

# **DISCLAIMER**

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The information contained herein includes both psychological and non psychological interventions. The delivery of psychological services requires a medical referral whilst non psychological services do not.

Each person is an individual and has a unique psychological profile, biochemistry, developmental and social history. As such, advice will not be given over the internet and recommendations and interventions within this website cannot be taken as a substitute for a thorough medical or allied health professional assessment or diagnosis.

# Bodywork, Breathing and Movement For Sensory Integration, General Health and Wellbeing

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## INTRODUCTION

In the [sensory integration article](#) we explored the ideas of the brain's ability to classify, organise, store, recall and utilise information as providing the basis for learning. Sensory integration was therefore described as "the organisation of sensation for use" (Ayers, 1995). We also explored the idea of the brain's inherent 'plasticity'.

"The plasticity of the living matter of our nervous system is the reason we do a thing with difficulty the first time, but soon do it more and more easily and finally with sufficient practice, do it semi-mechanically or automatically. The brain is built for change and functions in the environment in which it grows. The brain of every individual is continuously shaping its own processing and performance capabilities. Our capabilities reflect not just WHAT we've learned, but also how our brain has evolved TO learn. By its very nature, the brain's self-organising process is time based" (Menzenah iSNR Conference 2001)

In order for functional integration to take place, sensory input, particularly that of motor co-ordination is necessary. Movement then, is one of the vital keys to functional learning, general health and wellbeing.

The human body was designed for movement, from the cellular level through to the level of the whole person (organism).

The brain as controller of the body is a judicious budgeter. It will dispense with what is not used in order to conserve energy for those things that it does do, that is, the things it is used to expending energy upon. The old adage "use it or lose it" is more true than most people give credit to. Without use, muscle shrinks and atrophies .....as witnessed after weeks in a plaster cast. Likewise, without use, dendritic connections between neurons in the brain are reabsorbed by the cell body allowing more energy to be expended on information pathways which are deemed essential, that is, those pathways which are more frequently used.

Posture is defined in the Concise Oxford Dictionary *as the relative position of parts, especially of the body, attitude of body or mind; condition (state of affairs etc.)*. Stedman's medical dictionary defines it *as the position of the limbs, or the carriage of the body as a whole*.

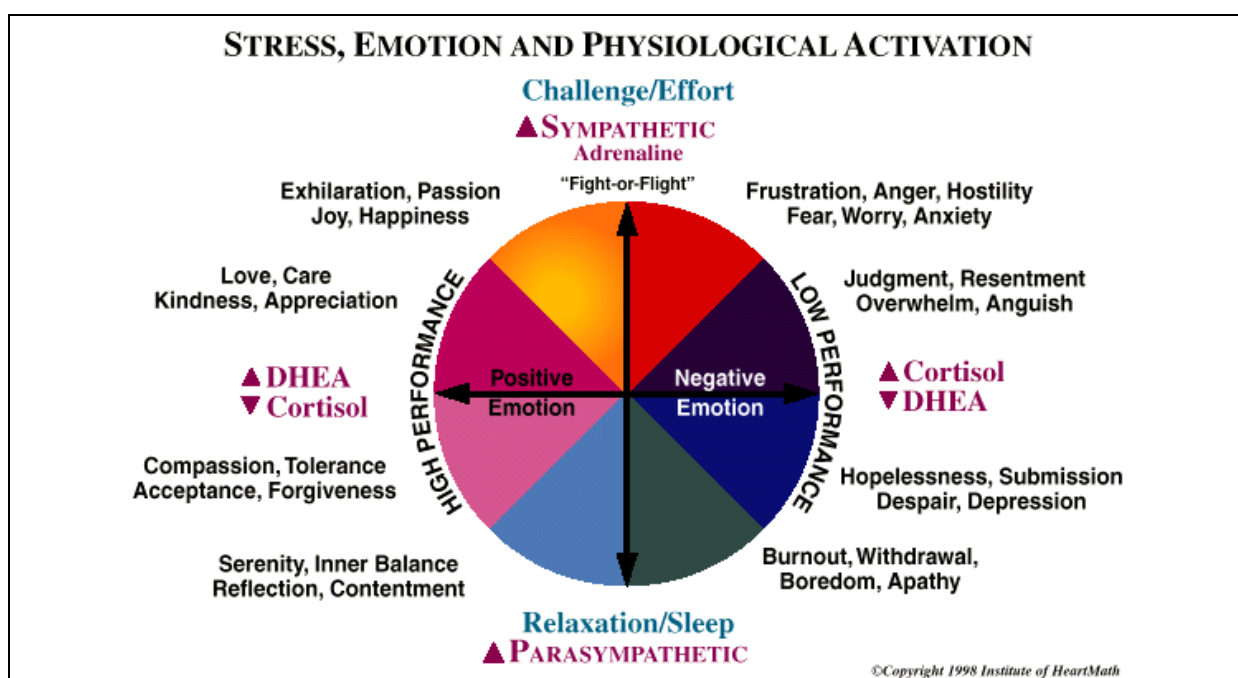
Anatomically speaking, 'posture' involves the use of all the body's muscles through minute contractions of pairs of opposing muscles, that is, muscles of flexion and extension / agonist and antagonist. It is how we are able to sit, stand upright and walk.

Feldenkrais was probably the first to report a correlation between negative emotions and flexion.

[Anxiety](#) and [Depression](#) are also common emotions, and are generally thought to be nothing more than differing responses to stress. Excessive anxiety and stress have various abnormal effects on the mind and body. There is a clear relationship between anxiety and the state of thoracic (shallow breathing) or abdominal (deep breathing) dominance and posture.

Emotional stress can also affect the immune system, raising the risk to the body from such foreign invaders as bacteria, viruses, and cancer cells. People under stress are more likely to develop infectious diseases, including those stemming from the reactivation of latent herpes viruses. It is known that several of the body's reactions to stress, including the release of cortisol, adrenaline, and other hormones, suppress the activity of the immune system.

The following diagram, from The Institute of HeartMath, elegantly illustrates how stress and different emotional states affect two key physiological control systems of the body: the ANS (autonomic nervous system) and the hypothalamic-pituitary-adrenal system (HPA axis). Dysregulation leading to hypersensitivity of the HPA axis appears to be a central defect in many neuroendocrine disorders including depression, anxiety, hormonal and behavioural disorders.<sup>11</sup>



The vertical axis shows the activation of the ANS, ranging from arousal (fight to flight) to relaxation. The ANS is a quick-acting system that affects the heart, digestive system, adrenaline secretion and many other bodily functions.<sup>8</sup> Perceptions and emotions activate the ANS and subsequently affect the balance between the sympathetic and parasympathetic branches<sup>10</sup>.

The horizontal axis represents what is called the hypothalamic-pituitary-adrenal or HPA system, which coordinates the release of several of the body's major hormones, including cortisol which is commonly referred to as the stress hormone. This axis is influenced by the quality of our emotions it is a slower-acting system than the ANS, but its effects are longer-lasting.<sup>8</sup> DHEA promotes the healthy maintenance and regeneration of the body's systems<sup>5</sup>, including activation of osteoblasts<sup>11</sup> and the inhibition of Interlukin-6 implicated in osteoporosis and others inflammatory disorders.<sup>12</sup>

The specialist field of psychoneuroimmunology studies how the interaction of psychological and physiological reactions affects the functioning of the immune system.

The field of [psychophysiology](#) is the science of the relationships between psychological and physiological processes; e.g. elements of autonomic nervous system activity activated by emotion<sup>1</sup>, and *vice versa*.

When we turn our attention to the breath and consciously alter volume (how deep we are breathing), rate (how fast we are breathing) and attentional levels (by focussing our attention on how it is we are breathing) dramatic, beneficial physiological and emotional changes can occur.

The action of the lungs, diaphragm and thorax in breathing are a primary 'pump' for circulation of the lymph and cerebro-spinal fluid. This mechanism of breath may be more important to the lymphatic system than actual body movements. In addition, the breath is of course our source of oxygen, which is the key element in the body's ability to produce energy.

**The simple act of relaxed, full (abdominal or 'yogic') breathing has the profound effect of shifting the function of the autonomic nervous system towards balance or homeostasis. The breath drives many physiological systems and by consciously controlling it we can learn to 'control' these other systems.**

Structure influences form and hence function.

This well understood arrangement is reciprocal to a greater extent than most people imagine. When we use something, that is, move something, we are in fact influencing it's structure - muscles are contracting, placing load on the bones of the skeleton and using up energy and nutrients. If they are supplied with subsequent rest and further nutrients, muscles will 'develop' by increasing bulk, enabling more load to be accomplished at less expense of energy in the future.

By the same token, the load exerted on a bone over an extended period of time will change its structure according to the nature of the load or movement. If muscle use is unbalanced in the body, or certain muscles are in a chronic state of contraction or spasm, loads are exerted unevenly on the human structure, the skeleton and particularly the joints, as they undergo subtle changes, which over time can become large changes.

General muscle tonus at rest is largely the responsibility of the brain, particularly the cerebellum and the level of arousal of the autonomic nervous system and reticular activating system via the nervous system's sensory receptors called proprioceptors and nociceptors.

A large number of these receptors are present at the golgi tendon organs contained within the muscle sheath close to the formation of the tendon which attaches the muscle and is continuous with the bone at the layer of the periosteum. Divisions in the body are in reality nonexistent, the divisions were simply created by man in order to classify and study the 'parts' to better understand them. It is time the parts were 'reunited' and understood as whole.

The simple act of walking provides a "pump" for circulation of fluids in the lymphatic system of the body.

Being mindful of balance in our home environments regarding water, pollution, recycling, and fuel resources is both necessary and of great value to our planet. **At least as important is minding the balance within ourselves.**

Taking responsibility for generating and maintaining optimum health is fundamental to human existence.

Posture is reflective of our attitude and emotional levels. It is a learned movement experience - in reality, a habit. Habits then, can also influence the structure and hence the form and function.

The human mind and body is renowned for 'habituation'..... the ability to tune out certain stimuli..... And this includes the signals generated to the brain by poor posture, muscle tension and pain. But the cycle can be broken.

Over time, through appropriate, counterbalanced, repetitive stimulus and balanced movement, new habits can replace old ones (the brain's plasticity mentioned earlier) to re-influence the structure simultaneously from within and without, thus ennobling the body to maintain balance itself.

Bodywork therapies make use of the golgi tendon organs, muscle spindles and other nervous system receptors to address body imbalances and effect the relaxation response. The relaxation response allows the body to begin it's own healing and balancing by activating the parasympathetic branch of the autonomic nervous system.

Gentle techniques such as those mentioned above work on the skin and fascia which are rich in sensitive nervous system receptors. The fact that certain parts of the body are rich in these receptors helps explain such factors as 'reflex zones' of the body and 'referred pain'. It is thus possible with these gentle techniques to influence the deeper body structures and organs to stimulate the body's own chemical factory to produce its beneficial neuropeptides and hormones to facilitate a 'whole body response'. Most people receiving such gentle bodywork report a minimum of increased general wellbeing. (Everything is connected in the body - don't forget we only separate them in order to study them better.)

Breath and movement exercise systems offer a structured way to restore balance and maintain health and vitality.

By combining posture, meditation, breathing and movement, many facets of being can be addressed. The exercises are generally gentle yet demanding enough to bring about positive changes.

[Neurodevelopmental Therapy](#) is based on the theory of replication. That is, it is possible to replicate specific stages of development through the repetition of movement patterns based upon early development giving the brain a "second chance" to pass through the stages which were omitted or incomplete. Repetition of this movement pattern establishes neural connections and has the potential to set the "neural clock" to the "correct time". The exercise regime consists of specific physical, stereotyped movements practised for approximately 5 to 10 minutes per day over a period of time.

Children's exercise systems such as Brain Gym and Edu-K, by Paul and Gail Dennison have been devised to be both fun and effective are utilised by parents and teachers with great success the world over. Computerised repetitive movement programmes such as The Interactive Metronome are also used to address sensory integration and laterality.

At **Learning Discoveries** we will develop a multi-modal, synergistic interventional strategy based upon an individualised assessment aimed at guiding you in such matters as:

- Goal Setting and Encouragement in Practicing the Techniques
- Good [Nutrition](#) and Personal Hygiene
- Breath Practice
- Body work
- [Biofeedback](#) and [Heart Rate Variability](#) (RSA breathing)
- Relaxation
- Gentle Movement
- [Interactive Metronome](#)
- Self-Applied Massage

The nutritional aspects take some relearning which is better understood by attending the cooking classes which offer sensible and delicious alternatives to processed and allergenic foods. The exercise activities are easy to learn, easy to apply, and can be practiced by all people (sick or well) daily with minimum impact on time or energy. In fact, they will actually give the individual, both time and energy. Time, because there is less fatigue and forgetfulness; and energy, because the function of body systems are enhanced and regenerated. Every minute spent applying the methods is returned to the person in a more relaxed, quality sleep and hence a need for less. Every unit of energy spent brings forth an internal ability to generate an even greater amount of energy.

**Life is for living - live it today.**

### **FURTHER READING SUGGESTIONS**

- Sensory-Motor Integration and Learning
- Anxiety
- Depression
- Biofeedback
- Neurodevelopmental Therapy - Inhibition of Primitive Reflexes
- Food Allergies, Coeliac Disease, Milk Intolerance & Nutritional Issues
- Heart Rhythms and Heart Rate Variability (HRV)
- Interactive Metronome (IM)

**For more information or to make an appointment please contact us on (02) 9637 9998 during business hours.**

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