VISION ENHANCEMENT: TRAINING IN CONCENTRATION

INGRID LORCH-BACCI, PH.D.

ALBERT SHANKMAN, O.D.

ABSTRACT

Vision enhancement depends on the ability of the patient to concentrate on and respond appropriately to sensory input. A focus on achieving particular goals is detrimental to learning true concentration, characterized by increased effortlessness in accomplishing tasks and by a more accurate match between perception and reality. Improved vision results from training patients to develop greater self-awareness by paying attention to sensory input, to enlarge rather than contract the field of awareness as they accomplish tasks, and to identify concentration with easeful rather than stressful behavior. This heightened attention also reflects itself in improved functioning in all aspects of a patient's life.

KEY WORDS

vision enhancement, concentration, attention, self-awareness, effort, effortless, binocularity, space and time

Vision enhancement training can help patients to become more efficient in processing sensory input by improving concentration and the ability to learn. Patients will improve most rapidly when they approach enhancement practices as tools for developing improved concentration or attention. This paper begins by addressing what we mean by concentration, a term which is widely and loosely used, but whose meaning is poorly understood. It then outlines a specific approach to vision enhancement which sees improved vision performance as a result of improved concentration in visual and other areas. The term "vision" is used here in its total meaning, and is not restricted to "sight."

The claims presented in this paper represent inductive conclusions reached by one of the authors, Albert Shankman, a behavioral optometrist, on the basis of 50 years of exploration and observation with hundreds of patients. They are further corroborated by the experience of the second author, Ingrid Lorch Bacci, Ph.D., a consultant in performance enhancement and a teacher of the Alexander technique. The Alexander technique,[1] an educational approach to postural integration and bodily coordination, shares certain aspects of Dr. Shankman's approach to vision enhancement, most notably the emphasis on improving performance not by seeking specific behavioral results, but by developing the patient's sensitivity and ability to *pay attention to* (concentrate on) sensory experience.

I. The Nature of Concentration

Asking a patient to "concentrate" on a visual task may be counterproductive more often than it is productive. People all too frequently respond to the request to concentrate by doing something that actually makes effortless concentration more difficult. An over-converger, for example, if told to concentrate on a technique aimed at promoting the ability to diverge, is likely to exaggerate rather than ameliorate his over-convergence. He will work hard on achieving his goal rather than experiencing his process, and will thereby defeat his own aims. We can sympathize with his plight by remembering some of our own early associations of concentration with effort--for example, clenching our fingers and furrowing our brows as children when trying to solve math problems, to answer exam questions, etc. Such effort most frequently leads to doing worse rather than better. It is generally accompanied by internal chatter--in the form of self- blame, worry, criticism, tension, etc.--which simply takes our attention away from the issue at hand.

The example of the over-converger, and our own memories of stressful moments of so-called concentration, point out a simple truth: the "habits" of concentration that many people learn are far from the reality of concentration, and many patients need to unlearn dysfunctional mental and physical habits which actually associate concentration with tension and stress. *True concentration is effortless.*

Visual dysfunctions often involve habits of stressful effort which lead patients either to work excessively hard to accomplish visual tasks or to abandon those visual tasks because they seem to require excessive effort. Underlying most failures to see, at whatever level, is what might be described as an inability to keep the mind's attention on where the eyes are pointing. The result is the conflict and struggle towards integration that the patient associates with achieving a visual

goal. Such dysfunctional habits of visual attention can be replaced with more efficient habits which develop the ability more effectively and effortlessly to gather and process visual inputs.

Easy instinctive concentration is a key quality of many people who are characterized as gifted. Yoyo Ma at the 'cello, Lawrence Olivier on stage, or Greg Louganis on the diving board—all have superb concentration within their specialty. This is manifested in their *effortless ease* of performance. Alert and relaxed, they belie the cultural assumption that to concentrate is to work and that work is effortful "unpleasure." The type of concentration they display is not learned as a splinter skill applied to specific tasks. It is better characterized as a style used in approaching all tasks, a style that produces not only greater achievement in all areas but also consistently greater ease in one's life. People who learn to practice effortless concentration pursue it for its own sake.

Many Eastern traditions identify improved concentration with effortlessness. Meditative approaches,[2] Taoist philosophy,[3] yoga practices[4] and a number of the martial arts[5] espouse an approach to learning, and to life itself, in which the goal is a discriminating subtlety of action which applies minimum effort with high degrees of accuracy towards achieving the maximum result. This could simply be called good engineering. In the Western tradition, sensory training procedures such as the Alexander technique,[6] Feldenkrais[7] and Somatics[8] also aim to improve performance by heightening awareness of sensory input to automatically improve the individual's ability to diminish internal and external resistance to achieving a goal. The ability to respond and act in a way that consistently decreases resistance to achieving one's goal might be called one definition of intelligence.

Within the realm of behavioral optometry, Elliott Forrest, O.D.,[9] was perhaps the first to explore the phenomenon of effortlessness as a mark of mental efficiency and a key to concentration. He identified two types of concentration, one exclusive and the other inclusive. Exclusive concentration, widely practiced in modern cultures, may actually contribute to some of the visual dysfunctions suffered by patients. A functional form of tunnel vision, exclusive concentration is goal-oriented and involves suppressing or ignoring stimuli in order to focus on a single stimulus or reach a predetermined goal. Forrest points out that this type of concentration generates both mental and muscular stress since it requires the individual to block out a great deal of sensory input, employing extra effort and wasting energy. Exclusive concentration may help a person to reach an immediate goal, but it encourages perceptual inflexibility and limits the simultaneous processing of stimuli from the entire visual field. When a person deliberately blocks out information today, he or she may become habitually unable to absorb information tomorrow. This translates into an impoverished responsiveness to the environment which the individual is likely to experience in the form of unsuccessful attempts to carry out his intentions. He will not understand that developing the skill of blocking creates misperceptions and is a primary source of failure.

Forrest[10] contrasts exclusive concentration with inclusive concentration, in which an individual remains open to the total field of experience while being focused on one part of that field. In comparison with exclusive concentration, inclusive concentration involves greater physiological relaxation and mental ease, and less internal verbalization. It is process- oriented, whereas exclusive concentration is dominated by the drive to reach a goal. The individual who concentrates well in this sense is able to stay present to experience as it happens, and to continually readjust expectations and behavior on the basis of experience by using the body and mind as a feedback laboratory.

When applied to visual perception, inclusive concentration, or global awareness, means being able habitually to focus effortlessly on a specific visual stimulus without losing awareness of the total visual field. The more a patient can develop the habit of expanding his or her total visual field, the more easily he or she will perform any given visual task. Effortless visual performance results from the increasing *integration* of an expanding field of awareness, first at a highly conscious level and later at an unconscious level. Ideally, this field of awareness includes not only vision but also kinesthesia, hearing and all other sensory modalities.

By identifying true concentration with effortless performance, and the latter with increased perceptual integration, we acknowledge that concentration is a function of an individual's ability to receive and process sensory information, then appropriately use feedback. The more sensory information an individual can process accurately, the more flexible and appropriate will be his or her response to the environment.

If an individual blocks sensory input, he or she may not respond to it appropriately. A person may "look" at a tree but not see it, "listen" to someone speaking yet fail to hear him, "move" one of his or her limbs but be unaware of the motion, etc. Again, depending on where their minds are focused, persons will "see" what is in front of them with more or less insight. Awareness is clearly relative.

To the extent that a person is unaware of visual information, one or more of four conditions generally holds. First, the person's mind may be wandering from a particular visual stimulus, he knows it, and is unable or unwilling to do anything about it. Second, the person's mind is wandering, he doesn't know it, and therefore can't do anything about it. For example, when a person "catches" himself not absorbing what he is reading, he can refocus his attention, but until this time he is unaware of his lack of awareness. Third, the person is overfocused on a particular aspect of the visual field and pays insufficient attention to or blocks out information from the larger field around him. Fourth, the individual may consciously be trying to focus on a stimulus or task, but as a result of visual dysfunctions--for example, a lack of effortless and sustained, clear and single binocular vision--must concentrate more on attaining this mechanical aspect of vision instead of on processing the stimulus in question.

Whatever the case, the key to improving concentration will be to start by improving *awareness of self*; that is, the ability to attend to sensory and mental experience as it is happening, to notice more regularly what one is and is not aware of, and to consciously direct one's awareness in chosen directions. This is work in harnessing the attention of the mind. Through this increased attention a person gradually improves his ability to register and respond appropriately to sensory stimuli. Vision enhancement will

therefore be most effective if it is approached as a vehicle for developing self-awareness first, then utilizing the improved, more effortless attention which results in concentrating more effectively and for longer periods of time on specific tasks.

II. Enhancing Vision by Developing Concentration

The first step in vision enhancement is to solicit the patient's commitment to observing his or her process. To improve concentration, one asks the patient to focus on noticing what he does and what happens in his body--to be aware of feedback--as he tries to accomplish specific physical tasks. This commitment of self-awareness must be repeatedly invoked, as it is not natural for most people, yet it is the core of enhancement practices. Only through this attention to observing the process, and the amount of effort it involves, can the dysfunctional habits which have become natural to patients be changed. As the patient learns to experience himself or herself, misperceptions and dysfunctional behavioral habits come to conscious awareness, and the patient can abandon these in favor of improved patterns based on the lessening of misperceptions.

It is also useful to engage the patient in exploring how to find increasingly easier ways to perform specific practices by "just letting it happen." Just as ease and accuracy will improve as a natural by-product of increasing awareness, awareness will also increase as the patient comes to value less effortful and more fluid approaches to learning, and can then focus more on the present experience and less on outcomes. For example, when clear and effortless binocular fusion is the goal, the patient is not asked to fuse the two images. He is required to do two things which will eventually result in effortless fusion. First, he is asked to be aware of what he feels, particularly in the face, around the eyes, forehead, cheeks, jaw, lips, neck and shoulders. Secondly, he is asked to be aware of what he sees. When diplopia is clinically created, he is asked not to look between the two images, but to look at one closely and compare it to the other. Are they the same or are they different in size, distance, clarity and color? The patient is instructed to allow the images to fuse or not to fuse. Eventually, they will fuse effortlessly, and fatigue will no longer be a factor in how long the images stay fused.

An initial commitment to process over goal, and to ease over effort, can be strengthened by offering simple active (as opposed to passive) meditative techniques as background for approaching movement practices and tools for focusing attention. For example, the patient may be asked to notice whether his or her breathing is relaxed during practices, as awareness of breathing is an excellent starting point for developing overall self-awareness. Restricted breathing invariably signifies excess effort[11] and reduced energy,[12] as well as diminished sensory receptivity. By learning to inhibit the habitual desire to constrict their breathing, patients begin to understand what it means to approach tasks in a less stressful manner. They frequently also experience an immediate improvement in performance, which helps overcome what may be a strong resistance to "relaxing" in order to carry out a practice, a resistance bolstered by arguments that it won't work.

Vision enhancement should enable the patient to graduate from simpler to more complex levels of self-awareness, and should fairly quickly involve all three primary senses of vision, body movement (kinesthesia) and hearing.

Body movement is the appropriate place to begin developing awareness since body movements are grosser than eye movements, which can be quite subtle and difficult to detect. An example of lack of body awareness is seen in the patient who performs a repetitive technique of raising left and right arms in a specified sequence while overtly verbalizing what she is doing, but fails to notice that she occasionally raises the left arm and calls it the right, or raises the right arm when she is supposed to raise the left. She is unaware that her mind is not where her body movement is. As she learns to attend longer, her awareness increases, and hence also her concentration. Her mind then is more regularly "with" her body, and she knows when she is doing the practice incorrectly or correctly. She also learns to listen to herself and to hear what she is saying.

Most people overestimate their levels of awareness so that they are surprised at the discrepancy between what they say they are doing and what they actually do. Upon making this discovery, some patients recognize that they truly do have a problem with attention, and seriously seek improvement. Others may discount their poor performance, claiming the technique is too simple or dull, or they do not need it. They refuse to acknowledge that they are not "with" the activity they have chosen to perform. When this failure of presence occurs during a simple technique, it is likely to occur elsewhere as well. If a patient can learn to not resist and "defend" against experiencing failures in his awareness of movement and can, instead, come to enjoy the game of "catching" himself being unaware, he is more likely to make progress.

A simple example which combines visual, kinesthetic and auditory awareness is traversing a walking rail while calling out letters on a chart on the wall with a patch first on one eye and then on the other. This relatively elementary task possesses the added advantage of giving the clinician the opportunity to observe the progress of the patient in developing self-awareness sand thereby in processing sensory information. Whether the patient walks the rail easily, and whether she notices mistakes in reading the chart, are observable both to the optometrist and to the patient. Finer changes in visual awareness are not directly accessible to external observation, but will tend to become evident to the patient after some experience working on grosser levels.

When one technique is easefully and accurately performed, the patient has integrated a new level of self-awareness and is ready to move to the next. For example, in the walking rail technique, the patient could now walk the rail in time to a metronome, simultaneously reading one or more charts, in horizontal or vertical positions, with or without lenses of varying strengths, etc. This more complicated task can be accomplished simply because concentration has become more effortless.

The sequence of techniques to which a patient is introduced should reflect the fact that concentration and performance improve as awareness becomes increasingly global, enabling the patient to process more and more input from multiple sources (body awareness, vision, hearing, etc.). Improved performance in one sensory area--for example, posture and movement--is related to improved performance in another--for example, vision.[13] Our discussion discloses why improved

concentration in one area, manifested through improved sensory feedback awareness, will contribute to improving concentration in others. As the patient learns to pay attention to sensory feedback in any given area, his overall sensory receptivity improves. This increase in awareness and concentration is first experienced on the *conscious* level. For example, a patient notices for the first time that he is doing something inefficiently, or that he wasn't previously aware of something in his sensory field, or that his mind wanders and he is only half "with it," or that an habitual way of dealing with a problem isn't working, or that he has been misperceiving something. Then the patient consciously works on inhibiting the inefficient and effortful processing and behavior, and on supporting an easier approach. Once this change in awareness has been incorporated, it soon requires less conscious effort. The patient uses vision more effectively, moves more easily, etc., and no longer needs to work to inhibit dysfunctional patterns based on misperceptions, or to "think about how he is doing what he is doing." Thus, improved concentration is marked by a decrease of conscious thought and inner chatter, and activities requiring concentration become less frustrating and more pleasurable.

It is, in fact, impossible to approach more complex vision enhancement practices consciously by applying rules and/or thinking about what one is doing. (Thinking about what one is doing is a common interpretation of conscious thought and behavior.) For example, one cannot maximize fluidity and accuracy of performance when matching steps on a walking rail with simultaneously calling out tachistoscopically presented letters that are flashed at various locations on a wall facing the patient if one has to consciously *plan out* what is to be done. One has to learn how to let an activity such as this "just happen," and to give up planning in order to experience. When the patient understands this, he or she begins to internalize mechanisms which allow the sensory feedback loop to regulate itself without conscious interference. Inner chatter disappears, to be replaced by easy concentration.

By paying attention to or witnessing what he is doing as he does it, a patient begins to adjust the warp between what he thinks he sees (feels, hears, says, etc.) and what is actually being transmitted by the senses. As he decreases this warp through a rigorous self-honesty, he learns to bring his mind in alignment with what is real and his thinking becomes increasingly accurate. Because it is more accurate, it is more effortless.

The goal of vision enhancement training is to bring the mind in alignment with the point of attention, and the resulting perception in line with reality. The more accurate perceptions are, the better concentration will be, and vice versa. In addition, the more constant, unambiguous and real the objects of perception, the greater the possibility for accurate perception and hence for improved concentration. Time and space, being real constants, are ideal for developing concentration. By utilizing them, an optometrist helps the patient to eliminate perceptual warps determined by the difference between the realities of space and time and a patient's perceptions of them. This is done primarily by using lenses and prisms to intentionally warp space, encouraging the mind to begin to negotiate distances more accurately, and a metronome to help the mind develop a better match with real time.

A patient may manifest a warped perception of time by running ahead of the metronome when he is to do an activity on the beat. He will most likely be unaware that his internal clock rushes time, and as he learns to perform visual therapy techniques more in "real" time, he will also generalize this to other situations. The use of various lenses, ideally in monocular techniques, can likewise promote more accurate perception of space. Using various low-powered plus and minus lenses, as well as prisms, one can encourage the patient to become aware of, and then adjust to, the induced different perceived distances, increasing visual flexibility.

We believe that many visual dysfunctions which involve impaired binocularity are both cause and consequence of poor concentration. The quality of binocularity is based on the degree of similarity between two images which are fused into a single image and on the individual's tolerance or intolerance to differences between these images. Differences between images seen by right and left eyes are readily identified by having a patient attentively compare what he sees with each eye. The images received by two eyes may be the same or different along any of three parameters: clarity, size, and apparent distance from viewer. When the images are dissimilar along one or more of these dimensions, the effort to fuse them becomes accordingly excessive. The individual's attention then focuses primarily on the effort of fusion rather than on processing the sensory information at hand.

The more impaired a patient's binocularity, the harder that patient will have to work to accomplish any visual task--for example, reading--and the more that patient will associate concentration with expending effort to resolve the mismatch between images recorded by his two eyes and between those images and real space. The result can be single, clear but *uncomfortable* binocular vision accompanied by a decrease in real concentration, which is manifested in a number of possible ways. The patient may be a non-achiever, avoiding the confusion signaled by his or her misperceptions, and the effort that must be involved in overriding this confusion. In other terms, this patient's mind will avoid "being with" visual input as much as possible. Or the patient may choose to work very hard to overcome his perceptual space warp and try to force reality to match that warp. In this case, the patient will choose to concentrate, but over time will breed increasingly worse warps of perception, often reflected in lens prescription and/or phoria and/or duction changes. Whether an avoider or a worker, the person with binocular impairment develops "defense mechanisms" which protect him against his problem--his perceptual warp. These defense mechanisms shield the individual from the sensory input he receives, not only making it harder for him to deal with visual tasks but also making it harder for him to receive the visual information which would enable him to abandon his "defenses" and attain more facile and accurate vision.

Such defense mechanisms are undone through learning how to position one's mind on present sensory experience, and to test this sensory experience against external reality. One thereby gradually overcomes discrepancies between thought and perception and between perception and reality, discrepancies which can be the basis of much failure and frustration. The development of congruity is the development of concentration.

SUMMARY

By heightening a patient's self-awareness, vision enhancement training heightens his ability to engage more productively in other life activities. As one experiences increased resistance, or the need to expend great effort, these become not a reason to stop that activity but a sign of poor concentration and a signal to explore his present sensory experience more effortlessly. These, in turn, become their own reward. A patient who approaches vision enhancement as a means for improving concentration through a self-monitoring feedback system will reap its benefits long after completing vision enhancement training. These benefits will manifest themselves in an ability to find increasingly easier and more efficient means of reaching one's goals. The person will learn how to do more by doing less.

REFERENCES

1. Liebowitz J, Connington B. The Alexander technique. New York: Harper and Row, 1990.
2. Benson H. Your maximum mind. New York: Random House, 1987: ch. 2-3.
3. Ni HC. Shrine of the eternal breath. Los Angeles College of Tao and Traditional Chinese Healing, 1979, Ch. 4: 59-73.
4. Arya U. Philosophy of hatha yoga. Honesdale, Pa: Himalayan International Institute of Yoga, 1977.
5. Herrigel E. Zen in the art of archery. New York: Random House, 1989.
6. Alexander FM. The use of the self. Long Beach, Calif: Centerline Press, 1984.
7. Feldenkrais M. Awareness through movement. New York: Harper and Row, 1972.
8. Hanna T. Somatics. New York: Addison-Wesley, 1988.
9. Forrest E. Stress and vision. Santa Ana, Calif: Optom Extension Prog, 1988.
10. Forrest E. Beyond Harmon: aspects of a personal psycho-behavioral philosophy. Invitational Skeffington symposium on vision, Washington D.C., 1984.
11. Selye H. Stress without distress. New York: J. B. Lippincott, 1974.
12. Rama S, Ballentine R, Hymes A. Science of breath. Honesdale, Pa: Himalayan International Institute of Yoga, 1979.
13. Ayres AJ. Sensory integration and learning disorders. Los Angeles, Calif: Western Psychological Services, 1973.

Corresponding authors:
Albert L. Shankman, O.D., F.A.A.O., C.O.V.D.
289 Agawam Dr.
Stratford, CT 06497
Ingrid Lorch Bacci, Ph.D.
455 Sleepy Hollow Rd.
Briarcliff Manor, NY 10510
Date accepted for publication:
October 1, 1992