# DELTA LIFE SKILLSsm

**EMOTIONAL FREEDOM IS IN YOUR HANDS with REBsm**

***Integral Energy Psychology***

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# PART ONE: THE RADIANT ENERGIES BALANCE (REB)sm PROTOCOL: PHILOSOPHY/RESEARCH/THEORY BACKGROUND©

**Section:**



## 18. EYE AND HEAD POSITIONS AND MOVEMENTS, AND EYE BLINKING

### 18.1. EYE AND HEAD POSITIONS AND MOVEMENTS

From its inception, the NLP (Neuro Linguistic Programming) approach has used eye positions (eye accessing cues) to determine how an individual is processing information. In a sense, the eyes were considered a "joy stick to the brain." (Brooks, 1989, ch.7; Lee, 1990, pp. 93-97; and Lewis and Pucelik, 1982, ch 4). In addition, the One Brain system (Stokes and Whiteside, 1984/1987, 1986) attributes specific broad emotions or states of being to specific eye positions. The research being done by Don Elium's Integrated States research group added head positions as another indicator ("joy stick") for assessing what they refer to as neuro-energetic dissociated aspects of the person/system. With 9 each of eye and head positions, there are a total possible 81 combinations (9x9).

From Kundalini Yogic tradition there is an Pranayam meditation technique, described as the ultimate by Shannahoff-Khalsa. It involves a sitting posture (asana), hand position (mudra), and breathing pattern. "The eyes are open and focused at the tip of the nose -- the end that you cannot see. This eye posture is also called Ajna Band which means mind lock and one effect of this eye posture is to stabilize the frontal lobes... Focusing the eyes in this way pressurizes the optic nerve and helps to stabilize thought processes. It is a common element with meditation techniques that are used to tranquilize the mind." (Shannahoff-Khalsa, 2001/2002, pp. 99-100)

Furman (Furman and Gallo, 2000, pp. 239-251) has summarized how eye and head movements are related to the brain functioning and information processing. The following discussion refers to a normally right handed person.

"The eyes, the only part of the brain visible to the outside world, are the windows to the brain and its activity... [Furman's proposal is to track] the correlation between... eye movements and the localized brain activation that subserves them. It is in studying this localized brain activation that clues are revealed as to what areas of the brain are being used." (Furman and Gallo, pp. 239-240).

The question is "What causes our eyes to move when we think? Our eye movements are part of a functional synergy; where our eyes move, our head follows. Therefore, eye movements by themselves only tell part of the story of internal cognitive functioning. We must also understand what happens physiologically in our brain when our head moves. The coordination of eye, head, and hand movement is under the control of the *superior colliculus*, an area of the brain stem. This structure possess a spatial map of visual, auditory, kinesthetic (somatosensory), and motor activity so that all the senses can be coordinated together in space... This and other related brain functions are... responsible for the reconstruction of the external world as an internal representation. It allows us to reproduce that world in an accurate, body-centered, spatial representation... [O]ur eye movements both help activate the correct cortical area via the vestibular [balance] system as well as maintain spatial location of the representation via the visuoparietal-prefrontal cortices... [E]ye movement activates the vestibular system to move the head in certain optimum positions so that increased blood flow and oxygen can be maintained to the part of the brain being activated. This means that when one looks up in order to visualize, optimum blood flow increases in the visual cortex toward the back of the head due to gravity... Gravity is a source of mechanical disequilibrium needed for pattern formation... and it creates a sustained asymmetrical distribution of matter and energy in the brain, which is necessary for the replication of previously incorporated patterns..." (Furman and Gallo, p. 241)

"Neurophysiologically, it is nearly impossible to internally replicate certain [sensory] mode-dependent information without the appropriate eye and head movement... much of this movement is controlled via the brain stem. [E]ye positions indicate initial activation, maintenance, and transmission of an image... [W]hen the person holds or maintains that image in mind, [they] can move (transmit) it to virtually any part of [their] visual field, paradoxically over-lapping with auditory and kinesthetic [eye] cues... Therefore, upon activation... the eyes move up and... the head moves back to allow gravity-assisted regional cerebral blood flow to increase to the visual cortex. This... temporarily boosts the energy level of the visual neural networks needed to assemble the image (replication). Once the image is assembled, it can be moved (transmitted) to the prefrontal cortex... and projected to almost any area in the visual field. The nerve cells that hold (encode) this image are the *pyramidal cells*... any of the pyramidal cells in this area can be selected by the brain to represent this image. This means that an image initially generated in the upper portion of the visual field can be expanded or contracted and moved to virtually any location... Without this flexibility, thinking as we know it would not be possible." (Furman and Gallo, p. 244)

"As a previously replicated image is now transmitted... from one portion of the visual field to another, different aspects of sensory representation are enhanced. Physiologically, information from the sensory systems overlaps. This is why in some portions of the visual field, one can just see a picture very well; while in other portions of the visual field, the visual and auditory portions of the experience are replicated equally well... The enhancement of visual, auditory, and kinesthetic signals is made possible by nerve cells in the brain, *bimodal* and *trimodal neurons*, which combine and integrate sensory information from more than one system... As one slides an image over specific receptor fields of bimodal or trimodal neurons... different combinations of auditory, visual, and kinesthetic information are enhanced... If we were to divide the visual field into three horizontal sections (upper, middle and lower), when the eyes are in the uppermost section, visual information patterns will overlap with auditory information patterns that originate from eye level and above, and also will overlap with kinesthetic information patterns originating from the upper head area... As the eyes move into the middle area... we are now able to enhance auditory sensory information that originated from ear level down to approximately the level of the sternum, and kinesthetic information becomes enhanced from ear level to just below the shoulders and upper chest... As the eyes are moved down to the lowest portion of the visual field, we are able to clearly 'tune in' or enhance auditory and kinesthetic information of the upper chest down. This is why we so commonly notice kinesthetic accessing to be down, as most of our feelings -- emotional, tactile, and motor (somatosensory and proprioceptive systems) -- will be generated between the upper chest and our feet." (Furman and Gallo, p. 245) This is the basis for my saying "the eyes are a joy stick to the brain" and why eye and head movement work (REB Module 6) is so effective in cleaning up remaining aspects of the issue.

"Eye movement is the lead system for vestibular functioning. Our eyes help us maintain head position and balance, and wherever our eyes move, our head and body follow.... [T]he brain is divided into right and left hemispheres. Each hemisphere has a different cellular structure allowing for different types of function. Our eyes will move left and right depending upon the cortical function... we need to perform... Brain cells in the right visual hemisphere [responding to stimuli in the Left Visual Field = LVF] have very broad overlapping receptor fields. Because these receptor fields are so broad, fewer are needed to encode an image that in the [left visual hemisphere responding to stimuli in the Right Visual Field =] RVF. In the RVF [left hemisphere]... the receptor fields of brain cells in the [left] visual cortex are much smaller and no overlapping... [Thus] the processing speed of the LVF [right hemisphere] will be faster... because less neurons are involved in the encoding and decoding process... Since the speed of image replication is faster in the LVF [right hemisphere] than the RVF [left hemisphere], any retrieved image will assemble quicker with less energy expenditure in the LVF [right hemisphere]... This is why we notice memory being frequently accessed upper left [right hemisphere accessing]... PET scans have... verified that regional blood volume increases in the right prefrontal cortex during retrieval (replication) of a memory, and the left prefrontal cortex during encoding (incorporation) of sensory information."(Furman and Gallo, pp. 247-8)

"Since the right visual cortex [accessing the LVF] is made up of overlapping receptor fields, it is possible to encode and decode (incorporate and replicate) three-dimensional images. The left visual cortex and RVF are not adept [at this]... because the receptive fields are non overlapping. The LVF [right cortex] also incorporates and replicates moving images... more efficiently... Replicating motion again requires overlapping receptive fields. Since the LVF [right hemisphere] is made up of broad receptors... images are very coarsely tuned with low degree of detail (low resolution). As a person is asked questions that require greater visual detail, [they] will move the image (transmitting it) to the [RVF left hemisphere]." (Furman and Gallo, p. 248) This involves a two step process; the image area is identified and then put into the RVF (left hemisphere), utilizing nerve cells with a slow processing speed and high resolution of detail. This process is possible because different neural networks can represent the same information.

The hemispheres also differ in their ability process color: left processes color best; right processes black, white and gray best. Creative recombinations are more possible in the left hemisphere since it has non overlapping receptors; thus pieces are easily separated and recombined independently.

(Furman and Gallo, pp. 248-249)

"In order to properly calibrate unconscious cognitive activity... eye movements alone do not tell the entire story... [We need to understand] how head movements, both vertical and horizontal, act in functional synergy along with eye scanning patterns..." (Furman and Gallo, p. 249)

The eyes also help differentially access the right and left auditory fields. "[T]he left auditory/visual field indicates phonetic, sequential, and rhythmic processing, while the right auditory/visual field processes the analogical components of language and sound... Analogical changes in elements such as pitch and inflection are decoded... when the eyes move toward the right auditory/visual field [accessing the left cortex] (located at the right, middle region of the visual field). These auditory functions are carried out by the *Wernicke's area*, which deals with meaning and understanding." (Furman and Gallo, p. 250)

There is also a third auditory eye position down and to the left. This accesses the *Broca's area,* which deals with speech. "As the right-handed person looks down to the left and tilts [their] head in the same direction, the change in head orientation facilitates a gravity-assisted, regional cerebral blood flow increase within Broca's area, making it easier to construct speech... [W]hen the eyes move down and to the left we are accessing... articulator motor patterns which help to translate... an internal auditory image of 'dialog' into jaw, tongue, and larynx movements... the kinesthetic/motor counterpart to auditory internal dialog... [Sometimes] when a person's eyes are positioned down to the left, his lips and larynx may exhibit unintentional leakage of the actual words he is in the process of thinking about." (Furman and Gallo, p. 250)

The kinesthetic eye position, usually down and to the right for most right-handed people, "... helps us to enhance information coming from the dominant somatosensory cortex which is located in the right hemisphere... [W]hen a person's eyes move down and to the right, [their] head also tilts down in that direction thanks to the vestibular system. This head orientation with respect to gravity assists a temporary regional cerebral increasing in blood volume to the *somatosensory cortex*. This cortical area is responsible for collecting all transmitted motor, tactile, vestibular, and emotional (biochemical) information from inside the body and relaying (transmitting and translating) it back into other relevant cortical areas for cognitive representation (replication). As the eyes move down and to the right, information carried by these pathways from the upper chest and below becomes enhanced." (Furman and Gallo, pp. 250-251

## 18.2. EYE BLINKING

Elium's approach uses eye blinks to defuse distress. This is also used by the Rapid Eye Technology (RET) approach (Johnson). According to the RET website "Recent [I downloaded 2001 Dec] research has found that blinking creates a momentary increase in alpha brain waves, which are associated with relaxation. Some eye movement researchers [Tecce, 1992] theorize that blinking provides a moment in which the brain stops taking in information in order to reflect upon or process what is has just perceived or experienced."

In North America, Joseph J Tecce (Tecce 1989, 1992; Tecce, Savignano-Bowman and Cole 1978] has done considerable research on the phenomena of spontaneous eyeblink activity. "The average human rate is approximately 15-20 bpm [blinks per minute]... Since normal adults need only 2-4 bpm to keep the eyeball moist, most blinks are physiologically unnecessary. Furthermore, since blind individuals have the same blink rate as sighted individuals, the significance of blinks goes beyond visual functions... Activities requiring complex thinking... tend to increase blink frequency. Doing two tasks at once... increases blinking. An important aspect of these tasks is the inward direction of attention to cognitive functions. Vocalization also increases blinking... This effect of vocalization suggests that blinking can be an indicator of generalized muscle tension and an expression of released motor tension... During reading, blinks appear at strategic points... These blinks may indicate a pause in the processing of information and may be a signal for the brain to rest between information inputs... Blinks also occur just before or after difficult parts of a task, possibly facilitating an erasure function by eliminating remnants of older information and preparing the brain for newer information." (Teece, 1992, pp. 376-377)

"Increased blink frequency generally reflects negative mood states... Blinking increases during heightened time pressure or when addressing a large audience... the blink-stress association... Eyeblink storms [rapid bursts of blinks] reflect underlying nervousness and fear and often accompany stuttering, which is also an apparent indicator of apprehension. Blinking increases when errors are made in memorizing digits, just before a decision is made to quit a difficult problem-solving task, and during poor performance... all situations conducive to negative mood states... Slower blink rates are observed during positive mood states... [such as] during successful problem solving and during simple repetitive thoughts... These relationships... support the hedonia-blink hypothesis, which states that increased blinking accompanies unpleasant feelings and decreased blinking accompanies pleasant feelings... This information on cognition and mood leads to a two-factor theory of blinking: (1) Blink frequency is increased during unpleasant mood states and is decreased during pleasant mood states (hedonia hypothesis). (2) Blink frequency is increased when attention is directed inward and is decreased when attention is directed outward (attention hypothesis)." (Teece, 1992, p. 377)

"In summary, eyeblink frequency is a simple, reliable, and accurate indicator of anxiety and other negative hedonic experiences associated with psychological disturbance. As such, it is a potentially useful and currently under used measure of cognitive-affective processes... Eyeblink frequency is an accurate indicator of psychological disturbance in normal and clinical populations..." (Tecce, Savignano-Bowman and Cole, 1978, p. 755, 757) There is also a relation between heart rate and eyeblink frequency. Negative hedonic state (negative arousal) involves increases in both heart rate and eyeblink frequency. Positive hedonic state (positive arousal) involves increased heart rate and decreased eyeblink frequency. (Tecce, Savignano-Bowman and Cole, 1978, p. 757)

An item in Newsweek, 1996, Oct 21 stated: "According to Boston College neuropsychology professor Joe Teece, stress levels can be measured by counting the number of times a minute people blink. The normal blink rate for someone speaking on TV is 31 to 50 blinks per minute (bpm). In the presidential debates, Clinton averaged 99 bpm (in the '92 debates he averaged 43 bpm) to Dole's incredible 147. Clinton peaked at 117 when asked about teen drug use. Dole peaked at 163 when asked whether the country is better off now than it was four years ago. According to Teece, the faster blinker has lost every presidential election since 1980. 'This is called the "Nixon Effect'."

Japanese researchers are particularly active in exploring the relation between eyeblinking and psychophysiological states. Nisio's (1999) system of indices for evaluating real-time distress selected three human physiological measurement factors: electrodermal activity (GSR), eye blinking, and blood pressure. According to Nisio, electrodermal activity reflects the person's emotional state and blinking reflects their psychological state. He continuously measures blood pressure to evaluate the state of the autonomic nervous system. This system allows the person's overall state to be investigated from various angles. The researchers Yamada and associates (1980) and others have a number of papers dealing with eye blinking.

Most of these researches do not deal with using eye blinking as a method of distress reduction although the finding of increased blink rates under stress implies that it serves as a natural mechanism for dealing with the stress. The REB$^{sm}$ Module 3e has eye blinking as an additional way to reduce stress along with the squeezing and rocking (3d) and deep breathing through the nose (Module 4).

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