Self-Induced Violent Eustress to Reduce Stress in Students

Leslie Cassinari, Christine Gavlick, Robert L. Peck

Abstract The riotous disruptive behavior in an inner-city middle school suggested a study of Krumping, a violent street dance credited with reducing the power of gangs and bringing peace to many in the riot torn Los Angeles ghetto. The inherent power contained in the violent motions of Krumping was found to be based upon cathartic motions called *popping and locking* which could be correlated with fundamental warm-up martial art exercises and with the violent *bandhas* of ancient Yoga. The physiological explanation for the violent tensioning found in *locking* has been described as eustress which counters harmful stress by releasing adaptive hormones, known to be a function of the amygdala. A small group of at-risk students were given a daily 15 minute session of popping and locking practices which increased their physical response time and awareness by 30% within a month's time indicating the reduction of increasing distracting stress which is being recognized as a major problem in education.

Keywords Stress · At-risk students · Catharsis · Amygdala · Krumping

A Rising Uncontrolled Problem

This study was made in a "failing"[1] urban middle school with a large, racially diverse population in which more than 70% of the students were eligible for state-subsidized meals. Many of the students were recalcitrant and considered to be "at-risk," and were more able to control their classmates with rewards or consequences than could the teachers. It was generally accepted that these at-risk students typically came from disadvantaged homes and neighborhoods and were likely to be less academically competent and more disruptive at high stress levels (Shonkoff 2011; (Masten et al. 1988). Consequently, these students were also commonly considered to be "streetwise" having had to adapt and develop survival skills with perhaps a greater power to execute their will than their teachers. One developed skill, for example, was that of reading faces as to a person's honesty and intent which could immediately initiate a defense/offense mode when a teacher attempted to intervene with recommended strategies to correct a behavior problem (Morris et al. 1996). Further, in sensing someone's actual power, the at-risk students quickly learned the limitations of the teacher's resources, control and authority.

It was also noted that many of the at-risk students were able to recognize an urgent need for some strong physical activity sufficient to release their inner emotions and unrest. However, their requests for physical outlet generally had to be denied, because of the teacher's strict timetable for meeting daily instructional objectives.

[1] According to *No Child Left Behind* criteria in the United States

Evidence of a Solution

After listening to the complaints of at-risk students, it became apparent that the underlying problem of many of the streetwise and at-risk students was an early development of the modern success/failure syndrome—stress, which develops with the constant mental concern to survive in a demanding world. Investigating stress led to the work of Wynton Marsalis, a preeminent musician and educator, who taught how the development of Jazz was a reaction to a hostile world and in particular came out of stressful communities made up of large racially diverse populations at the turn of the 20th century in New Orleans, Louisiana (Marsalis 2002). Of particular interest were Marsalis's descriptions of how the disturbing emotional nature of the Blues, coupled with its unique rhythms, could intensify suppressed feelings until they could be manifested, understood and then released, thereby allowing individuals to persevere through their personal hardships.

Recent research in neurology provides evidence to explain how discordant music could alter stress as purported by Marsalis's description of the origin of the Blues (Koelsch et al. 2008). Discordant music is unexpected and has the same amygdala response as any physical response which has an unexpected emotional response. The unexpected and unpleasant response requires the amygdala to review the incident in terms of its threat to survival. Marsalis's argument that discordant music could relieve stresses related to survival reactions led to the consideration of the use of bagpipes and drums to increase the stress of soldiers going into battle, however, that stress, like that of the Blues, resulted in quickening and increased awareness of life rather than depression and fear. This conclusion then suggested expanding further research into other methods of countering stress with discordant, unsettling and rhythmic stimulations for releasing stress.

The catharsis of Jazz and the Blues therefore suggested a later cathartic dance called Krumping which was introduced into the ghettos of Los Angeles, California as the result of the deadly and destructive riots in 1992 (Yarber 2011). Krumping, like the Blues, depends upon responding to disturbing feelings within the body and mind; however, this response is almost entirely self-created and has an inner purpose such as to fully face life's problems or stress and gain power to execute one's own goals in life. Krumping has its origin in the early forms of the *bandhas* or locks of Yoga and the martial arts which was known to be cathartic (Diamond and Lee 2011). The motions or moves used in Krumping were originally described as "Popping and Locking." Popping and Locking can be perceived as a sequence of separate rigid positions, each containing a separate feeling. The move toward a new position has to begin with first imagining it and then making the image so real that it can be felt. This is difficult initially since our culture stresses "doing" with the muscles rather than "feeling" them. When the next move can be fully pictured and felt as if it had already been executed, the body is then "popped" into that position. Once the body is popped in position, it is then "locked" in place by first tightening all the muscles forming the image which had been created in the mind. Then the muscles are further locked in place by integrating the image into the entire body with increasing effort and tension until even the perineal muscles also become tightly clenched as if preparing the body to be braced or readied for some extreme effort that

makes the purpose of the tension of greater importance to the amygdala gland than the initial stress.

Once the individual moves of Krumping are mastered and experienced, it then becomes possible to perceive how the same violent type of physical tensioning appears in expressing strong emotions such as ecstasy, determination, grief, anger and fear. For example, the same inner violent tensioning can be experienced when preparing to face a threat such as some adverse judgment or danger, preparing to perform on stage, or bracing oneself for a wild amusement park ride. In these types of situations, the amygdala overrides the lesser stresses and forces the generation of hormones to meet the challenge of the new and greater intentionally chosen stress.

In reviewing Krumping it also became evident that as Krumping became popularized, its moves were gradually defined and synchronized with that of others, and it finally developed into a competitive form of dancing, thereby losing much of its self-controlled catharsis. However, it seems reasonable that Krumping could be kept under individual control if its methods of Popping and Locking were introduced to students as an individual Art form to be experienced as a catharsis from stress rather than as an Academic achievement to be judged.

Selye's work with stress can be used to obtain an explanation of how the violent methods of Krumping or catharsis can remove stress and bring the body and mind to a desired state. His model can be used to understand that Krumping's extreme physical tensions produce an inner personal (eu)stress or good-stress. Eustress is defined as stress able to counter (dis)stress or bad stress (Selye 1978, pp. 74-75). He used, as examples of eustress, the sudden dash of ice water in the face, electroshock, or drug shock to counter severe distress (pp. 402-403). He explained that "stress is the non-specific response of the body to any demand, whether it is caused by, or results in, pleasant or unpleasant conditions." He continued that it is "how you take it" or your intention that determines whether the stress will be good or bad for you (p. 74). He further gave excellent support in his section on "Stress as an Equalizer of Activities" in which he explained that "muscular, nervous activity or anything else that requires effort" (pp. 415-416) sends out alarm signals to influence all kinds of biological activities including adaptive hormones.

The term hormone comes from the Greek *hormé* meaning "to urge on" which supports Selye's description of eustress. His adaptive hormones can be further defined as the generated hormones which cause adaptation for the attaining of additional powers as first described by Darwin (1874)[2] and modified later by Baldwin (1896) who introduced "Organic Selection" to supplement Darwin's "Natural Selection" to explain evolution and growth in children. Briefly, personal cathartic eustress induces hormones to shift or adapt to what is needed next according to the individual's inner needs.

Selye concluded his last chapter suggesting that the rising problems of civilization such as violence, drug abuse, and destructive aggression can be alleviated with knowledge and

[2] "Man may be excused for feeling some pride at having risen, though not through his own exertions, to the very summit of the organic scale; and the fact of his having thus risen, instead of having been aboriginally placed there, may give him hope for a still higher destiny in the distant future …We must, however, acknowledge, as it seems to me, that man with all his noble qualities… with his god-like intellect which has penetrated into the movements and constitution of the solar system – with all these exalted powers – Man still bears in his bodily frame the indelible stamp of his lowly origin." (taken from the last paragraph of Darwin's *The Descent of Man*, 1874)

control of stress (Selye 1978, pp. 460-461). However, present methods of coping with stress generally consist of trying to reduce the intensity of stress by outer psychological methods such as counseling, relaxation techniques or psychotropic drugs which are opposite to the older methods of ridding the system of stress through the inner physiological generation of eustress.

Adaptive Hormones as the Ancient Metaphysical Elixir

Selye's "adaptive hormones" can now be perceived as being in agreement with the ancient science concerned with the mystical transformational Elixir which was generally described as being generated within the body by the directed forceful or violent actions of the body. The generated Elixir then flowed through the body to transform the body and mind to manifest the intention of the seeking individual (*RgVeda* 9:1:1, Sanskrit Version). The correlation of hormones to Elixir is based upon the same experience of an upward inner flow which is associated with producing necessary changes in the body and mind. However, even though modern science can fully describe the nature of hormones and substantiate the validity of the ancient Elixir, it is still unable to describe how an individual can directly stimulate the generation and control of hormones.

Athletics has become a source of renewal for the ancient claims of the existence of inner transformational Elixir and its powers as athletes perform supernormal feats on the playing fields with their acquired physical prowess. The ability of the inner Elixir or hormones to also increase intuitive insights and precognition is, however, unexplained. Athletes describe this supernormal state as stepping into a state of mind called the Zone. Similarly, individuals under extreme stress or demand report being able to perform an impossible or difficult task with ease after stepping into the same state of mind which has also been called Flow (Csikszentmihalyi 1997). Heroes, likewise, have long reported the uncontrolled quieting of their conscious thoughts and judgments while obtaining an insight into their actions for the oncoming moment as well as the knowledge and physical strength to fully perform the anticipated actions. In all cases, the conscious brain is quieted and the body responds to a deep, powerful intention and quickening coming from the lower heart or guts. Maslow described such a state where the conscious brain is overpowered by the heart as being self-actualized (Gobel 1970, Ch. 3). Claxton (1997) called this state of unconscious intelligence our "tortoise mind" which often reaches a distant, defined goal must faster than the "hare brain" which looks great while dashing to and fro without a continuous intention.

Major Opposition to Eustress as a Solution

If self-induced eustress is so powerful, why is there virtually no Western reference to it for the last two millennia? If it is able to open the mind of a child, why is it not a major tool in education? Why are not the powers of self-actualized and creative individuals being taught in schools? Why are at-risk students laboring under the handicap of stress when eustress cannot only reduce it, but replace it with increased awareness and attention?

The answer is complex because for nearly two millennia both the source of eustress and the Elixir has been denied to exist and further, history denied that the average individual had

any self-awareness, determination or power of self-actualization. It is only recently that Elixir can be identified as adaptive hormones, yet the modern world does not accept the ancient view that adaptive hormones can be under the direct conscious control of the individual.

There is one remaining icon of the ancient belief in the inner mind and powers of individuals located in central Rome called the Arch of Constantine. This monument contains panels honoring the power of individual warriors and their emperors Marcus Aurelius and Constantine the Great, who through inspiration (*instinctu*) managed to conquer far greater opposing armies. These panels display the power of the unified minds of a small group of self-actualized individuals able to defeat a much larger army that was trained to move only in uniform ranks and files and controlled by external commands. The panel of the Battle of the Milvian Bridge is an excellent portrayal of the powers of the individual soldiers. This depicted power of a seemingly unorganized group of men able to defeat well-controlled, institutional forces had no doubt instilled fear in later rulers of Rome who attempted to suppress the masses, lest they lose their power to an outside inspired group.

The Hidden Methods of Suppressing the Generation of Elixir

Throughout history and cultures, groups who advocated the generation and control of Elixir were invariably described as sexual deviants and pagans by their detractors. The transformational Elixir was falsely claimed to be obtained from imbibing alcohol or some unknown drug, and since the ancients allegorized the powers of Elixir as inner gods, the ancient claims were dismissed as superstitious and pagan. This accusation can be readily compared with modern descriptions of the powers of hormones and drugs that also use allegorical models to explain physiological phenomena. Sapolsky (2004) described adrenal hormones preparing the body for a challenge as "…epinephrine is the one handing out guns; glucocorticoids are the ones drawing up blueprints for new aircraft carriers."

In order to deny Elixir and inner powers, the opponents of the ancient science had to change the accepted view of the physiology of the body so as to not include any concepts of inner processes or organs of the body that could produce Elixir or adaptive hormones. Briefly, the ancient concept of Mind was replaced with the brain, and the ancient concept of Heart in the perineum and the Seat of Feelings and Thoughts in the breasts were said to be located within the beating heart in the chest (Peck et al. 2008, pp. 11-12)

In the modern world the full physical natures of the perineum and the breasts are still relatively unknown other than as the centers for excrement, sex and nursing. This is evidenced today when the beating heart is defined as the vital center of one's being, emotions and sensibilities. The perineum is stated as being defined by the Greek roots *peri* and *inan*. *Peri* means "around," but *inan* is a word of unknown origin supposedly meaning "to excrete;" and the breast is limited to its power of serving only as the human mammary gland.

Gaining Access to Ancient References on Elixir

There exists a major problem of obtaining valid references to the ancient Elixir in order to substantiate ancient claims as related to the generation and control of adaptive hormones.

Namely, English dictionaries or lexicons deny that there was any self-generated, transformational Elixir despite writings to the contrary. For example, English dictionaries state that Elixir only existed as an ancient belief for a magical cure. *Ambrosia* in the *Greek-English Lexicon* is defined as a mixture of water, oil and various fruits. *Soma* in the *Sanskrit-English Dictionary* is defined as juice, especially that from the *soma* plant, prepared by priests, despite Sanskrit verses to the contrary (*RgVeda*, 10:85:3). The Elixir *haoma* of the Persians is defined as being obtained from some unknown, external source and imbibed during secret meetings (Cumont 1956, pp.158-160). The transformational Elixir of the Greek Dionysians is likewise stated in many writings to have been obtained from wine during the debauchery believed to take place in the bacchanalia orgy (Kerényi 1996).

The process of denying the existence of Elixir or transformational hormones is made quite obvious by the efforts of the colonial British to facilitate the conversion of India to Christianity through the introduction of "translated" Sanskrit documents (Sarasvati and Vidyalankar 1977, p. 116). This intent is openly acknowledged in the Preface to the preeminent *Sanskrit-English Dictionary* which contains praise for its ability to assist in translating the Bible into Sanskrit and how Christian missionaries in India owe the Dictionary a debt of gratitude (Monier-Williams 1899, pp. ix-x).

A prime example of the deliberate distortion of the meaning of Elixir is readily available in Monier-William's *Sanskrit-English Dictionary*. It contains a lengthy and convincing detailed description of how the Elixir *soma* was pressed from plants by priests and then filtered. The *soma* plant was said to be *sarcostema viminalis*, which was found with further research to be native to South Africa (not India). This plant is a very strange-looking climbing milkweed with no psychedelic properties other than to make cattle sick if no other grazing is available (Monier-Williams 1899, p. 1249).

Popular translations of Sanskrit documents, when describing *soma* or its transformations, are invariably nonsensical, metrical compositions. Max Müller, one of the early translators, stated that the metrical form is often an "excuse only for an inaccurate translation," (Sarasvati and Vidyalankar 1977, p. 97). However, if the *RgVeda* and other ancient documents are read in the original Sanskrit, they describe a science quite in agreement with modern experiences and not in fundamental disagreement with modern science.

Ancient Methods of Eustress as Catharsis

An ancient method for the modern experience of catharsis of intense gut churning crying or laughing is found in a recent re-translation of the 1st Book of the *RgVeda* (Verses 1:28:1-6) (Peck et al. 2008, pp. 104-110). It describes the eustress of violent gut churning motions found while sitting and slowly rocking and using forced exhalation and muscle tension to press down on the swollen bulb, the *bulbospongiosus* (BS), in the perineum which then releases *soma* (adaptive hormones). The description of the rocking practices includes light stimulation of the breasts to assist in the churning of the guts. The entire 9th Book of the *RgVeda* (Peck et al., pp. 111-125) is almost exclusively concerned with the generation, control and effects of *soma* or the generated adaptive hormones.

Another Sanskrit text describing methods of catharsis, the *Hathayogapradipika* (*Hatha*: "violent" + *yoga*: "union," + *pradipika*; "striving after") explains how the body is extended in different positions and the muscles held stationary and sufficiently tensed to stimulate the BS. These *bandhas*, similar to Locking motions of Krumping, place a eustress on the body in order to generate and direct adaptive hormonal responses of the body. Ancient documents such as the *Hathayogapradipika* and *RgVeda* provide reasonable descriptions of fundamental practices which provide the basis for modern eustress-type activities and which are supported by modern scientific knowledge of the endocrine system.

Knowledge of the Ancient Model of Physiology is Critical in Understanding Eustress

The shift in the meaning of critical words and the shift in the description of the functioning of critical organs of the body can all be related to the shift in the societal and institutional description of individuals from being god-like as described by Darwin to being physical programmable robots. Instead of the bodies of individuals containing self-actualized controlling powers of self-evolution, the bodies became viewed as mechanical automatons responding to external social controls.

The ancients were concerned with increasing the inner powers of individuals rather than their ability to respond to outer societal demands. An example of the complete ancient model is given in perhaps the oldest surviving manuscript, the *Rudrayamala*, which is a short Sanskrit document of less than eighty lines describing how an individual can find increased inner powers. The document describes the individual as containing three elements: the "controlling me" in the heart between the thighs, the "feeling me" in the breast and the "thinking me" in the head.

To the ancients, the most important organ was the heart or center of the body which was considered to contain the Will and/or the control of the body and mind to obtain some intended goal. It was the heart which took over in emergencies or which provided guidance in daily life. The heart identified the individual and was set by the intentions or basic needs of the individual. The location of this control was universally described to be in the loins (in the center of the extended body) and specifically as the perineum (Greek *peri*: "central source of" + *neuma*: "control or Will"). Ancient India described the control source as the *muladhara* (*mula*: source or root. *dhara*: stream, or support.) The perineum or heart was connected to the sacrum or sacred bone (Stross 2007) at the base of the spine which connects to the amygdala in the primal brain. The sacrum contains a large amount of gray (brain) cells and an unusual collection of nerve roots looking like horsehair which connects it to the perineum as well as the body's peripheral nervous system through the proprioceptors in the joints. Because of its central location, it provides the fastest body response to emotional demands or threats, much faster than the normal sense organ-brain-muscle response.

Surprisingly, for the most part, modern scientists continue to ignore the special functions of the perineum, with a few notable exceptions. Shafik has researched the complex transmission of signals throughout the perineal body and lower abdominal area (Shafik et al. 2007). Kegel noted the atrophy taking place in the perineum because of the socially induced continual tension. He became known when he assisted aging people to reverse their urinary

incontinence by teaching them how to restore function to the perineal muscles with exercise (Resnick and Griffiths 2003, pp. 395-397).

A second critical organ ignored by modern science is the breasts. The *Greek-English Lexicon* describes the ancient usage of the word *stethos* for breasts functioning "as the seat of feeling and thought." However, as the modern reader can only identify feelings within the beating heart in the chest, the *Lexicon* further describes this early meaning to be understood with the modern usage as: "…in the same manner as the word heart is used today." Further, there is no distinction in Greek word usage between males and females for this feeling and thought property of the breasts. However, there are other words for breasts as mammary glands.

Greek contains a number of words referring to the beating or grabbing of the breasts to release emotional stress, in which case, the physical grabbing on the breasts serve as eustress to reduce or remove the emotional stress. Greek also used the word *amphisbaina* to describe the connection between the breasts and the perineum which Leonardo da Vinci (c.1492) illustrates in a physiological sketch. In addition, this connection is obvious during postpartum nursing as the lower abdominal muscles respond (Salzmann et al. 1971; Larsson 1989). It is also a major component of the Sanskrit depiction of the physiology of the body and no doubt played a major role in the early Dionysian descriptions of the body, since a critic described their breasts as being used to feed wild (inner?) beasts (Euripides 405 BCE).

Eustress as a Power for Good

Maslow studied large numbers of people whose works indicated both good intentions and efforts. His study of these self-actualizing individuals "refutes the Freudian theory that the human unconscious (id) is only bad, evil, crazy, or dangerous. In self-actualizing people, the subconscious is creative, loving, positive, and healthy." (Gobel 1970, p. 35). Krumping, documented in the movie *Rize* (LaChapelle 2005), followed a number of evolving forms of violent eustress with each step growing in acceptance because of the increased resulting good it produced. Krumpers not only formed closer relationships but also gained a more positive view of life.

A common form of eustress, known to counter stress faster than can an administered drug without any adverse physiological effects, is intensive or violent crying which secretes hormones through the tears to reestablish equilibrium within the body (Frey 1985, pp. 47-58). Teachers and parents are well aware of the natural curative effects of a child "crying his or her eyes out." Another similar eustress is belly laughing, where the guts are churned with laughter (Cousins 1979; Provine 2001, pp. 194-196; Berk Felton Tan Bittman and Westengard 2002, pp. 62-76).

The nature of eustress resulting in a positive catharsis is described in the very short *Rudrayamala* document which explains how perfect understanding follows from *bandhas* and one can do no wrong (Peck et al. 2008, p. 134). This claim is similar to the conclusions of Maslow about the inherent good of self-actualized individuals. However, it must be noted, as it is in ancient discussions of creating eustress, that there must be a strong intention for good

before seeking the eustress. As an example, an infant can cry because of neglect or pain which cannot alleviate the suffering, in which case crying can be the cause of further problems (Rao et al. 2004). However, a child consciously seeking to change disturbing thoughts, pains or excess stress uses the process of active crying as eustress which can quickly produce relief. Therefore, it is the intentionality of eustress as well as the sufficient stimulation of the body which provides the generation of adaptive hormones and the good effects of stress.

Is Eustress Necessary In Schools?

The No Child Left Behind Act (NCLB) of 2001 in the United States might be viewed as the first nationally mandated social experiment which intentionally induces increased stress on children with its standards-based educational reform. Schools are applying experimentally determined research findings to increase learning using written standardized testing as a way of assessing basic skills. Interventions to increase basic skills such as reading comprehension have expanded into the curriculum of hands-on instructional classes and into activity periods once considered essential for self-development and self-expression. As an example, art, music, physical education, and industrial or consumer arts classes are now required to teach reading comprehension strategies at the expense of the their course curricula. In addition, periods of social free time (recess, study halls, and elective courses) are being replaced with remedial reading activities. There can be no denying that NCLB has proven effective in slightly increasing the general level of reading comprehension and that students' brains function best with moderate stress (Whitman 1985). However, excessive stress is now interfering with the true goals of education and the healthy functioning of students (Collishaw et al. 2004).

One obvious explanation for this rise of mental stress must be in what might have been considered in the near past as the denial of the needs of the heart, or what Selye would have described as the loss of eustress. For a simple example of this loss, consider an elementary or middle school teacher in the classroom a few decades ago who would sense the rise in classroom tension and would instinctively change the activities of the class so as to relieve the stress with some form of eustress, such as taking the class outside to run and scream on the playground. This would be nearly impossible today with rigid schedules or physical restraints on the movement of students or activities of teachers. Perhaps in the near future educators will have to agree that the two small amygdala glands dealing with emotions can exert more influence upon the body than can the much larger cerebral cortex dealing with thoughts.

Introducing Self-Induced Eustress into the Classroom

One beginning problem for introducing eustress activities into a school environment is the current confused and uncertain view of the body as to what parts and motions are socially acceptable. Krumpers faced the problem of convincing others that Popping and Locking was not sexual, aggressive or illegal (LaChapelle 2005). Other obstacles range from students feeling embarrassed in using a full extended body stretch to the fact that the ancient physiological models cannot be used, including any references to the breasts other than as noted during crying or strong emotions.

Most likely there will be little problem in getting students interested in the eustress value of experimental Krumping even if they are unfamiliar with it. All of the at-risk students who participated in this study readily accepted their problems of stress and were interested in mastering a physical method of getting rid of their tensions.

The Experimental Group

Six students were chosen from a larger list of at-risk students as identified by the school guidance counselors for grades 6, 7, and 8. These students were interviewed one at a time as: 1) the experimental class was described in detail, 2) student intention to participate was fully explored, and 3) estimation of student health and endurance was established and confirmed. Upon initial interest from these interviews, the students were given a letter home for their parent and guardians to review and indicate their support.

The six disruptive 7th grade at-risk students consisted of three females and three males, of Caucasian, Hispanic and Haitian ethnicities. All of the students were eligible for the Free and Reduced Lunch Program which also included breakfast (which overlapped the time available for the class). Two of the six students began the class with a reputation of hating each other and their teachers did not expect them to be able to work together or succeed in the experimental class.

The class met in a large, open-spaced room during the opening activities of the school day. Each day of the class, the students: entered the room with their breakfast, listened to descriptions of the concepts and physical tensions needed for the Popping and Locking motions, observed teacher demonstrations, practiced executing the motions with accompanying live drumming and then later with taped Krumping and Hip Hop music, sat and rocked with concentrated effort on forceful exhalations, completed two separate physical response tests, and ended in the cafeteria eating their breakfast while reviewing the class and other applications of Popping and Locking.

Observations of positive changes were evidenced within the students after a few days of the experimental class, as they not only began discussing personal experiences and asking more specific questions, but also began to exhibit cooperation and companionship with one another. The students became more aware of their special individuality as evidenced by their increasing ability to help and/or tease each other. As soon as one student would make a discovery of feeling the Pop and Lock, he or she would quickly and quite naturally describe it and demonstrate it to others. Likewise, when one student faltered or had a bad day, other students would begin to counsel and encourage participation in the class. Another interesting observed change occurred during breakfast time which gradually included not only recaps of the class but also became a time for open sharing and group discussions of the autonomic nature of the practices. Lastly, on the final day all the students demonstrated closeness similar to a parting of old friends.

The Experimental Practices

It was quickly discovered that a detailed physiological goal had to be introduced before instructing the students in Popping and Locking in order to avoid the problem suggested by the *Rize* documentary, namely that modern culture demands that one must *look* good and resist the urge to *feel* good (LaChapelle 2005). In addition, modern individuals are also fearful of hurting themselves with any strenuous effort, so that asking students to tighten a muscle until it feels ecstatic was a major problem requiring their trust in the full execution of the cathartic practices.

The cathartic practices were described as functioning by controlled gut churning similar to the lower abdominal motions found in intense crying and laughter or facing a critical demand. This deep churning was then described to be the mechanism for rebalancing the amygdala gland and the hormones of the entire body. Students were informed that applying a violent or excessive amount of tension all over the body through Popping and Locking would generate a cathartic eustress, thereby allowing the brain's amygdala gland to function better and consequently allow for breaking free of tensions and emotional or bad feelings.

As the exertion and tension in the Pop and Lock motions were increased, students began to experience lower abdominal feelings when reaching upwards while standing or while Popping and Locking their upper bodies while sitting down. They appeared to be convinced that something was indeed happening and that their efforts were worthwhile. Reported experiences of these lower abdominal feelings, along with the daily testing showing increased response time, confirmed that the students were beginning to exert fully and feel the necessary effort involved in Popping and Locking. In addition, more detailed physiology, mental pictures and mental models were presented, including a brief description of the muscles from the lower abdominal cavity down to the pelvic floor muscle or the perineum. As students became aware of an upper flow, the concepts of "girding the loins" or "wrenching the guts" were introduced.

One exercise which they could readily accept was to stand and imagine the feelings involved in taking a cold shower. When this image became real, the students would then intensify the lower feelings of the body until it became a lock. This cold shower image also introduced the basic survival mode as the imagined cold shock reaction of the muscles of breathing was felt to press the breath downwards with a strong, sustained exhalation. After taking the imaginary cold shower, the students were able to note the loss of the prior mental tensions and could then understand the popular expression of "chilling out" or the power of taking a cold shower to cool off emotionally.

Once the students understood the goal, they were then able to understand the need for a number of different types of positions and feelings to prepare the body for other shocks. It was found that students had to monitor all of their muscles in order to achieve the full locked position. Once the basic exercise was mastered, live drum rhythms and taped Hip Hop songs were introduced such that the music could facilitate the manifesting of deeper and more personal feelings. The Hip Hop music also provided the students with a familiar auditory setting in which they could apply the learned practices of Popping and Locking. When

students slipped into “looking good” they became aware of the loss of the full power of Popping and Locking. Active Popping and Locking became so strenuous that each session averaged no longer than ten minutes as the students quickly fatigued.

Measurements

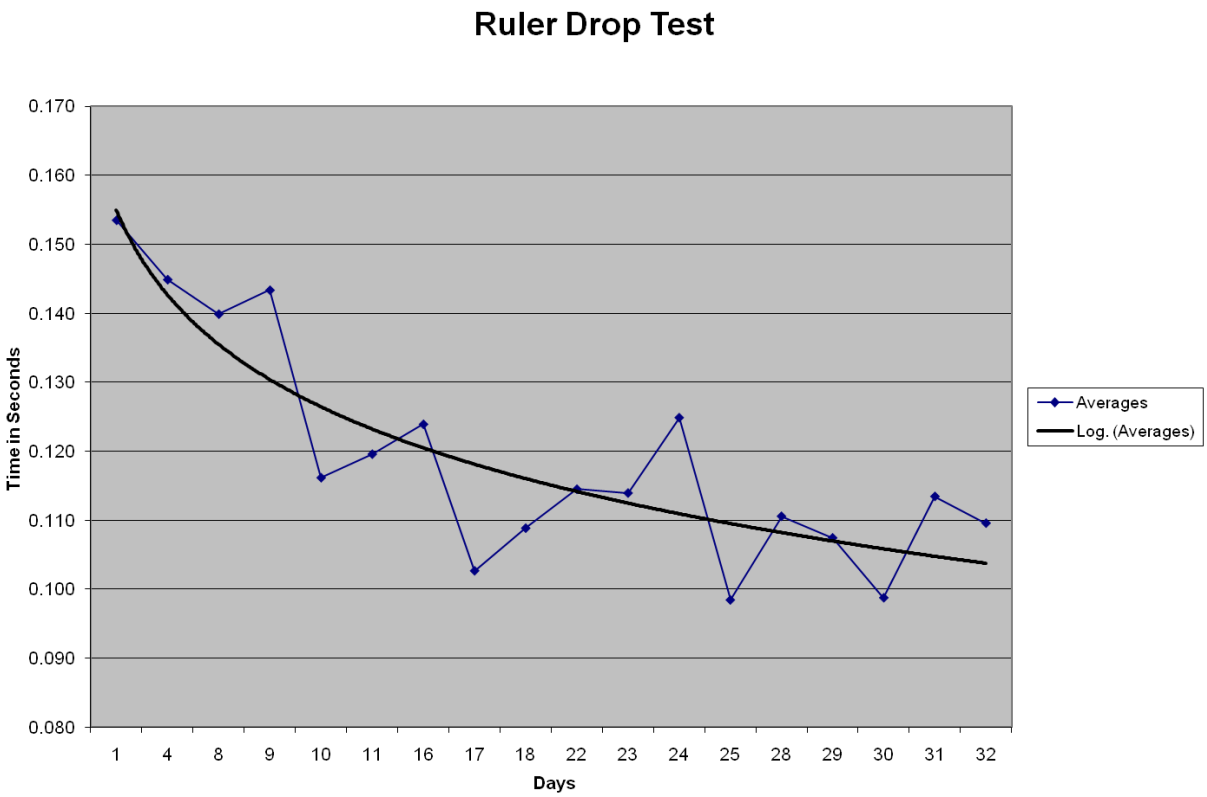
It is known that increased number and intensity of the sources of stress tend to overload the limbic system of the brain, thereby reducing clarity of thought and speed and efficiency of physical response (Whelan and Phelps 2009, pp. 53-55). Conversely, lower stress levels should result in faster and more accurate physical response. Therefore, a simple measurement of the time to respond to the external world should offer a measurement of the level of stress in the body and mind and the efficiency of the amygdala.

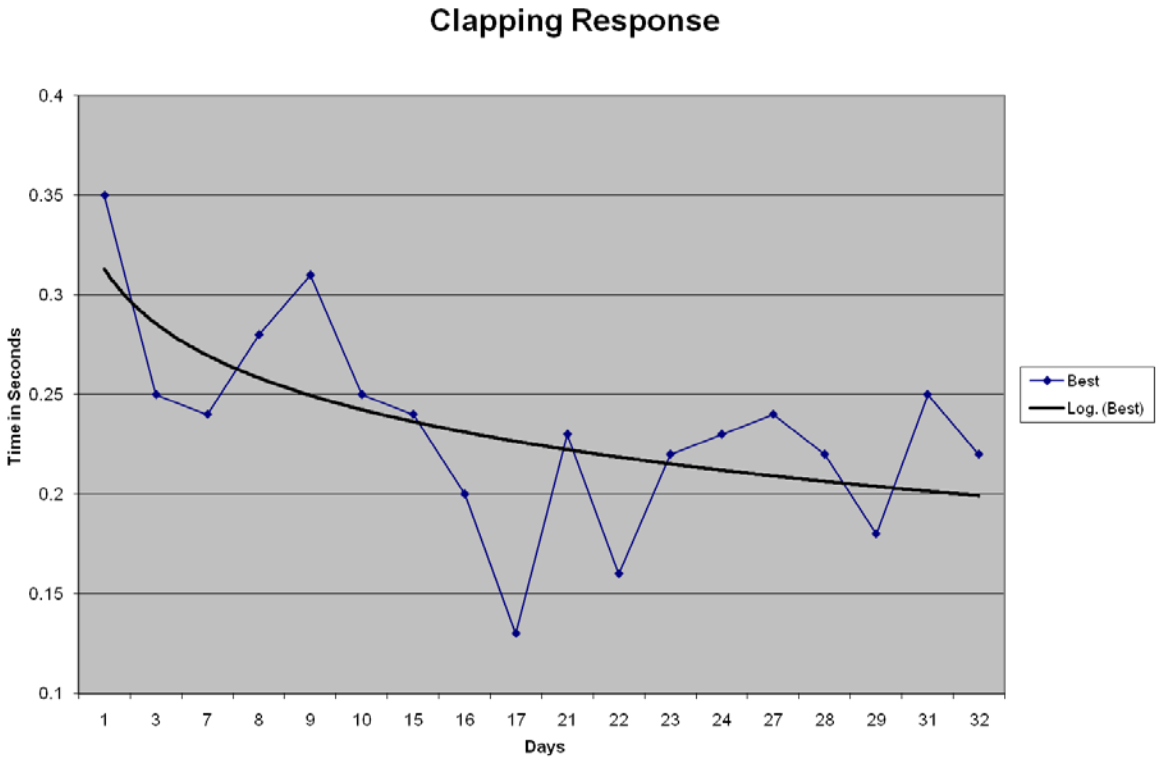
Two methods were used to measure the students’ awareness and response time. The first was to calculate the time it took for a ruler to drop between the open fingers of a hand resting on the seat of a chair, from zero to a recorded length when it was caught by closing fingers. The length in cm was then converted into time by calculating the square root of (cm/980).

The second method was to record a stimulus handclap and the resulting clapping of student hands in response. The sitting students were instructed to initially hold their hands fixed with palms resting on the thighs while sitting with their eyes closed. Upon hearing the stimulus clap, they were to clap their hands as fast as possible. The resulting recording was then analyzed with an oscilloscope to determine the response time.

The results are given in the table and graphs below. It is interesting to note the difference in consistency between the ruler and the clap test as easily observed in the figures. The students’ eyes were far more consistent than their ears, which may be attributed to reliance on visual acuity in computer games, television and, as mentioned at the beginning of this report, survival skills etc., and the disregard or dulling for background sounds such as music and voices. Both methods, however, demonstrate the increase in the speed of response, but the ruler drop test depicts quite accurately the actual adaptation curve.

Average Response Time with Ruler Drop					
Day	1	8	10	21	30
Seconds	0.154	0.143	0.120	0.114	0.110
Improvement		7%	22%	26%	29%


Ruler Drop Test
Time in Seconds
0.170
0.160
0.150
0.140
0.130
0.120
0.110
0.100
0.090
0.080
1 4 8 9 10 11 16 17 18 22 23 24 25 28 29 30 31 32
Days
Averages
Log. (Averages)


Clapping Response
Time in Seconds
0.4
0.35
0.3
0.25
0.2
0.15
0.1
1 3 7 8 9 10 15 16 17 21 22 23 24 27 28 29 31 32
Days
Best
Log. (Best)

Theory

An explanation for these results can be gained with the recent research into the properties of the amygdala in the limbic system. The amygdala and limbic system have characteristics commonly associated with other parts of the brain such as decision ability and memory. However, these characteristics are much different in the amygdala and limbic system because of their much faster speed and the seemingly unlimited nature of the memory. The simple "reflexive" responses such as catching a dropped ruler are often performed before the conscious brain is aware of the decision to catch (Custers and Aarts 2010). It is also noted that better decisions can often be made by unconscious, reflexive responses than by mental deliberation (Dijksterhuis et al. 2006). In addition, heroes and geniuses offer even further characteristics not found in normal mental operations such as knowledge, limited by need which includes the future, and phenomena beyond their experience. It is this ability of the mind which Darwin (1874) referred to as "god-like intellect."

The catharsis of Krumping and other cathartic methods operate in large part by changing the memory and the response of the limbic system which the conscious higher brain is unable to do. This is because the functioning of the limbic system is based purely on feelings rather than thoughts. The access to the memory and response of the limbic system can only be gained by activating the gateway into and out of the system with feelings produced in the lower heart or perineum resulting when the stresses in the body reach a critical level sufficient to cause the muscles in the perineum to tighten, such as mentioned before as occurring before stepping into an ice cold shower. Once the gateway is opened, then the feelings of the intention of the moment and the resulting physical feelings are transferred up the spine to the limbic system. This flow is similar to that which occurs during a trauma of intensity sufficient to clench the perineum and activate the amygdala, which then shuts down the conscious thought process and records the details of the trauma in the limbic system and no doubt in the sacrum.

A child deep in despair and pain sinking to the floor in a paroxysm of crying is an excellent example of the process of catharsis. Her conscious brain can offer no solution or even hope of some remedial action, yet the opening of the heart during the crying stimulates even more violent crying and abdominal muscle churning. This triggers the survival mode of the amygdala, thereby overriding the conscious thought process and activating the adaptive hormone system. The inner mind or Will is then free to access an extensive memory bank of feelings to find an appropriate feeling which can be used to change the body and brain to meet the existing threat. The accessed memory bank has to be the source of the unexpected, seemingly impossible changes in the child (Custers and Aarts 2010; Dijksterhuis et al. 2006).

The original cathartic Krumping was used in the same manner as crying to alleviate inner stress, but provided a more deliberate and conscious direction of the cathartic process required when living in the complex world of an inner city. Each separate pop and lock can be viewed as offering the same result as each deep abdominal contraction in a crying session, but the Krumper has the ability to further intensify each lock. This increase in intensity is quickly noted with the rapid rise in fatigue during Popping and Locking. However, the sinking to a hard floor with rocking against the swollen BS in the perineum found in crying is an

advantage with crying; whereas, in Krumping the stimulation is less direct. Krumping can be easily repeated day after day to remove the build-up of accumulated active stresses layer-by-layer by replacing them with the intention of each Krumping session. It is, no doubt, this ability which results in the almost miraculous speed of catharsis found in Krumping.

Conclusions

Modern education in the United States, through its federally mandated system of testing, has been able to prove that learning can be slightly increased but at the expense of increased stress particularly within those students not able to respond at mandated levels. The increasing stress within at-risk students is unfortunately increasing the stress level of schools. Attempts to reduce this stress with school-wide behavioral intervention programs have not yet proven to significantly reduce this stress in at-risk students.

Unfortunately, the historical methods of reducing stress have been largely removed because of the violent or potentially dangerous attributes of such things as teeter-totters, punching bags, physical contact games and even boisterous or extremely active responses to the freedom of a playground. Many of the non-mandated classes, such as the hands-on instructional classes and physical activity periods once considered equally important for self-development and self-expression as well as stress reduction, are now being lost because they have not been “scientifically proven” to be productive for learning mandated core subjects. Those classes that remain in the schedule are being modified to include additional instruction in areas not meeting Adequate Yearly Progress (AYP) goals. Further, the older methods of relieving stress by the positive effects of eustress through physical exertion and self-expression, which took place in many of the non-core classes and on the playground, have been eliminated from the school day. Lacking these opportunities for natural eustress, many stressed-out students now require supportive interventions such as counseling, social skills training, relaxation techniques, and medication.

This study reports on teaching six at-risk, recalcitrant students in an urban middle school to counter their inner stress by inducing within themselves a violent form of eustress using the Popping and Locking motions of Krumping. The effectiveness of this experimental self-induced eustress was physically determined by measuring student level of awareness and speed of physical response which gave a very significant daily rising level up to a 30% improvement with no more than a daily ten-minute session of self-induced violent eustress for only 20 days.

Recommendations

By the same arguments and methods used to lead students into learning relaxation techniques assumed to *reduce* stress, it is recommended that students be lead into self-induced violent eustress which is known to *remove* stress. Self-induced eustress is based on the underlying power, well known in the ancient world and confirmed by modern endocrinology, which recently reappeared in the cathartic dance of Krumping.

Due to the physically intense nature of Krumping and the fear of overstraining the body, it is recommended that Krumping be introduced with the power of strenuous sensual stretching which most individuals have experienced and whose principles form the basis for the warm-up exercises of athletics, Yoga and traditional martial art practices.

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