



Self-Regulation

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Editorial

The simplest definition of 'self-regulation' is an innate ability of a neuro-motor or sensory related activity that an individual is capable of in terms of survival, daily function and long term activity, including teaching another individual (or other individuals) to do the same.

Innate abilities are not singular human characteristics. For instance, self-regulation such as bowel/bladder control is widespread in the animal world and is based on neuro-muscular maturation characteristics.

In the end, the ability to learn and self-regulate is an innate survival and reproduction function without which the species cannot survive.

People (and probably all mammals) are born with two 'reflexes', the blinking and pucker reflex.

Without the former, one could get poked in the eyes and lose the eye-sight (thus detrimental to survival). Without the latter, the infant could not look for the nipple & suck and thus not die of starvation.

These are essential example of innate self-regulation, though not the only ones.

The nervous system has been classified for at least 150 years into two components, the central and autonomic (or visceral) systems. Even if the intention of the anatomists and physiologists of the 19th century who did the classification division was honorable and advanced for the time, the classification cannot be considered appropriate today and needs extensive review.

Not too long ago, medical texts held that "the brain was a black box". This and many other "axioms" have been dispelled as neural sciences progress.

There are other issues with present consequences.

In the middle of the 19th century, the German anatomists and physiologists divided the formerly classic anatomy into structural and functional components.

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Great intent, however they encountered a problem of an anatomic structure that they didn't know how to handle. Consequently, they "passed the buck" from one field to the other; each one disowned it and thought the other should handle it.

That structure or organ exists and has at least one function but one cannot find it in most atlases or physiology texts, never mind any therapeutic texts.

Small wonder that one cannot learn any pathology of the organ or treatment for any such pathology.

The organ in question is the CYSTERNA CHYLI" or the "lymphatic heart". It brings all the lymphatic fluid from all parts of the body to the heart. It is located behind the heart and close to the entrance of the inferior vena cava. Yet, most anatomic pictures do not depict it along with the venous return to the heart.

So far for the complexity and truism of the present classic medical field and its pretense to cover all aspects of vascular anatomy, physiology, pathology and therapeutics.

Is it possible that an organ that brings liters of lymphatic fluid back to the heart every day has no pathology and deserves no therapeutic consideration?

Should it be up to "complementary medicine" to uncover the pathology of the lymphatic system and treat it? At present, complementary medicine is not generally treated with equanimity by the official Western medical system although some modalities like acupuncture are making in-roads.

It has been long held that central nervous system components were compatible with conscious

learning whereas the autonomic nervous system (or visceral) system was not accountable to the same rules.

The reality is different but it takes a paradigm shift to prove it so.

Fortunately one of the means of documenting and dealing with the process of autonomic learning is at our finger tips now, in the age of computers and related electronic equipment.

Human beings (and probably or other mammals too) are capable of learning, whether we consider that learning strictly at the conscious level or not.

Take for example learning how to ride a bicycle. *Prima facie*, it seems irrational to learn to ride a vehicle on two wheels that cannot stand up against gravity by itself.

Yet we can learn to ride because we have an innate sense of equilibrium, possibly inherited from our far away ancestors who were able to hang on tree branches and jump from one branch to the next without falling to the ground.

The principle of survival of the fittest was hard at work, since we never heard of the fate of those ancestors who were not proficient at it and ended up as easy prey to the local carnivores.

There are various stages of neuro- motor learning and the formation of a neuro-motor engram. The neuronal process is such that we make several errors in judgment during the process, but progress pretty quickly to master the task. Training wheels may be necessary for a short while, but most if not all children or adults learn quickly to maintain the equilibrium necessary to ride the bicycle in a vertical position and the learning engram lasts for life.

This may be a classic example of neuro-motor self-regulation.

The development of present day computers and related electronic equipment opened the gates to the learning of all tried "autonomic" functions.

When the learner uses a computer and electronic equipment as tools for self-regulation learning and activity, the process is commonly called biofeedback.

In this process, the learner is facing a computer screen or monitor and specific parts of the body are hooked up with electrodes that connect to the electronic equipment. The loop is completed by the visual (or sometimes auditory) system.

The monitor projects an image of the object of the learning, e.g. muscle tension shown as amplitude or frequency of contraction or brain wave activity (EEG waves).

It may show respiratory waves, temperature or sweat waves, vascular waves of vaso-dilatation or constriction, numbers such as in heart rate variability or respiratory rhythm, etc. It may show a number of these parameters on the same screen simultaneously.

The instructor teaches the learner the aim of the learning process. The instructor shows to some extent to the learner the process of the learning.

The learner's brain takes over very quickly the instructions to the extent that the learner is motivated to achieve the final learning aims.

This is why in many cases the learning process is taken over by a 'game' in which the learner 'wins' when the aim is achieved. Children and adult's alike like to win and games are quite successful tools of learning in the biofeedback field.

The terms 'conscious' and 'subconscious' are somewhat blurred and need to be modified in this process of learning. It is possible to use the term 'conscious' when a person is learning how to relax or contract a muscle to the level desired and instructed by the monitor/instructor. The term is at least blurred when the instruction is to increase the sweat or temperature, factors dependent on the sympathetic or parasympathetic systems. While the sequence of INPUT-PROCESS-OUTCOME is maintained, the complexity of the actual process of attaining the outcome needs further scientific refinement to bring it to an acceptable conclusion in our time.

Complementary medicine, well intended and researched may become very valuable in our time and integrate with classic Western medicine as it follows the same rules of research.

Its aim is very clear most of the time: attaining self-regulation of different physiologic parameters by learning how to control and modify them for the purpose of function, wellness and relief of disease symptoms wherever possible.

Simply put, the example of learning to use a bicycle holds. One learns on a bicycle with training wheels, unless one risks falling a few times while the learning process takes place. As one becomes proficient at it, the training wheels are removed and one remembers for life to ride a bicycle.

The individual learns autonomy and relies on it for the rest of one's life.

Complementary medicine such as exemplified by biofeedback relies on the process of self-regulation. Its success does not depend on the pharmaceutical industry. That dependence is akin to not ever removing the training wheels from the bicycle.

At present, our classic medical industrial complex is heavily reliant on the pharmaceutical industry. While there is great value in dependence on medicines when there is no other way, the dependence should be judicious and, if possible, only temporary.

It should aim in many cases at blending it with preventive and/or 'complementary' methods that aim at the self-regulation and reliance of the individual on one's brain and body ability to become independent and self-reliant.