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Research Article

From Core and Mantle to Primary Integrality - A Brief Introduction of the Fit and Snug States

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Abstract

The body acting as a whole could function positively. In the body with a comprehensive functional-anatomical framework, adaptations start with core-to-match to the environment, and being fit and snug in living is important. For an individual to actuate and assert in confronting the surrounding environment, the body is prepared by a nervous and vascular co-directed development whence information and perfusion go together. This coupled nervous-perfusional adaptivity is for the first time expressed in this paper. Correspondingly, Chinese medicine describes the concept with Qi (Energy process) and Xue (Blood); and also related Yin Yang dynamics. Positivity in living in an individual can be ensured by the fit and snug processes with these body assets working together for advantages in living. The whole functional-anatomical body is involved from the heart, brain and other systems and managed in this perspective.

Keywords: Integral approach; Snug and fit; Neural vascular couple; Chinese medicine; Qi; Yin Yang

Positivity by Being Integral

While many medical specialties emphasize holistic medicine for wholeness, it has to further delineate integrality better. For a person to become an integral unit, the necessity to a completeness calls for nothing lacking in the individual. Not just recomposing the whole by treating all aspects of a person's health, including physical, psychological and societal components, as totality is difficult [1]. Medicine should rather ensure returning the positive attributes that the integral person could have (table 1). Body-integrality should be redefined to require that every time a new piece of component is added to the system, it have to be properly optimized within the entire system so as not to end up with energy wasting and operational inefficiencies. Positivity is thus ensured.

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	Holistic approach	Integral Approach
Basis	Whole person. Multifaceted.	Succinctly and saliently fitted and targeted
Approach	Full coverage of "listable" problems of the whole person	The complex solved at a key impact point
Operational focus	Macro - physical, psychological and social aspects Micro - genetic, biochemical, cellular, structural	Find critical line of approach, cracking the problems, with nothing lacking – use insight-directing tools
Management	Multidisciplinary - correct EVERY deviation from the balanced state	Addressing the KEY imbalance
Limitations	Expensive to be comprehensive. Some "problems" may be missed out and not handled	Difficult - required insight enhanced by insight tools
Validation	Systemic Biology	Abduction and Simulation
Objective	Satisfy patient needs	Restore positivity

Table 1: Personalized complexity treatment - Integral Medicine vs Holistic Medicine.

These words of "integral" and "integrality" would thus have a stricter definition. The way this integrality-positivity principle be brought out is important and can be understood, first by knowing how integrality is built up in an individual being so that therapeutic approaches could be sought and aimed for. Interestingly, an integral person may still have wholistic gaps yet not filled but the person remains positive as a whole. Off this concept might skew elaborations from the best clinical approach.

The Body Setup and Adaptive Functioning As a Whole

The body functional-anatomically will be adapting to the environment. From development and in everyday life, the body core matches with its surrounding by innate mechanisms. Built-in mechanisms support it to stay fit and snug.

The body functional-anatomical framework - layering from mantle to core

The body must first be understood comprehensively for a functional-anatomical whole; an overview helpful [2]. The core of the body sustains itself through cellular processes, operational organ systems, and self-vitality subsystems to suit survival [2]. It is bound off outside by the mantle as the body is subjected to physical and biochemical changes in the environment. This body borderzone stabilizes, acts, reacts, and shape overall outer feeling and reaction. Through traction, immune surveillance, border sensing, heat transfer, and microbiome sampling, a correspondence mechanism is set up between the body and the outside world, reaching the inner supportive and regulatory strata. The fascia sag of the whole body, important in the body frame, forms a rich connective tissue in the transfer of this correspondence, also aligning itself with bone trabecular remodeling lines and body form changes.

Thus in parallel to the medical framework of organ systems, the whole body can be described in layers [2], emphasizing a view

through the manifest down to the nano-microscopic details as a continuum without breaks. Four layers are described with the mantle as borderzone, the under-layer interface as interactional zone, the core with organ systems, and the deep biostratum of resources, all subjected to constant changes. Adaptive interactive signaling and homeostatic regulation is ongoing between the body core functioning in five vitality subsystems and its borderzone. Body is healthy when a good quality body interface would bring together the body connected in dynamics up-down throughout the body while layered neatly and orderly for function. The process of adaptive changes is a life process, starting from very early genetic and epigenetic influences, embryonic and developmental changes, and throughout adulthood. Adaptivity and resultant strength, capability and capacity of a person depend on these processes.

Viewed in a general perspective, the mantle, organs and cells constitute the body form installed in position. The five subsystems as vitality systems of the integral whole [2] depict the body state adapting to the body-environment changes. The way the individual actuates and asserts is his body disposition. The body form, the body state, and the body disposition could comprehensively describe the whole person for how he lives in health and disease. This paper describes how these can lead to a prime medical understanding. More will be described in another paper.

Core and match

Body core and matching processes: The body at birth in a person without gross prenatal insults and genetic defects should produce a normal person and an integral body is subsumed. The body grows and develops in momentum while well preserving its innate characteristics. To start with, matching of the core to surrounding is first demonstrated by the innate motor setup with a variety of righting abilities, even starting with primitive reflexes, and by the motor-visual coordinative setup [3]. Righty as a similitude of mighty, "rightiness" achieved would allow righty responses in a direction suited to the individual's center of balance. Motor setups, whole brain processes and learning functions are by no means separated and their processes suited to the individual balance as well as core activities. The body is set in a position right for it to live so that the individual maintains integrality of the entirety of the individual. Deviations tend to be corrected by self-regulating mechanisms.

Later, these self-regulatory integrality maintenance mechanisms are felt hidden during maturation as these become such routines with newer behavioral controls developed. Even so, a stabilized positional stance in autonomy, as a habitual poise for readiness to everyday movements, is composed during repetitive patterning after righty motor positioning for many living moments and situations [3]. Consolidated in readiness with this poise contingent for common recurrent needs, the body minimizes wastage for meeting new situational needs. Such anticipatory and reactive mechanisms optimize for and enhance effectiveness and efficiency as energetic cost for a task would be lowered after adaptation with the task [4,5] and even when given various loads for the same movements [6]. When mature, vision and proprioception work together as a coordination-corrective operating system for getting good grasp of targets, optimizing vision and guiding movements [7,8] and sharpening neural orientation tuning [9,10]. A good grasp of the surrounding is thus enabled with these motor setups and the eye-hand matching system, achieving coordination-corrective operations and optimizing movements and actions in life.

Experience early in life would form relational functioning, starting with an attachment system [11]. Matching capabilities are remodeled across development [12]. Consciously or subconsciously self-centered, the individual coordinates operations interactively for efficacy. From muscle movements, senses and brain, matching spans school days at play and learning, and everyday actions growing up, even with peers and partners throughout life. As one grows up, matching may involve internalizing and externalizing, reciprocity and returns for expression, directing expectations and anticipations as well as reality confrontation and interaction, so that the whole person functions coherently.

The body functions may be singly or collectively deflected by task requirements (Figure 1). Over a period of time, with development or with adaptation to challenges and demands, the body and whole body functions would change significantly. Overt events or tasks may also overthrow the dynamics. When snug, the deflected body and the internal processes of daily life could be set back to the balanced idling state at rest as well as returned to their primary righty positions by restorative mechanisms such as sleep after all activities and demands cease [3].

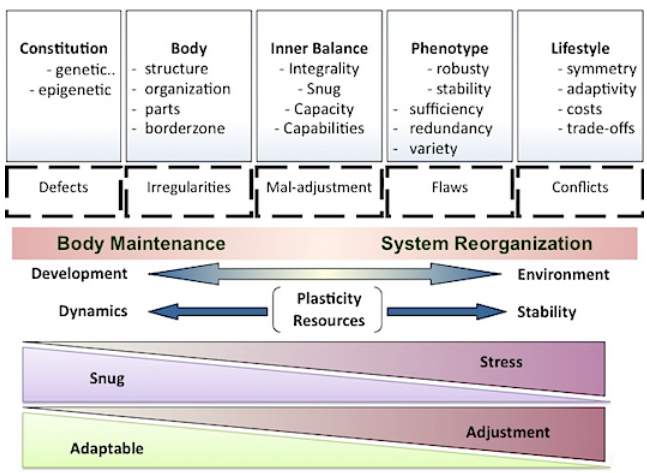

Figure 1: Core-to-Match re-organizational progression to deviations.

Matching right up to core needs, fit and snug: The complex body that developed with intricate, dynamic functions can be related to its matching processes to surrounding. An adaptive stance is a prerequisite for fitting to fit as the person strives to live by acting, reflecting, learning, and actuating through his strengths and weaknesses, making choices. In a fuller perspective, the body is striving to meet many objectives and would be more or less tuned to the environment with internal and external processes, which varies to a degree for how the individual acts fit to the environment and stays snug to the core itself. (Figure 2).

Being Fit and Snug

Fitting to fit: Emerging fitness is attributed first to genetic endowment. Then epigenetic regulations influence the setup. This body constitution would develop and be further acting and reacting to match or dissociate with surrounding elements.

Fitness is assumed being bestowed from genetic endowment through concepts of selection in evolutionary biology, sometimes calling for competition among 'selfish genes' and contemporary theories of adaptation [13]. Adaptation has been attributed to movement

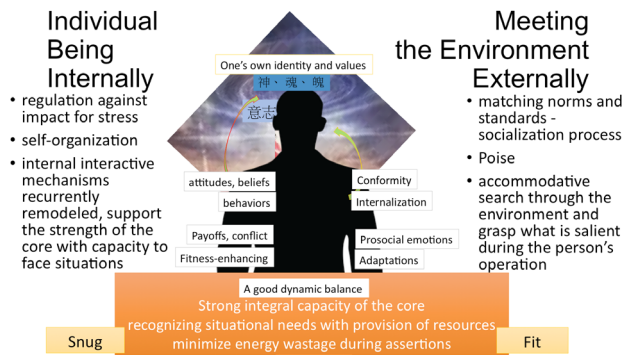

Figure 2: The prerequisites of an individual striving to meet life objectives.

of a population towards a phenotype that best fits the present environment so as to produce a precise match between an organism and the world in which it lives [14]. Notably, adaptation is not natural selection. Many important questions remain unanswered in the genetic basis of adaptation [15,16].

Regarding evolutionary fitness, a lot of evidence from animal studies [17] has shown that the individual behavior will be different depending on the core state of the body, with relations to evolutionary fitness [18]. This has been currently transposed to humans [19,20]. The body state has been referred to the individual's energy reserves, condition or vigor, physiology including metabolic rates, hormone levels, or immune state, even up to some of the body assets in morphology, or color and complexion, age and reproductive value, or size. As these add up with consistent features in its informational state, skill set, social rank or role, coupled with characteristics of its social environment, it would, in combination with adaptive state-dependent behavior, explain consistent differences among individuals in behavior. Even animal personality could emerge as an adaptation to individual differences in core state variables [21-23].

Striving to fit, assertively: In short, the individual's structure and organization would control mechanisms for autonomous adaptive behaviors in dynamic physical-social environments. Fitness mechanisms tend to strive for the best, and for physical fitness, the way to handle everyday challenges. The body tends to maintain an adapting or positioned suspense with a forwarding stance. Good performance patterns would perpetuate speed and power to keep it on going in spite of uncertainties and constraints while anchoring for consistency onto certainties. Unmet needs could be handled by constant remodeling since infancy resulting in stabilized patterns [24].

With these body assets built up from genetic, epigenetic and developmental endowment, the individual meets his physical, biological and social environment. While modern days describe these for a person in terms of needs and strengths, challenges and stresses, most of the processes involve adaptive control of host neuroendocrine pathways [25,26]. Hormones particularly coordinated with nervous activity can serve as an important mediator of feedbacks between intrinsic or extrinsic state variables and behavior. According to the pressures from internal and external elements, the body is to be molded in efficiency and effectiveness over itself and the environment, stable and acceding to learning or changes, being enabled by inherent mechanisms [27]. Various homeostatic regulations as heterostasis, allostasis and hormesis describe the body being induced to adaptive mechanisms through stimulation of dormant tissue reactions [28], preparing for anticipating needs typically involving cephalic control to acute stressors, chronic stressors, and anticipatory stressors [29], accommodating to toxic agents in a broader understanding of biphasic dose–responses wherefrom repair or restoration of damage could produce a stronger organism [30] and with adaptive homeostasis transiently expanding or contracting the homeostatic range in response to exposure to sub-toxic, non-damaging, signaling molecules or events [31]. When inadequate to overcome, stress evokes a variably wide range of physiological responses as general adaptation, and these responses can be undue, inappropriate or exaggerated response to the situation. Notably, some can face the storm but some cannot even stand a wind. In striving, challenges are positively appreciated while in contrast, stresses when burdensome are negatively reacted upon.

Snugging to fit, reoptimizing: Contrarily, maybe surprisingly to some, physical fitness to overcome stress-related disease is rendered by blunting/optimizing effects on hormonal stress responsive systems in the hypothalamic–pituitary–adrenal axis and the sympathetic nervous system [32]. Much more can be said. Are these common mechanisms not trying to let it strive?

Fitness has been a hot topic to study but now not so favored for dissertations; maybe frustrated. Fitness has somehow become too often a handy concept since Herbert Spencer spelt out "survival of the fittest" after Darwin as it lumps into one idea for everything that matters to the ability to fit, leading to a lot of fitness theories, biological or social. Fitness as viewed prospectively, the biochemical, hormonal or cephalic projective body responses undertaking stress are trying to reestablish homeostasis even associated with new body changes including constitutions, psychotypes and adaptive structural types (acclimatization of Northerners is an example). For behaving well adaptively, the systems of organisms do not require calculating optimal behavior functions; simply they work by using successful algorithms for saving operational energy where possible [33].

Fitness as viewed retrospectively, biochemical, hormonal or cephalic projective undertakings of body responses as preparation to stress restore the body stability and energy reserves. Snug is a significant concept too often ignored. This starter observation, and using coupled Snug and Fit concepts together have over two decades enlightened the author to gain much unexplored clinical grounds. In essence, the body has to have a stabilized core to support the individual over domains and terrains in conserving energy for forward thrust and stability. Simply, individuals cannot go too much over just to fit. If a person stays on executive assertion for too long, many cognitive functions are impaired, ranging from focusing with attention and short-term memory to verbal fluency, inhibitory control, managing emotions, and humor appreciation and having difficulty telling jokes. Effort is the activities when an individual needs to exert beyond basic levels of functioning or attempt alternative strategies even recruiting other resources to maintain performance. Mechanisms to functioning in Snug are needed to allow the body to return to its former neutral state before any more undue demands, thus helping returning necessary resources. Energy efficiency is an important principle for optimizing physiological functions within organisms, both simple and complex, including mammals [34]. A person going on a path variably under shadows and strong sunlight will mold himself to walk probably subconsciously under more shadows even on a line deviating and not straight [35]. Self-organizational internal interactive mechanisms would have been recurrently remodeled from infancy to adulthood. The more stable the core, the less it be disturbed.

Fit to survive, snug to be alive. Both affect the survival quality. Sleep loss appears to affect the capacity for performance and access to energetic resources [36]. For instance, sleep duration of sleep is associated with global cognitive decline [37]. A form of restitution needed. Biological and physiological synchrony between the individual and environment in interactions plays an important role in the maturation of core and matching responses in terms of body habits and brain circuits that support social engagement, and contributes to cognitive, social, and emotional growth in childhood and adolescence [24]. The core and match capacity in interactions nurture the individual ready for social relatedness. The organism seeks mechanisms to reoptimize itself, including body state's energy, memory consolidation, and a stabilization mode worth remodeling on (Figure 3). These reserves support the core with strength and capacity to meet situations, even stresses with less traumatic confrontations. Fitter are those with more snug.

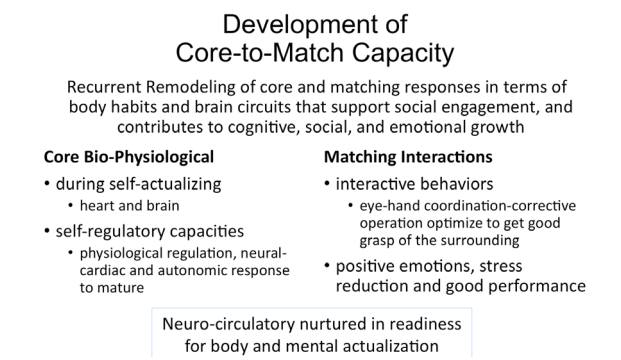

Figure 3: Gaining a capacity for stable responses through remodeling with recurrent core-to-match adaptations.

Body Preparedness towards Assertion

Assertional activities and matches to the surrounding environment by its capabilities and capacity will be a prime objective. From top down, chartedly, the different system-wide topology of individual domains is picked up and advanced or subdued by the dynamics of the human brain. From whole operational perspective, the different terrains necessitate the body rendering its capabilities and activities to get over or subjugate the course along the plans and moves. In between, the whole body fascia built from the mesoderm permeates the mantle and connective tissue up to intermuscular septa, bones, and organs. The fascial, circulatory and neurohumoral elements are woven together and contribute to shaping interactions between external and internal domains.

The infrastructure: nervous and perfusional adaptivity co-directed forward together

With these body assets, supported with resources carried along nervous and perfusional directives, all kinds of activities spring forth. Within the body of organs and cells, the whole body adaptivity depends on both the nervous system and the circulatory system being spatially and temporally coordinated and co-directed. The developmental, structural, and functional interdependence between neural and vascular elements are closely related in health and disease [38]. In the fascial connective system where circulatory and neurohumoral elements are woven together, it can be said that the living organism starts to build such a network with paths for the transportation of energy signals including Meridians [2].

Nerves and vasculature are patterned in a similar way and closely associated alongside throughout development and up to adulthood. Owing to the historical reductionist division of body into separate organs systems, nerves and blood vessels at first consideration should be independently guided. Yet nervous elements and blood vessels are peculiar for their entanglement relationship (Table 2). Neurovascular Bundles (NVB) wherewith nerves and blood vessels run closely parallel and branch in a correlated fashion are widespread. Regardless of the need for perfusing neural tissues with vasa nervorum, the neurovascular couple in fact develop together early. On the same token, the Neurovascular Unit (NVU) concept centrally in the brain [39] emphasized the symbiotic relationship between brain cells and cerebral blood vessels.

Congruence	Examples	Development	Associated Connective tissue
At Periphery	Neurovascular bundles	Nerve-derived signals direct arterial differentiation and angiogenic patterns	Fibroblasts and their derivatives up to the basic cellular adhesions between endothelial cells as adherens junctions (composed of vascular endothelial cadherin and catenins)
Centrally	Neurovascular unit	Neural tube-derived signals regulate sprouting capillaries during angiogenesis	Glial cells contribute; Astrocyte–endothelial interaction regulating cerebral blood flow

Table 2: Nervous elements and blood vessels in peculiar entanglement relationship.

Nervous and vascular elements develop along each other since early embryo: The essence of body adaptation is to prepare the body core incorporated with elements and assets both spatially and temporally ready in adapting to the variable demands of the surrounding while having controlled stability to ensure proper function. Nervous activity and perfusion go together. For perfusion, microvascular density is adapted to tissue oxygen and metabolic needs. In development tissues and organs, appropriate vascularization rate is ensured as being adapted to specific needs in nutrients and oxygen [40].

In the periphery, the congruence of blood vessels and nerve branching patterns is established through nerve-derived signals [41]. At developing periphery, nerve-derived signals direct arterial differentiation and regulate patterns of angiogenic remodeling resulting in nerve-artery alignment [41]. In the developing central nervous system, a similar phenomenon occurs as neural tube-derived signals regulate sprouting capillaries during angiogenesis when blood brain barrier characteristics in the neural tube vasculature are induced to form. The neural tube was identified as the source tissue for positive blood vessel patterning signals [42].

During development, the leading tip cells in angiogenesis and the axonal growth cones share many features [43]. At early embryonic stages, growth cones for neurons and for vasculature both project onwards by extending filopodia. They share expression of receptors (Nrps and Eph) [44]. Extending filopodia dissolve confronted obstructions by secreting proteases [45,46]. Developing together in parallel, they ramify the same mesenchymal environment following similar differential cues from the connective tissue environment as they branch progressively in fine tree-like network to reach every organ and the periphery.

Pericytes appear in the brain during early vascular development [47]. Pericytes are multi-functional mural cells of the microcirculation that wrap around the endothelial cells in every vascularized tissue in the body. During development, certain arteries became innervated and form a pressurized circulation to allow proper control of the distribution of flow to vital organs [48]. The embryonic neural crest contributes directly to the formation of both autonomic nerves, and smooth muscle cells and pericytes over the large thoracic arteries and forebrain vessels [49,50].

Pericytes generate early microvascular structures before recruiting endothelial cells to line these vessels [51]. Even in the adult, endothelial cells still show a high level of proliferation and significant growth potential. They are activated particularly in regenerative or pathological processes [52,53].

Importance of connective tissue on nervous and vascular coupling: As the multidimensional space from deeper organs and tissues up to the body mantle is filled by fascial, circulatory and neurohumoral elements, these elements contribute to shaping interactions between external and internal domains. This mesodermal space contains fibroblasts, which when migrating to tissues with different tension would change into different cellular phenotypes accordingly [54].

In the central nervous system, the Neurovascular Unit (NVU) is composed of neuronal, glial, and vascular cells along with extracellular matrix. Here, bidirectional cell-cell and/or cell-extracellular matrix interactions including neuronal stimulation of glial cells would promote release of vasoactive arachidonic acid metabolites onto blood vessels, release of potassium from astrocyte endfeet onto vessels, and production and release of nitric oxide and adenosine from neurons and glia, as these together would mold the neurovascular coupling mechanisms [55,56]. In the brain, astrocyte–endothelial interaction is critical in regulating cerebral blood flow [57].

In the somatic body, developing nervous and vascular elements together following similar differential cues from the connective tissue environment ramify the body whereby they form Neurovascular Bundles (NVB) that penetrate as one through many clammed and tunneled structures (variably through the spinoglenoid notch down to the scapula, though the neural foramina of the vertebrae, in the upper limbs from the brachial plexus down through the carpal tunnel, from top to bottom to the lower limb through the femoral canal and down-most through the tarsal tunnel, to cite just a few examples). As their highly branched, tree-like network reach the periphery, the deep bundles pierce the deep fascia out to become cutaneous. In superficial neurovascular bundles, capillaries instead of arteries go along with nerves.

In the network of fascial, circulatory and neurohumoral elements, nervous elements supports and helps the development of blood vessels to carry necessary nutrients, oxygen, proteins to all organs via the interstitial space, as well as immunity cells that migrate out from the blood vessels. Fibroblasts in the connective tissue could generate mesenchymal stem cells [58,59], which even for their small numbers in adult tissues, contribute to tissue cell turnover and also respond to tissue damage [60,61]. Adult stem cells require physical interactions with the extracellular matrix to maintain their potency, and physical cues through the fascia regulate stem cell fate and function during embryonic development and in adult tissues [62]. Understanding from the emerging field of mechanobiology, physical forces and changes in the mechanical properties of cells and tissues would contribute to development, cell differentiation, physiology, and disease. Notably, in all tissues, the basic cellular adhesions between endothelial cells comprise adherens junctions supporting the integrity of the vascular tube and regulating tensile forces.

It can well be said that the connecting tissues are involved with neural and vascular fronts. Pushing forward, information and perfusional resources go hand in hand, a body principle to be reemphasized.

The snug redistribution: overly forward directives need perfusional reflow for a snug

Neural activities need perfusion: Peripheral nerves are vascularized by a dense network of blood vessels to guarantee their complex function. Vasculature to meet the nerves' metabolic demands is guarded for by nerve-artery alignment in the peripheral nervous system [41].

For the brain, oxygen and nutrients are maintained in satisfactory levels through vasodilation and vasoconstriction. The NVU, through interaction between neurones, astrocytes, endothelial cells of Blood–Brain Barrier (BBB), myocytes, pericytes and extracellular matrix components in intimate anatomical and chemical relationship, detect the needs of neuronal supply and trigger for demands the necessary responses by vasodilation or vasoconstriction [63], regulating local cerebral blood flow [64] so that local blood supply is matched to neuronal demand [65].

Perfusional activites carries information: The Vascular Endothelial Growth Factor (VEGF) is a prototypic example of the cross talk between nerves and vessels. VEGF, originally described as an angiogenic factor, is well established to play a crucial role in the nervous system, during development, health, and disease as well. Through secretion of factors including VEGF, pericytes generate microvascular structures, later lined by endothelial cells [48]. Neurogenesis and angiogenesis are closely intertwined, with endothelial cells in vascular niches releasing cues for neural stem cells [66,67]. Another close interaction between neuronal and vascular cells is the innervation of flow resistance arteries by autonomic nerves [68,49].

The interplay of the extracellular matrix and mechanical properties of cells to maintain physical cues and regulate tensile forces through their basic cellular adhesions with endothelial cells contribute to development, and physiology of perfusional branching of the vasculature. In the wall of blood vessels are pericytes, adventitial fibroblasts and mesenchymal stromal cells [69]. In capillaries, pericytes is a discrete subset of mesenchymal cells. In larger blood vessels, the adventitia, which is connective tissue, contains a mesenchymal subset termed adventitial fibroblasts [70]. Perfusional activites carries information resources [24].

Dry assertion cannot last long: During activity, blood flow needs to reach the local tissues at the right time and place and in the right amount, especially in the brain which cannot stand interruption of cerebral blood supply for a few minutes.

In general the blood supply of nervous tissues is well guarded for. The calculative central brain with its massive capabilities over the body certainly can direct any assertive action it behooves. As the functional role of the nervous system is much more complex, its new connections and selectivity would be much higher than that in the vasculature [71,72], the brain can only function up to body capacity, and the asserted actions cannot exceed the capacity of the body for long.

Dry assertiveness or endeavors by simply willing and pressing forward is not vigor, cannot last long and toils the brain, and overly assertive use of supportive resources for diversifying endeavors creates gaps. Notably an observation from the classic in Chinese medicine, Huangdi Neijing, which contains well-described astute observations apart from being a theoretical treatise, described "the brain working in dry worry for a problem first days" is covered by the body reserves. "After some days", the brain overused would be compensated by increase in heart perfusion, with "the Zang Heart heated up. The face over the area is hyperperfused" [24,73]. Interesting, understood recently, cerebral hyperaemia is one of the fundamental mechanisms for the central nervous system homeostasis [63].

Redistribution for snug for the whole body during and after assertion: At tissue level, in the network of fascial, circulatory and neurohumoral elements, the spatially and temporally co-directed nerves and vasculature are coupled in development and distribution by differential environmental cues as patterning signals. These biological substrates secure the individual's forward thrust with perfusional support, also having innate vascular and connective cells with proliferation and significant growth potential at the forwarding front ready for tissue repair and regeneration when required. The structure is laid responsive to mechanical cues from the fascia on the nerve-vascular entanglement in governing appropriate microvascular density towards needs so that nervous activity and perfusion go together. Such maintenance of resources to vital tissues in satisfactory levels through vasodilation and vasoconstriction also allow nervous activities are well protected by perfusion whereas dry assertion requires reflow.

At regional levels, autoregulation is a well-known phenomenon. Autoregulation works to maintain constant blood flow to a region over a wide range of perfusion pressures. Renal autoregulation is well studied for the mechanisms [74], which integrates intrinsic intrarenal mechanisms that stabilize renal blood flow and glomerular filtration rate in spite of changes in renal perfusion pressure over a defined range. Autoregulation is significant so that glomerular filtration and solute clearance which depends on blood flow through the kidney remain stable over a wide range of systemic conditions.

At whole body level, there is the characteristic recruitment of the hepatic splanchnic circulation during assertive activities. Energy and perfusion are coupled to support action. Beyond reserves for basic sufficiency, assertive actions as enhanced activity require extra blood flow for that part of the body. This has to be recruited from other parts, with trade-offs. During assertive action, skeletal muscle blood flow may peak with many fold increase from that at rest and cannot be met by increased cardiac output and stored body fuels, Circulatory recruitment are drawn from other body parts including the perfusion bed of the gut, the muscles and the brain, as these may cause tradeoffs in those areas, to be restored at night. The large hepatic capacitance sinusoids and the even larger capacitance splanchnic system may be recruited when stressed [75,76]. This circulatory redistribution will go into restorative processes afterwards, particularly during sleep time when energy consumption is minimal.

Besides, there are patternable metabolism and perfusion with body pacemakers according to patterned daily activities. This is similar to auto-regulatory processes driven by the hepato-splanchnic circulation and liver patterned dynamics [76].

Snug is not a simple fallback, and different body areas need to adjust between themselves till a part can reach autonomous functioning, not recruiting from outside the local functionalities (Figure 4).

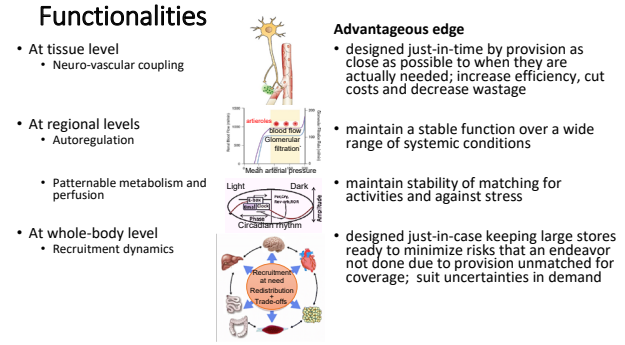

Figure 4: Body prepared at all levels to minimize costs and risks by co-directed nervous and perfusional adaptivity.

Resources are plenty, but local specific needs may not be covered adequately if overtly drained. The body serves all internal and external actions while acting to minimize costs and risks, All would be maintaining due return to the former basal state before subject to any other different assertive demands again. Snug is not simply restitution. When the body is functioning in unperturbed basic neutral rhythm with no extraneous activity and no wildly elevated demanding activities, and in body snug with harmonious energy process redistribution and clearer discretion, matters are carried out well and through.

It may be seen that nervous directives and perfusion that go hand in hand are needed for new changes over the existing balanced life unit. When these processes are patterned well, activities in health will be snug in good timing. In congruence and snug, one can work well and respond readily to diversified operations for activities. Chinese medicine describes an analogous concept with Qi (Energy process) and Xue (Blood) viewing that energy processes and blood perfusion is prime for the body. These provide for both robust and succinct mechanisms to act and react to variations and disturbances from their surroundings, and allow the individual to go across rough terrains and variable grounds to complete various tasks.

Dynamic Regulation as A Whole, Keeping Positive

Functioning as a whole: The physical and reciprocal connection between the mind and the body is genuine [77]. While connections by physiological pathways and organic structural elements are definable, the interdependent brain-body as a whole should be viewed in a framework wherewith the constitutive coupling of the brain and the body functions in relation to the environment.

Successful survival in the real world actually involves dealing with fluctuating levels of both internal and environmental perturbations. In the front end, the individual is facing situations with core and match responses by motive and emotive behaviors, while whole body is under physical-biological constraints with current climate, and environmental exposures. With the mantle, organs and cells installed in position as the body form, the five vitality subsystems adapt to the body-environment changes and tune the whole core body state [2]. As the whole body builds up in physique acquiring resources, the body is set in disposition to furnish contingency surpluses through option generations and pattern development. Well-patterned dynamics tend to further provide more capacity for adaptiveness [2]. The calculative brain, with various assets, grasps the surrounding to go forth to

put out context-dependent user behaviors or other socially dependent learning and individual behaviors.

Inside, the body core continually keeps matching to the surrounding, dealing with fluctuating levels of variables for consistency. In the basal homeostatic range, variables and changes are accommodated in the 'normal' homeostatic range of the body. Over this range, the body capacity with resourceful adaptivity provides for certain resilience when change would not affect the core momentum. Multiple protective systems can demonstrate great transient plasticity in response. Functionalities at all body levels cater for nervous and perfusion demands. When stressed further, the body may be tuned up more levels from the stable core, starting with transient and reversible adjustments. Regulatory heterostasis, allostasis, hormesis and adaptive homeostasis are the reactive or anticipatory body-mind mechanisms in case. Positive accommodation allows alterations until adaptive mechanisms yield beyond capacity range. Thus, when the acting body state is in positive snug, challenges are appreciated whereas negative burdensome demands become real stresses.

More snug, more capacity to fit: The core state of the body would produce state-dependent behaviors [78]. Being state-dependent, optimal behavior could be put out when the state is more stably controlled. Thus with restitution by good sleep, the output of the brain neurohumoral system would be different with high levels of attention and cognitive performance in the day [79]. But to be snug, the many tuned-up levels of the core must be tuned back to snug levels.

Over the years, much has been focusing on how the nervous system coordinates many behavioral and physiological responses to stress, often through the interaction of hormones [80]. On the other hand, snug is a body functioning poised at the neutral basal body state, a restitution to the autonomous steady state that maintains itself before having been subject to any strains and stresses. This snug complex as a minimum energy-cost functioning may be viewed analogous to a ball at the valley in energy terms. There can be alternative positional states as the body states may change over the many trough of lowest energy-cost. Outside these troughs, energy-cost increases up in the many paths and positions up the valley system. (Snug is the lowest energy state, i.e. most efficient state, of possible steady states of a structure or neuro-perfusion with its feedback system). More stability, more reserves.

Loads are always there. The more reserve for homeostatic stability, the smoother the facilitation over fundamentally ever-changing processes. At critical points, loads turn into burden. But the capacity with more snug means more buffers allowed being adaptive with less yielding to new changes. There may still be gaps yet not filled, but the integral person remains positive as a whole. Beyond the range, the snug quota is reduced and the allowance for external drive for assertion is less. Patients can becomes so decompensated, tired and energy insufficient that they cannot even exercise though thus advised, just because any movement means more energy-inefficiency and tiredness. Squandering energy resources and resource waste degrade well-being.

Snug states can vary dynamically. At restitution, the body-environmental complexity fall back to individual body congruence in body layers functional-anatomically, settling and freeing from distortion and extraneous loads. Functioning coherently in another different environment for long enough time, self-regulatory integrality maintenance mechanisms changed the body state. Restituted, gaps reduced, and the system would reset for adaptiveness by aligned patterns. At each steady state, a new snug body state, and a different allowance pattern for redistribution of energy and resources.

Putting it Together

A study found broad intelligence gains comparatively in multiple human populations over decades [81]. In another token, extended longevity and cognitive preservation in humans is observed when genes that mediate excitatory neurotransmission are down-regulated [82]. Not simply assertion, not simply rest. Maybe countries getting more proficient have more reserves and capacity in individuals to confront the environment.

An individual as a living system autonomously generate intrinsic constraints on his behavior depending on the core body state. Temperature is one most significant environmental influence. Being endodermic, humans have physiological implications of temperature deviations [83,84]. Externally in the environment, heat changes interact with the circulatory system and body perfusion homeostasis. Under a range of metabolic rate constraints, performance for a lowest cost efficacy could to a certain extent be supported by a good co-directed neuro-vascular disposition. This exemplifies only a part of the many similar body-tuning scenarios. The nervous system directly influences blood vessel patterning resulting in neuro-vascular congruence that is maintained throughout development and in the adult [41].

Living in a system in a dynamic relationship with their environment, individuals have their own cognitive networks and body functionality [85]. Besides neuro-muscular reflexes, primitive reflexes, value systems, and the many other mechanisms, the body state is a robust stabilizing mechanism to react to any expected and unexpected forces from their surroundings. With an adaptive perspective, positive feedbacks between state and behavior can co-play in producing consistent among-individual covariance between state and behavior [78].

The body state referable to the individual's energy reserves, condition or vigor, physiology including metabolic rates, hormone levels, immune state, and some of the body assets collectively can be utilized by the person during assertion and to be reset snug at neutral position. A fit body state fitting to surrounding, and a snug body state congenial to the core are both positive outcomes (Figure 5). On the other hand, living conditions often could weigh down an individual to one side and the person becomes negatively functioning, depressed in mood or strength.

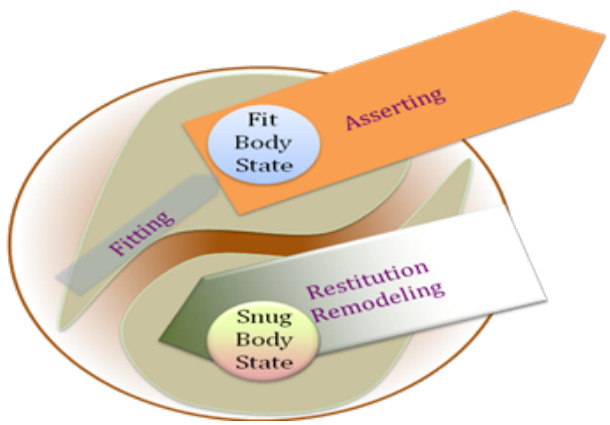

Figure 5: Balancing assertion and restitution-remodeling over fit and snug body states.

Keeping snug, staying positive: Though living systems operate under far-from-equilibrium conditions, a balance would best be mutually and bilaterally equalizing (Figure 6). Evolving from infancy interactive behaviors [86], repeated remodeling between the individual's core and match with the environment tunes maturation [3]. Adaptive components allow systems to change and evolve over time in response to feedbacks and changes in the system context. The mature person would be often re-attuning emotional communication and signals to establish synchronous interaction [87] as reciprocity consists of mutual beneficial exchanges [88,89]. A lot could be discussed how the body can function as a whole with the various anatomico-functional parts supporting endeavors with positivity in another paper.

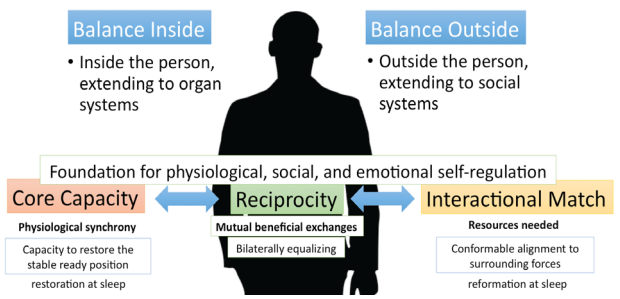

Figure 6: Balancing mutually and bilaterally between the individual core-match and the environment.

In confronting stress from the internal and external environment, the heart, brain, and body together have to work in concert in response, having emotional feelings tied with cognitive and physiological changes [24]. With the cycle from anticipating, actuating, adapting, to remodeling, and reprocessing again, the brain and body are coupled to tune to self-mastery. An imbalance between excitation and inhibition might degrade neural and somatic function [82]. Remodeling during interactions tend to reorient the state of the systems to attain being fit and snug righty for the individual with advantages in living. Understanding of this body state, clinically lacking currently, is important for medicine as a whole.

While remodeling can be more when the individual is young and being more plastic, a balance when older as mutually and bilaterally equalizing the individual's core and match with the environment may not be easily achieved. Righty may not be right when grown up, especially when early interactions did not poise the body adaptively. Principles between the fit body state and snug body state are useful to establish an appropriate poise that facilitate rightiness, maybe even leading to mightiness. Every time when a new component added to the system is properly optimized within the entire system so as not to end up with energy wasting and operational inefficiencies, positivity can be ensured.

Principles

Snug-Fit coupled: To be snug is the foundation of activity, and being active is such organized bodywork at play. Only by accumulating energy in an autonomous steady state can one ensure life activities buttressed. Asserting to fit the extreme would soon calm or be bore down; whereas a body overly snuggling down would need activity. A good balance with mutual transformation maintains vitality.

Self-mastery: Only by instituting right degree and right balance of the fit body state and snug body state would the body state be in good self-mastery. This bilaterally equalizing symmetry balance may involve processes inside extending to organ systems and outside the person to social systems [3], involving complementary changes in self-regulatory capacities in the autonomic system with repeated remodeling.

Adjustments: For one poised at being over-assertive for various reasons, snug-fit states should balance more for the way of *conservation*, having more regulatory processes and overt activities subdued. Poised at being over-withdrawn, snug-fit state should balance more for a better infrastructure as a way of facilitation, redistributing and regularize the order to work and rest for a proper being.

Resource efficiency: paradigm has clear and immediate impacts when applied to the body energy budget: Inefficiency occurs when fit and snug states are not balanced. Activity expansion with increasing demands, living and working in energy-inefficient styles could result in increasing core and borderzone erosion depleted of support and resource redistribution. Dry assertion has serious consequences [24].

Buildup: Developing assets as fitting to fit, and storing resources as snuggling to snug. Pushing forth during excitement, while renourishing inner tranquility at periods chosen for snug. It is a Chinese medicine belief that Qi is the commander of blood, and blood is the mother of Qi. Mutual growth of the two is needed comprehensively to replenish the body parts. Information and assertion go together, Nervous and perfusion as unison in support of activities. Make less dry assertion.

Look for warning signs of lazy words, lack of breath, breathlessness, fatigue, lack of energy as symptoms, while watching signs of the body state (by knowing how to assess). Replenish for fit or snug processes as deem necessary, redeeming what is running faulty. Understand the body state for its balance in terms of the comprehensive framework. Find a critical line of approach, cracking the problems, with nothing lacking by the use insight-intelligent diagnostic tools. Then we can consider the various modalities for recuperation, conservation, advancement for health or disease remedy. The whole functional-anatomical body is involved from the heart, brain and other systems and managed in this perspective, to be discussed in another paper.

For our brain, over-activity and out-of-control excitation is not good. Neurons are active not just generally firing off anywhere in the brain. For the body, aberrant activity or deleterious acquiry only makes the body-brain less efficient and can be harmful. For anything with attempts harder and harder, activated body or brain may eventually reach a crucial point being out off resource backup so that returns become difficult.

While investigating on the effect of down-regulation of genes related to neural excitation and synaptic function on extended longevity in humans, the author of the study concluded that "activate REST would reduce excitatory neural activity" (REST being a distinct transcriptome signature in the cerebral cortex) [82]. Simply resting is not necessary snug. Exercise as done by someone trying to cut time by walking up flights of stairs to office during hurrying for work is not real exercise. Both rest and exercise rightly in snug can benefit positively. Self-mastery instituting evolving snug-fit states rightly tunes

the functional-anatomical whole to the environment with internal and external processes for the individual fit to the environment and snug to the core, even setting the dynamics readily active and rapidly restorative to overcome situational and environmental variations and disturbances.

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