimulation with acupuncture or electro acupuncture can activate neuronal networks via local immune factors and neuronal opioid receptors. Neuronal sympathetic stimulation can induce local release of neurogenic norepinephrine, which may provide clinical advantages by inducing local control of inflammation, thereby avoiding collateral effects in non-targeted tissues. Neuromodulation studies of the immune system are suggesting new models of the functional organization of the nervous system in controlling inflammation, and may have important clinical implications in specific cohorts of patients.

In 2009, the United Kingdom's National Institute for Clinical Excellence did recommend acupuncture for back pain. This exercise in clutching at straws caused something of a furore. In the light of National Institute for Clinical Excellence's judgment, the Oxford Centre for Evidence-Based Medicine updated its analysis of acupuncture for back pain. Their verdict was... "Clinical bottom line. Acupuncture is no better than a toothpick for treating back pain."

Acupuncture was developed by traditional Chinese practitioners to control pain. The points of stimulation were selected by empirical assays based on the responses of the patients. All but one of 361 acupoints in humans are located close to neuronal networks. However, the efficacy of acupuncture or electro acupuncture is very controversial because it relies on the experience and precision of the practitioner with needle inseretion, and because of a lack of proper mechanistic studies. Moreover, nerves can be stimulated with different techniques including pressure (acupressure), massage, heat, sound. Each technique might activate distinct mechanisms of action with different intensity.

The most typical examples of this medical hypothesis include the differences between acupuncture and electro acupuncture. While acupuncture induces mechanical stimulation in neuromuscular junctions and causes local release of neuromodulators, electro acupuncture represents a transdermal electrical stimulation of the nerves with voltage-dependent effects. Many clinical reviews conflate these techniques and create confusion regarding their efficacy, mechanisms, and statistical meta-analyses. Furthermore, the efficacy of acupuncture is also controversial because the lack of proper mechanistic studies in this field prevent an explanation of the clinical limitations of these techniques, and on why electro acupuncture may be effective in some diseases, and in some patients, but not in others with similar symptoms.

Clinically meaningful nocebo effect in acupuncture?

The conclusion of Kooga et al. that "the nocebo effect of acupuncture is clinically meaningful and the rate of patients with any adverse event may be a more appropriate indicator of the nocebo effect" deserves some comments. First, opposing placebo and nocebo is a misconception. Indeed, conditioning and expectations are the main factors triggering a response, whether positive or negative. It is the cognitive information itself, which produces the response, for both the level and the direction. If you place a placebo into a person's drink without telling him, it does not work! ... Finally, although statistically significant, how could the small difference they observed for adverse events be clinically relevant? Even the small analgesic effect of acupuncture seems to lack clinical relevance and cannot be clearly distinguished from bias... Placebos do not have clinically meaningful objective effects: the subjective patient-reported alleviation is not significant, being observed in only one-third of the trials and only under certain conditions. Placebo is Latin for "I will please"; the doctor's duty is not to please but to help. There is no need for placebos to provide reassurance, comfort, and hope. Several factors are pivotal in establishing and maintaining relationships with patients: patience, openness, attentive listening, trust, sharing authority, and commitment. No placebo can replace them (Dr. Alain Braillon - Northern Hospital, France).

Response to letter: Nocebo and placebo effects may not be separate in acupuncture

We thank Dr. Alain Braillon for his interest in our article on the nocebo effect in acupuncture. In our article, we calculated the magnitude of the nocebo effect in acupuncture using data from clinical trials and found that this effect is clinically meaningful... However, Dr. Alain Braillon argues that, although placebo and nocebo are not separate effects, we took different attitude toward these two effects in our study... Clearly, these responses do not occur without patients' cognition. In this respect, we agree with the opinion of Dr. Alain Braillon that "it is the cognitive information which produces the response". Of these responses, we focused on the negative ones and found a significant nocebo effect in acupuncture.

Information to patients about their disease, especially about persistent pain, is important clinical practice approach. Improving (placebo) or worsening (nocebo) expectations may influence patients' evolution during treatment.

Nocebo effect may increase pain intensity (hyperalgesia or induced allodynia), stress, anxiety, catastrophizing, in addition to increasing the search for health services, new therapeutic approaches, higher drug consumption and more surgeries to treat adverse effects produced by nocebo effect itself. Psychological stress has been linked empirically with dysregulation of facets of the human immune system (the stress-immune relation).

Fear of needles, known in medical literature as needle phobia, is the extreme fear of medical procedures involving injections or hypodermic needles. It is occasionally referred to as aichmophobia -a kind of specific phobia, the morbid fear of sharp things, such as pencils, needles, knives, a pointing finger, or even the sharp end of an umbrella and different sorts of protruding corners or sharp edges in furnitures and building constructions/materials. It is derived from the Greek aichmē (point) and Phobos (fear) -although this term may also refer to a more general fear of sharply pointed objects. Since the mid-2000s, it has also been referred to as trypanophobia, although the origin and proper usage of that term is highly controversial. The condition was officially recognized in 1994 in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, 4th edition) as a specific phobia of blood-injection-injury type phobia. Phobic level responses to injections cause sufferers to avoid inoculations, blood tests, and in the more severe cases, all medical care. It is estimated that at least 10% of American adults have a fear of needles, and it is likely that the actual number is larger, as the most severe cases are never documented due to the tendency of the sufferer to avoid all medical treatment. It is a Diagnostic and Statistical Manual of Mental Disorders recognized phobia affecting approximately 50 million Americans, making it a top-ten American fear. According to Dr. James G. Hamilton, author of the pioneering paper on needle phobia, it is likely that the form of needle phobia that is genetic has some basis in evolution, given that thousands of years ago humans who meticulously avoided stab wounds and other incidences of pierced flesh would have a greater chance of survival. Fear of sharp objects and puncture wounds could have easily developed as a survival instinct prior to the emergence of modern medicine.

The discussion of the evolutionary basis of needle phobia in Hamilton's review article concerns the vasovagal type of needle phobia, which is a sub-type of blood-injection-injury type phobia. This type of needle phobia is uniquely characterized by a two-phase vasovagal response. First, there is a brief acceleration of heart rate and blood pressure. This is followed by a rapid plunge in both heart rate and blood pressure, sometimes leading to unconsciousness. The loss of consciousness is sometimes accompanied by convulsions and numerous rapid changes in the levels of many different hormones. People who suffer from vasovagal needle phobia fear the sight, thought, or feeling of needles or needle-like objects. The primary symptom of vasovagal fear is vasovagal syncope, or fainting due to a decrease of blood pressure. The physiological changes associated with this type of phobia also include feeling faint, sweating, nausea, pallor, tinnitus, panic attacks, and initially high blood pressure and heart rate followed by a plunge in both at the moment of injection.

In a book published in 1878 (Physiologie des passions), Charles Letourneau, who was contemporary with the French neuroanatomist Paul Broca, defined emotions as "passions of a short duration" and described a number of physiological signs and behavioural responses associated with strong emotions. Emotions are "intimately linked with organic life," he said, and either result in an "abnormal excitation of the nervous network," which induces changes in heart rate and secretions, or interrupt "the normal relationship between the peripheral nervous system and the brain." Cerebral activity is focused on the source of the emotion; voluntary muscles may become paralyzed and sensory perceptions may be altered, including the feeling of physical pain. This first phase of the emotional response is followed by a reactive phase, where muscles come back into action, but the attention still remains highly focused on the emotional situation. With the knowledge of brain physiology and anatomy that was available at the end of the 19th century, hypotheses on the mechanisms possibly involved in emotions were of course limited. However, Letourneau assumed that "the strong cerebral excitation" that accompanies emotions probably only concerned "certain groups of conscious cells" in the brain and "must necessitate a considerable increase of blood flow in the cell regions involved." He also mentioned that the intensity, the expression, and the pathological consequences of emotions were directly linked to "temperaments" (which he defined within the four classic Hippocratic categories).

It is amazing to see how Letourneau's views on emotions, more than a century ago, were in many ways premonitory. The fact that emotions are "intimately linked with organic life," his precise description of the sequence of the physiological and behavioural reactions that accompany a strong emotion, such as fear, the idea that emotions involve specific areas of the brain, and the theory that activation of these areas is associated with an increased blood flow have all been largely confirmed by modern neuroscience.

For a long time, emotions were considered to be unique to human beings, and were studied mainly from a philosophical perspective. Evolutionary theories and progress in brain and behavioral research, physiology, and psychology have progressively introduced the study of emotions into the field of biology, and understanding the mechanisms, functions, and evolutionary significance of emotional processes is becoming a major goal of modem neuroscience.

The main function of fear and anxiety is to act as a signal of danger, threat, or motivational conflict, and to trigger appropriate adaptive responses. For some authors, fear and anxiety are undistinguishable, whereas others believe that they are distinct phenomena.

Ethologists define fear as a motivational state aroused by specific stimuli that give rise to defensive behavior or escape (fight -or-flight).

Fear or anxiety result in the expression of a range of adaptive or defensive behaviors, which are aimed at escaping from the source of danger or motivational conflict. These behaviors depend on the context and the repertoire of the species. Active coping strategies are used when escape from threat is possible, and the autonomic changes associated with these active strategies are mediated predominantly by sympathetic activation (hypertension, tachycardia). This is the fight-or-flight response originally described by Cannon. Passive coping strategies, such as immobilization or freezing, are usually elicited when threat is inescapable, and are usually characterized by autonomic inhibition (hypotension, bradychardia), and a more pronounced increase in the neuroendocrine response (activation of the hypothalamopituitary-adrenal axis and increased glucocorticoid secretion). This type of passive response was originally described by Engel and Schmale as a conservation-withdrawal strategy. The concept of alternative (active/passive) strategies itself owes much to the work of Henry and coworkers. Specific brain circuits appear to mediate distinct coping reactions to different types of stressors.

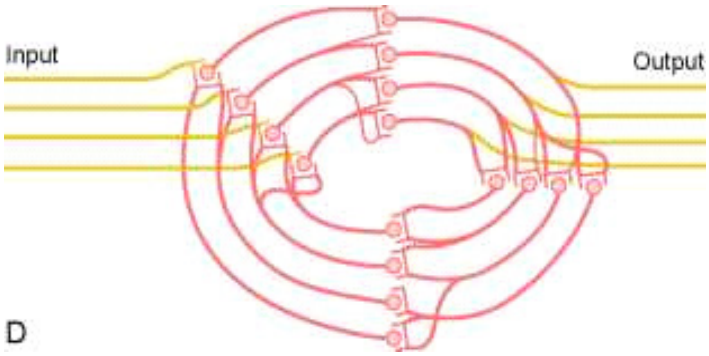
Autonomic activation and increased arousal are among the earlier psychophysiological responses observed in a state of fear or anxiety. Since the immediate consequences of autonomic activation (eg, tachycardia) are perhaps the most readily perceived when experiencing a state of fear or anxiety, it has been proposed that the ascending noradrenergic system originating from the locus ceruleus (LC) is the core around which feelings of anxiety are organized. The LC contains a large proportion of the noradrenaline (NA) cell bodies found in the brain and it is a key brain stem region involved in arousal. It is highly responsive to alerting/stressful stimuli. The meaning, as well as the intensity of stimuli, seems to be an important factor in LC response.

Recent data suggest that a phasic mode of LC activity may promote focused or selective attention, whereas a tonic mode may produce a state of high behavioral flexibility or scanning attentiveness. Some LC neurons project to the paraventricular nucleus (PVN) in the hypothalamus and activate the hypothalamopituitary-adrenocortical (HPA) axis, triggering or facilitating the stress response associated with increased anxiety.

Noradrenergic LC neurons also project to the amygdala (mainly to the central nucleus of the amygdala [CeA]), the prefrontal cortex (PFC), the bed nucleus of the stria terminalis (BNST), the hippocampus, the periaqueductal gray (PAG), the hypothalamus, the thalamus, and the nucleus tractus solitarius (NTS), which arc all areas involved in the fear/anxiety response. The LC is in turn innervated by areas such as the amygdala (which processes fear-related stimuli) and other areas receiving visceral stimuli relayed by the NTS. The LC is therefore in a key position to integrate both external sensory and internal visceral stimuli and influence stress- and fear-related neuroanatomical structures, including cortical areas.

Dr Josipovic's research is part of a larger effort better to understand what scientists have dubbed the default network in the brain. He says the brain appears to be organised into two networks: the extrinsic network and the intrinsic, or default, network. The extrinsic portion of the brain becomes active when individuals are focused on external tasks, like playing sports or pouring a cup of coffee (or having an acupuncture session). The default network churns when people reflect on matters that involve themselves and their emotions. But the networks are rarely fully active at the same time. And like a seesaw, when one rises, the other one dips down. This neural set-up allows individuals to concentrate more easily on one task at any given time, without being consumed by distractions like daydreaming.

And the logical question that comes up is: what kind of incoming information you bring in to process and what sort of memories they create? In mathematics, function is defind as follows: incoming information (extrinsic-exteroception) -> process (intrinsic-interoception) -> outcome (mind-body behavior). The figure below shows a reverbatory (oscillatory) circuit, which displays the above-mentioned mathematical term of function.



Psychobiologists show how the vagal pathway links hormones outside the brain to neurotransmitters inside the brain to lock in memory of emotional or stressful events. Their findings outline the neural pathway through which hormones that are released in the body affect specific parts of the brain during meaningful or emotionally arousing events in order to strengthen memories that will later foster sentimental pleasure or torture us with relived trauma.

Stimulating the vagus nerve, which carries sensory messages to and from the brain, releases the neurotransmitter norepinephrine into the amygdala, strengthening memory storage in limbic regions of the brain that regulate arousal, memory and feeling responses to emotionally laden stimuli.

The research solves the mystery of how the adrenal gland could stimulate the release of norepinephrine in the brain, observers say. During stress, the adrenal medulla (near the kidneys) in humans and rats releases epinephrine into the bloodstream, famously causing the "fight-or-flight" response in the heart, lungs, stomach and elsewhere. However, epinephrine cannot cross the blood-brain barrier. So what is the switch that turns on epinephrine? The vagus nerve.

The new evidence provides a close-up look at how emotional events affect the body to influence how well the brain encodes information about exciting or meaningful events. First, emotionally arousing events stimulate the nervous system to release epinephrine. Unable to get into the brain, it does the next best thing: It activates the ascending fibers of the vagus nerve, which in turn stimulate brain neurons in an area of the brainstem known as the nucleus of the solitary tract (NTS).

In this model, NTS neurons release norepinephrine into brain structures that process memory, such as the amygdala and hippocampus. Upon activation, these memory-related regions work harder to properly put the attributes of emotionally arousing experiences into long-term storage.

Skin hunger is the biological need for human touch. It is why babies in neonatal intensive care units are placed on their parent's naked chests. It is the reason that prisoners in solitary confinement often report craving human contact as ferociously as they desire their liberty.

"When you touch the skin," explains Tiffany Field of the Touch Research Institute at the University of Miami, "it stimulates pressure sensors under the skin that send messages to the vagus [a nerve in the brain]. As vagal activity increases, the nervous system slows down, heart rate and blood pressure decrease, and your brain waves show relaxation. Levels of stress hormones such as cortisol are also decreased." Touch also releases oxytocin, the hormone released during sex and childbirth to bond us together. In other words, human touch is biologically good for you. Being touched makes humans feel calmer, happier, and more sane.

Without touch, humans deteriorate physically and emotionally. "We know from the literature that lack of touch produces very negative consequences for our wellbeing," says Alberto Gallace, a neuroscientist at the University of Milano-Bicocca. He explains that humans are inherently social creatures; studies have shown that depriving monkeys of physical contact leads to adverse health outcomes. Our brains and nervous systems are designed to make touch a pleasant experience, he says. "Nature designed this sensory modality to increase our feelings of wellbeing in social environments. It's only present in social animals that need to be together to optimise their chances of survival."

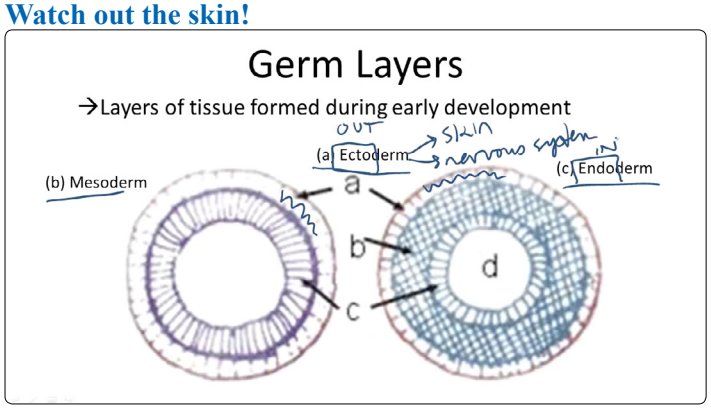
With social distancing protocols in place in countries across the world due to the coronavirus pandemic (COVID-19), those who live alone find themselves enduring months without human touch. This is a particularly cruel irony, given that skin hunger actually weakens our immune systems — making us potentially more susceptible to coronavirus. "I'm very concerned," says Field, "because this is actually the time we need human touch the most." She explains that touch is instrumental in immune function, because it reduces our cortisol levels. When cortisol levels are high, our immune system is depleted: cortisol kills natural killer cells, a type of white blood cell that attacks viruses for us. Field tells me that human touch has been shown to increase natural killer cells in patients with HIV and cancer.

Gallace is profoundly concerned about the mental health implications of prolonged skin hunger for those locked down alone, particularly given that a global pandemic is in itself a stressful and anxiety-provoking situation. "We use touch for comfort," he says. "When we are in danger or anxiety, being touched is a form of help. A lack of touch increases the stressfulness of situations." He explains that studies have shown that people perform tasks better when they are clapped on the back beforehand. "It's a form of reassurance that goes back to the touch of the caregiver when you were a child," he says.

"When you move the skin you increase serotonin," explains Field. Low serotonin has been linked to insomnia, anxiety, and depression. "If you move the skin before going to bed, you'll have deeper sleep, which is critical because Substance P is emitted during deep sleep." (Substance P is a neurotransmitter that affects pain perception, stress, and our emotional responses).

Technology cannot substitute for skin-on-skin contact. "We can maintain our social relationships through technology," says Gallace. "But although our technology is very advanced in terms of visual and audio rendering, all these technologies lack the sense of touch. There are basically no systems currently available that allow us to interact using touch." He explains that haptic technology is not sufficiently advanced enough to reproduce the vigour and subtlety, say, of a handshake. The sensory modality involves a lot of systems.

Watch out the skin!



Germ layer, any of three primary cell layers, formed in the earliest stages of embryonic development, consisting of the endoderm (inner layer), the ectoderm (outer layer), and the mesoderm (middle layer). The germ layers represent some of the first lineage-

specific (multipotent) stem cells (e.g., cells destined to contribute to specific types of tissue, such as muscle or blood) in embryonic development. Hence, each germ layer eventually gives rise to certain tissue types in the body. The ectoderm forms certain "outer linings" of the body, including the epidermis (outermost skin layer) and hair. The ectoderm also is the precursor to mammary glands and the central and peripheral nervous systems. Cells derived from the mesoderm, which lies between the endoderm and the ectoderm; give rise to all other tissues of the body, including the dermis of the skin, the heart, the muscle system, the urogenital system, the bones, and the bone marrow (and therefore the blood). The mesoderm is the germ layer that distinguishes evolutionarily higher life forms (i.e., those with bilateral symmetry) from lower life forms (i.e., those with radial body symmetry). The mesoderm allows more highly evolved organisms to have an internal body cavity that houses and protects organs, bathing them in fluids and supporting them with connective tissue.

Skin is our largest organ, but did you know that it is much more than a 3.5-kilogram, 2.5-square-metre passive covering for our body? There is a delicate interplay between our skin and our internal health. Its function as an organ is multi-dimensional: it acts as a barrier to outside threats, providing physical protection against trauma and the environment and antimicrobial signals to ward off infectious invaders. It can heal itself when damaged where many organs cannot. Skin and its substructures, such as the sweat glands, hair follicles and small blood vessels, are indispensable in managing homeostasis (keeping our internal environment and temperature in just the right balance) and in the elimination of internal waste. Like our ears, nose and eyes it is a sensory organ sending vital touch, temperature and vibration communication to our brain. The skin is where the interface with sunlight allows biochemical interactions critical to health to take place, such as the metabolism of bilirubin in a jaundiced newborn and the first steps in Vitamin D production.

Due to its exterior location, our skin has its own unique vulnerability to the effects of the external environment and it visibly shows the burden of toxins, lifestyle and exposure. Protecting it from harmful environmental factors or managing stress, you can have an impact on your skin & health.

Conventional textbook wisdom portrays the skin as an organ that literally enwraps whatever each of us stands for as a more or less functional, individual member of the mammalian species, and has it that the skin primarily establishes, controls and transmits contacts with the external world. In addition, the skin has long been recognized to protect the organism from deleterious environmental impacts (physical, chemical, microbiological), and is well known as crucial for the maintenance of temperature, electrolyte and fluid balance.

Now, ever more studies are being published that show the skin to also operate as a huge and highly active bio factory for the synthesis, processing and/or metabolism of an astounding range of e.g. structural proteins, glycans, lipids and signaling molecules. Increasingly, it becomes appreciated that the skin, furthermore, is an integral component of the immune, nervous and endocrine systems, with numerous lines of crosstalk between these systems established intracutaneously, reminding us of the – often-ignored – evolutionary and embryonal origins of our favorite organ.

How does stress get "under the skin" to influence immunity? Immune cells have receptors for neurotransmitters and hormones such as norepinephrine, epinephrine, and cortisol, which mobilize and traffic immune cells, ideally preparing the body to mount an immune response if needed. Recent evidence shows that immunological cells (e.g., lymphocytes) change their responsiveness to signaling from these neurotransmitters and hormones during stress. However, immunological responses are biologically and energetically costly, and over time, chronic stress produces negative systemic changes both in immune trafficking and in target tissues

Thus skin (epidermis-dermis) as a sensory interface, from the beginning of creation has a strong connection, a quantum entanglement with a wide spectrum of systems & consequently as an omnipotent medium, can have a strong influence upon them if (or not) properly handled. Skin is a converter. It can alternate elastic energy to kinetic and vise versa like the aorta of the heart, due to connective tissue's geometrical stucture (matrix).

I end on a triumphant note: 'Skin is in'.

Natural Anamorphosis Process (a mind-body intervention with neutral behavior)

Some of the principles of medical ethics have been in use for centuries. For example, in the 4th century BCE, Hippocrates, a physician-philosopher, directed physicians "to help and do no harm" (Epidemics, 1780). Natural Anamorphosis Process is a new or unusual -in an interesting though way- non-invasive, innocuous system for nerve stimulation, which behaves as an indirect vagal maneuver, and as an antithesis to the invasive behavior of acupuncture.

A vagal maneuver is an action used (by medical doctors) to slow down the heart rate by stimulating the vagus nerve. The vagus nerve is the longest nerve of the autonomic nervous system and helps regulate many critical aspects of human physiology, including heart rate, blood pressure, sweating, and digestion. Over-stimulation of the vagus nerve, however, can cause fainting.

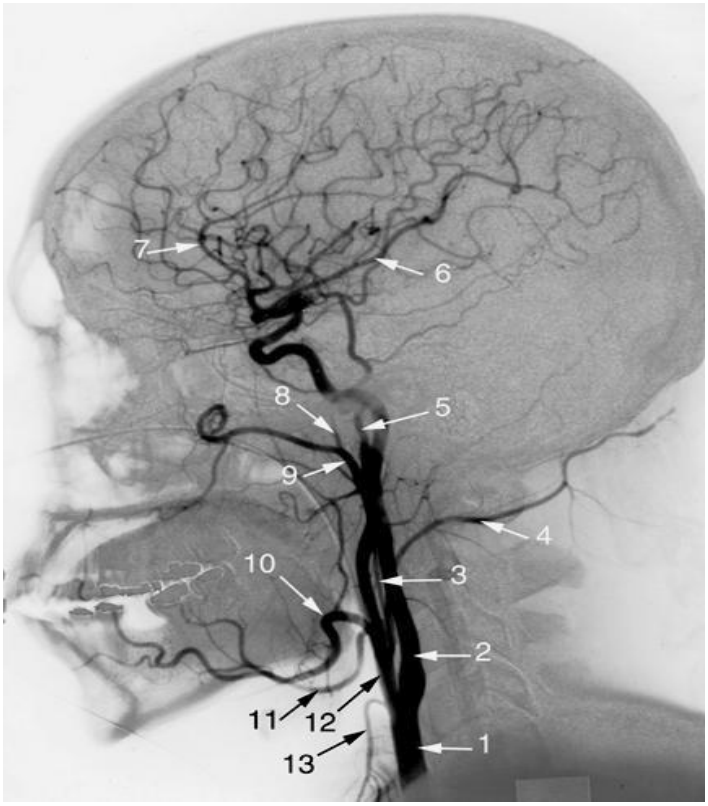
The Czermak–Hering test is a vagal maneuver consisting of the application of external digital pressure to the carotid sinus. The test is performed at the patient's bedside by imposing moderate pressure with the fingers, repeatedly massaging the left or the right carotid arteries.

The Czermak–Herding test is a test for autonomic nervous function (vasovagal response), exerting:

i. Bradycardia
ii. Hypotension
iii. Decrease of blood flow in the brachial artery
iv. Alterations in the blood flow in the internal carotid artery.

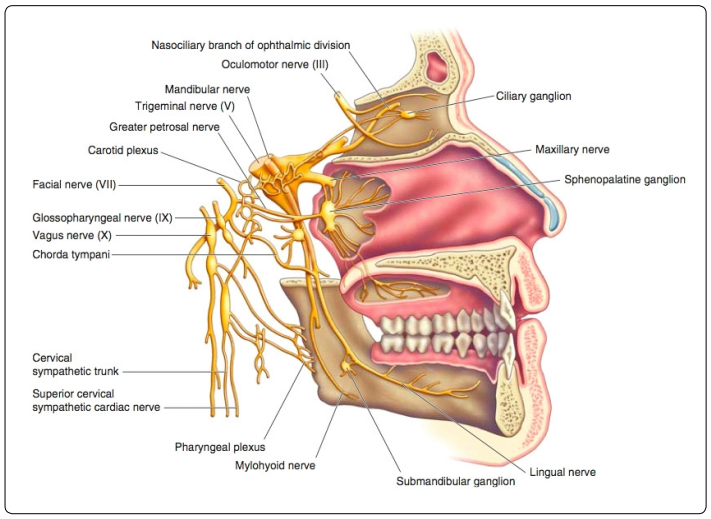
Johann Nepomuk Czermak stated that mechanical compression of the carotid artery due to the carotid sinus reflex initiates a stimulus of the heart inhibitory branches of the vagus nerve.

NAP's indirect & safe way of imitating the above vagal maneuver is by using haptic, quasy-static, isotropic (isotropy is uniformity in all orientations; it is derived from the Greek isos (ἴσος, "equal") and tropos (τρόπος, "way") mechanical & rythmical pressures to the mastoids (occipital part of the head) and, by extension, the occipital artery (4) which arises from the external carotid artery opposite the facial artery. Its path is below the posterior belly of digastric to the occipital region. This artery supplies blood to the back of the scalp and sternocleidomastoid muscles, and deep muscles in the back and neck.



The Oculocardiac reflex, also known as Aschner phenomenon, Aschner reflex, or Aschner–Dagnini reflex, is a decrease in pulse rate associated with traction applied to extraocular muscles and/or compression of the eyeball. The reflex is mediated by nerve connections between the ophthalmic branch of the trigeminal cranial nerve via the ciliary ganglion, and the vagus nerve of the parasympathetic nervous system. Nerve fibres from the maxillary and mandibular divisions of the trigeminal nerve have also been documented. These afferents synapse with the visceral motor nucleus of the vagus nerve, located in the reticular formation of the brain stem. The efferent portion is carried by the vagus nerve from the cardiovascular center of the medulla to the heart, of which increased stimulation leads to decreased output of the sinoatrial node. This reflex is especially sensitive in neonates and children, particularly during strabismus correction surgery [3]. However, this reflex may also occur with adults. Bradycardia, junctional rhythm and asystole, all of which may be life threatening, can be induced through this reflex. This reflex has been seen to occur during many pan facial trauma surgeries due to stimulation of any of the three branches of trigeminal nerve.

The ciliary ganglion is a bundle of nerve parasympathetic ganglion located just behind the eye in the posterior orbit. It is 1–2 mm in diameter and in humans contains approximately 2,500 neurons. The ganglion contains postganglionic parasympathetic neurons. These neurons supply the pupillary sphincter muscle, which constricts the pupil, and the ciliary muscle, which contracts to make the lens more convex. Both of these muscles are involuntary since they are controlled by the parasympathetic division of the autonomic nervous system. The ciliary ganglion is one of four parasympathetic ganglia of the head.



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By understanding a few key basics about the nervous system (and how fear, pain, and anxiety work in the body), you can help minimize pain, shut down fear responses, and decrease inflammation. Understanding the interaction of the trigeminal nerve with the vagus nerve and their roles in either upregulation of the nervous system (fight or flight) or relaxation and pain relief (a parasympathetic state) can help you accomplish this.

The brain can say, "Hey that's interesting. Turn up the volume on this pain information that's coming in", or it can say, "Oh no – let's turn down the volume on that and pay less attention to it," says David Linden (a professor of neuroscience at Johns Hopkins University and author of the new book Touch: The Science of Hand, Heart, and Mind.) By mastering the interaction of the trigeminal and vagus nerves, you can mitigate pain, anxiety, fear, and inflammation.

According to Gray's anatomy, the trigeminal nerve is the largest cranial nerve. It carries sensory input from the face, the greater part of the scalp, the teeth, the oral and nasal cavities and is the motor supply to the masticatory and other facial muscles. It contains proprioceptive nerve fibers from the masticatory and extraocular muscles and contains connections to the vagus nerve through the main sensory nucleus in which the vagus nerve may be influenced by masticatory reflexes. The trigeminal nerve plays a major role in the sympathetic state of the nervous system.

It is the link between the trigeminal nerve and the vagus nerve that makes it possible to enhance feelings of either anger, fear, anxiety, pain (increasing inflammation) or the sense of well-being and peace. The complex interaction between the vagus and trigeminal nerves is becoming clearer through recent research that has noted their connections through nerve stimulating studies related to treatment of neuropsychiatric disorders.

The vagus nerve is responsible for various tasks, including heart rate, GI function, sweat, and many muscle movements in the mouth, as well as speech (via the recurrent laryngeal branch of the vagus nerve). It also innervates the inner canal portion of the outer ear and part of the meninges.

When the vagus nerve is functioning properly, the gag reflex is diminished, the stomach is calm, heart rate is slow, and breathing is normal. Stress can cause the vagus nerve to operate poorly and may even cause a person to faint when faced with extreme distress.

The vagus nerve plays a major role in decreasing inflammation and monitoring/regulating heart functions. As mentioned previously, it assists in lowering the heart rate. The right-side vagus innervates the sinoatrial node. Neuroscientist Otto Loewi first demonstrated that nerves secrete neurotransmitters, which have effects on receptors in target tissues. Loewi electrically stimulated the vagus nerve of a frog heart, causing the heart rate to slow. Then he took the fluid from the heart and transferred it to a second frog heart, one that had the vagus nerve removed. The second heart slowed down without any electrical stimulation. This shows that the vagus nerve stimulates secretion of calming neurotransmitters, a key element in calming your patients. Heart rate variability is a measure that can be used to assess autonomic (parasympathetic) activity in response to meditation or calming.

Excessive activation of the vagus nerve during emotional stress can cause vasovagal syncope (side effect in acupuncture) due to a sudden drop in cardiac output. Vasovagal syncope affects young children and women more than other groups experiencing moments of extreme fear or stress to the nervous system. Vasovagal syncope occurs when you faint because your body overreacts to certain triggers, such as the sight of blood or extreme emotional distress. It may also be called neurocardiogenic syncope. The vasovagal syncope trigger causes your heart rate and blood pressure to drop suddenly. That leads to reduced blood flow to your brain, causing you to briefly lose consciousness. Vasovagal syncope is usually harmless and requires no treatment. But it is possible you may injure yourself during a vasovagal syncope episode.

Understanding the interaction of these two nerves can make one ask, "What if you could calm down the trigeminal nerve and enhance the functioning of the vagus nerve?

The effect of vibration on the mechanics of pain is most commonly described using a modified Melzack and Wall gate theory. The use of vibration will stimulate receptors at the point of localized vibration application. The stimulation of peripheral receptors then sends signals back to the spinal cord and releases neurotransmitters. Thus, the release of pain neurotransmitters inhibits neural pain signaling. While the actual mechanism for pain reduction at the spinal cord level versus higher level (central or cortical) remains unclear and debated, recent research has pointed more towards central or higher level interactions (think vagus nerve) for pain suppression.

Neuronal stimulation (e.g transdermal) or (eg. transensory such as neurogastronomy-gastrophysics) is an emerging field in modern medicine. As neuronal networks were evolutionarily selected to achieve physiological homeostasis, it is not surprising that neuromodulation emerged as one of the first strategies used in medicine to re-establish homeostasis during illness.

With the introduction and the usage of valuable and complex information (informational medicine) of undoubtedly rigorous sciences such as mathematics, physics, biology and philosophy, NAP as a regulator/buffer aims for the least action path (Hamilltonian physics) and with the controlled repetition (enrgams) of its intentional systems & agents, intends to maintain and enhance the physio-logical mechanisms of homeostasis and, by extension, through the parasympathetic system which returns the body to homeostasis (vagus nerve-interoception), the stored energy levels of healthy bioavailability, since they form the absolute natural intrinsic self-repair mechanism of existence & smoothness (Navier-Stokes equation).

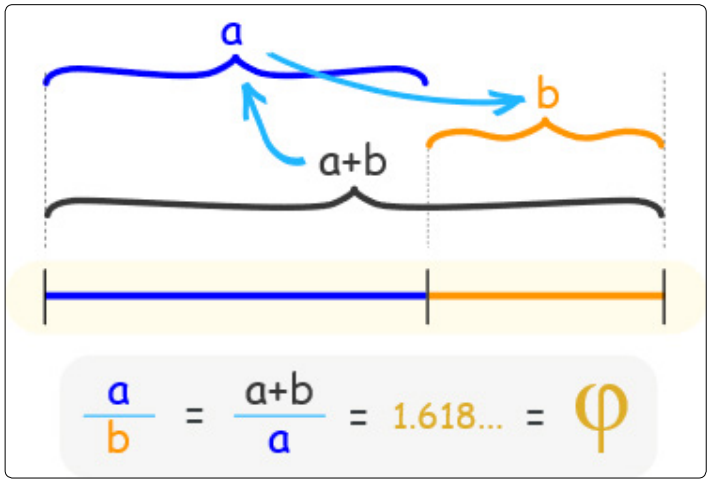
With the deepest respect to the human imperfect, Natural Anamorphosis Process (NAP) operates non-aggressively towards the cryptoalgorithm of any form of problem and the noisy, foggy, obfuscating dynamics of its potential complications. With the physio-logical tactic of its centrifugal approach, moves peripherally and in between (neutral behavior) the event horizons of the healthy bio-available and any pathology, disease, illness, syndrome, injury etc, which is basically the "abstract" area of the emerging stress before the true values-1, such as biophotons-

light-energy-electricity-3D holographic & elctromagnetic fields, inevitably, become false values-0 (nihilism).

NAP operates under the analogy of the divided line, which has been presented by the Greek philosopher Plato. The lower & smaller in size two sections are said to represent the senses, while the higher & larger in size two sections are said to represent the intelligible (mind-abstract).
Mathematics come first, according to Plato, while entering the intelligible in the allegory of the line.

The Greeks said that all beauty is mathematics. If that is true then perhaps there is a mathematical code, formula, relationship or even a number that can describe beauty.

In mathematics, two quantities are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. Expressed algebraically, for quantities a and b with a > b > 0, According to Mario Livio:



Some of the greatest mathematical minds of all ages, from Pythagoras and Euclid in ancient Greece, through the medieval Italian mathematician Leonardo of Pisa and the Renaissance astronomer Johannes Kepler, to present-day scientific figures such as Oxford physicist Roger Penrose, have spent endless hours over this simple ratio and its properties. ... Biologists, artists, musicians, historians, architects, psychologists, and even mystics have pondered and debated the basis of its ubiquity and appeal. In fact, it is probably fair to say that the Golden Ratio has inspired thinkers of all disciplines like no other number in the history of mathematics.

Kepler said of these:

Geometry has two great treasures: one is the theorem of Pythagoras, the other the division of a line into extreme and mean ratio. The first we may compare to a mass of gold, the second we may call a precious jewel.

Every reverse processing is necessarily a quasi-static one (time dependant). Tonic in physiology refers to a physiological response, which is slow. Truth is that the real path is the one being minimal in action. If we are lucky to find it, Hamilton's principle of least action just says we should be happy in this regard. An integrative theory of locus coeruleus (LC) neurons exhibit two models of activity, phasic & tonic. When utility in a task wanes (slows down), LC neurons exhibit a tonic activity mode, associated with a search for alternative behaviors, such as exploration (mind/abstract state).

NAP in general is a type of coping response, which aims to control & neutralize stressors.

"There is nothing in a caterpillar that tells you it's going to be a butterfly". - R. Buckminster Fuller

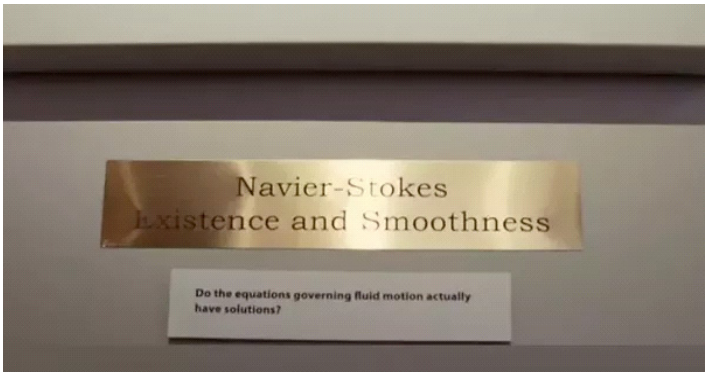
NAP's logical, nociceptor free algorithmic model of transdermal (sensory) neuronal stimulation: Skin (senses) -> haptic (relating to the sense of touch, in particular relating to the perception and manipulation of objects using the senses of touch and proprioception), quasi-static, isotropic mechanical pressures -> kinetic-elastic rythmical oscillations (slow vibrational response of skin's elastic connective tissue/fascia) -> mechanoreceptors -> free nerve endings -> tonic property -> connection to proprioception & recording of the slow stimuli -> reticular formation -> locus coeruleous homeostatic control center; principal site for brain synthesis of norepinephrine (focuses attention); involved with physiological responses to stress and panic; part of the reticular activating system -> scanning attentiveness (tonic mode) -> hypothalamus-thalamic relay nuclei-amygdala-hippocampus neuronal network connection -> relation to meditation (mind/abstract) -> gamma waves -> stress reduction, mood elevation, increased life expectancy of the mind and, by extension the body (mind-body).

"*Mechanics is as important as Biochemistry for Control of Cell and Tissue Development*" =Ulm University

Intuitively or analytically, whichever way you see it, N.A.P's innocuous intention, its classical science's base, neutral and omnidirectional devoid of reactions behaviour, concentrates exclusively on the enhancement of every bio-available environment that its equilibrium constant is unaffected or still within the limits of normal function, for the reason that any simple or complex action, which in its manner or its application intends to promote or sustain the normal functioning/eurythmic, is life's force [1-44].

So when therapy by definition aims to normalize a distorted biological condition, actually, what it does is to try to bring biochemical regularity (normal functioning). Now if we see it from another perspective (Anamorphosis), by intensifying or enduring the normal bio-available functioning (eurythmia), essentially, we are in a therapeutic sphere of influence via a simple reverse process thinking mechanism. If one value is equal to another value, then the second value is also equal to the first value (mathematical symmetric property of equality).

N.A.P is not an ego-system, but an eco-system. In essence, it is a way of thinking outside the box and beyond. A source of inspiration and reason for reconsideration. It is my intuitive suggestion to attain eudemonia (human flourishing; contented state of being healthy and happy).



As an epilogue, I will put forward from the valuable insights of mathematics and physics in the Navier-Stokes case three rhetorical and reasonable at the same time questions:

1. Existence - Given a specific situation, will our actions always provide a solution?
2. Uniqueness - Will the solution be the one and only one?
3. Smoothness - Will the solution describe that action path as true or real?

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