

Depression: The Effects of Vibrational Frequency Measured Through Darkfield Analysis

Marilyn N. Parkin

Department of Energy Medicine, 2003 Greenwich University

*Corresponding author

Marilyn N. Parkin, Department of Energy Medicine, 2003 Greenwich University, #404 – 1688 152 Street South Surrey, BC V4A4N2, Canada. Tel: 604-535-0521; E-mail: drparkin@shaw.ca

Submitted: 30 Apr 2019; Accepted: 06 May 2019; Published: 20 May 2019

Abstract

This study was conducted to determine the effects of sound vibration on individuals with depression. The study also examined changes to the blood cells as observed through live blood analysis when the intervention of vibratory frequencies ranged from 64Hz to 600Hz. Variables consisted of a time frame of one hour of control group (n=17) listening to music from the position of a chair in a contained room, and experimental group (n=27) positioned on a sound vibrational treatment table. The random study was conducted on 7 males and 37 females with a minimal six-month diagnosis of depression. Measurement was accomplished through evaluation of live blood analysis level of aggregation and Profile of Mood States questionnaire for depression. A drop of blood from a finger puncture was obtained and examined through Darkfield microscopy for specific quality and level of visible clumping. Post blood analysis determined less clumping and healthier activity of the cells after intervention in the experimental group. The live blood analysis of the control group remained unchanged. Profile of Mood States for Depression indicated there was no significant difference between the experimental and control groups. Results indicated an increase in mood state from the use of music and blood aggregation was reduced only with the sound vibrational treatment table.

Introduction Background

Historically sound has played a factor in various areas of our lives such as warding off the enemy or promoting relaxation. Vibrations of the sound of the voice can also have varying impacts on individuals from soothing, monotone sounds to high pitched, shrill, sharp sounds. Essentially, the effects will be varied, depending on the tonation and intention. Human and other animal infants are enthralled by the intensity of the repetitious tone of their mother's heartbeat. Sounds of nature, from the roaring of the ocean to the gentle breeze through the trees have an effect on human awareness. It is interesting to note that cultures the world over have created musical instruments, which mimic the subtle sounds, perhaps as archetypical echoes reminding us from whence we came, and exist as guide posts for our long journey back home. Music has been used to ward off despondency and bestow hope to those in despair. The human voice is one of the most powerful tools of sound for transmuting pain and sorrow into radiant well-being. Sound, through the vibration of music is a universal language.

The use of sound may be a blend of ancient wisdoms with the discoveries and practical applications of modern science. This becomes a possible blend of the age-old adage of science versus religion. There is some thought towards our bodies being a hierarchy

of vibrational frequencies which functions within systems that are much larger and continue within systems even more large than we can imagine [1].

Scientific research indicates a correlation between the use of sound through music and the boosting of human immune functions [2]. In a study done at Michigan State University, Bartlette, Kaufman and Smeltekop, found that listening to music for a fifteen-minute period could increase levels of Interleukins in the blood from 12.5% to 14% [3]. Music can also increase endorphin levels [4]. Another form of sound that is transmitted through our body is breathing. Breathing combines a rhythmic form of taking in and letting go. A deep, rate of breathing is optimal, contributing to calmness, control of emotions, deeper thinking and even better metabolism [5]. Shallow, fast breathing can lead to superficial and scattered thinking, impulsive behaviour and a tendency to make mistakes and suffer accidents [6].

Music can slow down and equalize brain waves [7]. Ordinary consciousness consists of beta waves, which vibrate from 14Hz to 20Hz [8]. Heightened awareness and calmness are characterized by alpha waves, which cycle from 8Hz to 13Hz. Sleep is characterized by theta waves, which cycle from 4Hz to 7Hz, whereas deep meditation or unconsciousness produces delta waves ranging from

3Hz to 5Hz [9]. Because sound has an effect on the immune system, it would be a very valuable tool in contributing toward our health and well-being [10].

If frequencies of sound did not possess a contribution toward health, I feel sound would not have played the role it has in human evolution. It evokes emotion, it soothes, and it penetrates our very soul. Perhaps we may have come full circle to realize the beneficial impact and association sound can contribute towards our well-being.

Live Blood Analysis

Whether it is through the voice or through musical vibratory stimulation as shown in the Michigan State University Study, when music was applied interleukin-1 (IL-1) was increased through listening to music for only a 15-minute period. Proteins, known as interleukin are associated with blood and platelet production, lymphocyte stimulation and cellular protection against Auto Immune Deficiency Syndrome (AIDS), cancer and other diseases [11, 12].

The use of live blood analysis through Darkfield microscopy dates back to the early 1900's with the work of Gunther Enderlein [13]. He found when blood was in harmony, meaning healthy, no pathogenesis or illness could prevail. Toxins, chemicals and emotions can change biochemical reactions in the body, thus having a visible effect on the appearance of the blood [14]. Darkfield microscopy is a method in which light is refracted off of objects under examination, making them appear to glow.

Rife, developed a microscope to intensify magnification. His work was very innovative and controversial. He was subjected to persecution by the American Medical Association for his practices and much of his work has been lost in the political shuffle [15]. He found live blood analysis to be a revolutionary method for examining a blood sample, which led to an extensive understanding of human physiology. Reich (1938) investigated the bioenergetic influences of human emotion and sexuality, which led to the discovery of the "Bion" in the blood. He believed that the "Bion" particle was at the border between living and non-living matter. Reich felt that these particles had the ability to develop into microorganism such as protozoa. All of this information sets the foundation for my research through the use of "depressed" emotion and the visible effect this state has on the biology as observed through live blood analysis. In a study done by Samai and Geckeler, the effects of cluster aggregation phenomena in aqueous solutions of fullerene-cyclodextrin conjugates, β -cyclodextrin, sodium chloride, sodium guanosine monophosphate, and a DNA oligonucleotide, indicated larger aggregates in dilute aqueous solutions than in more concentrated solutions [16]. Practitioners of live-blood analysis claim they can spot cancer and other "degenerative immune system diseases" up to two years before they would otherwise be detectable.

Live blood analysis was chosen for this particular study to determine if cellular aggregation, known as "rouleau", decreases through the application of vibration of sound to the body. Rouleau is the appearance of red blood corpuscles that stack upon each other like a roll of coins. On a physiological level, this would mean the blood cells that show a significant amount of aggregation would be less able to oxygenate and do their job in transporting nutrients through the blood system. When less aggregation is indicated, the blood cells have a better chance of accomplishing their work such as increasing levels of immunity and oxygenation to the rest of the body, including

the neurotransmitters in the brain. Less aggregation in the red blood cells would indicate that the blood cells are responding positively to the induction of the vibration through music. The depressed state of emotions of the population in the current study was taken into consideration. Prior research indicates a relationship between altered neurotransmitters in the brain of individuals diagnosed with the condition of depression in a study titled "Biology of Depression" [17].

The research on live blood analysis and founding practitioners, such as Rife, Enderlein and Naessens, appear to not be part of the mainstream scientific community. The current studies in energy medicine and the research I am doing add to this continuum. There is a need for further investigations to be done. Preliminary trial testing supports the hypothesis of the measurable physical effects of vibration, which decreases aggregation of blood.

Music Bed Design

The design of the bed consisted of a wooden frame, counter height structure, with a 39" wide air mattress placed over five stereo speakers, which were positioned under the mattress for transference of sound and vibration. The speakers were located in the base of the bed with holes cut through the mattress support to transfer vibrations. The speakers were placed in alignment with the chakra locations of the body. The first speaker, Yamaha NS-90, was placed under the base chakra; another speaker, Radio Shack 40-1272, under the second chakra and the third speaker, Radio Shack woofer 40-1301A supplied vibration to the third and fourth chakra's. The fourth speaker, Radio Shack woofer 40-1024A was aligned with the fifth chakra and the sixth and seventh chakras were vibrated by the fifth speaker, Yamaha NS-90. The chakras are described as seven intense areas of energy entrance into the body. Myss claims each chakra holds a universal spiritual life lesson that we must learn in order to evolve to a higher level of consciousness [18]. The design of the bed capitalized on energy transmitted through sound vibration into the body. The type of music used is Chakra Chant sounds by Jonathan Goldman [19]. The natural sound Yamaha stereo system, model number RX-V430, 2002, had been set to transmit frequencies in the low range of 64Hz to 600Hz. Subjects lay prone on the music bed while the music was played for a one-hour time frame. They were instructed to place the palms of their hands on the surface of the mattress and lie quietly on the treatment bed while vibrations of the low frequency sounds were felt through the air mattress. The stereo was set at a signal level of -30.0 dB. Protective headphones were placed over the participant's ears to diminish auditory absorption and protect the eardrum from the excessive noise factor. No adverse reactions were experienced during the sessions.

Objectives

The objective of this study is to determine if there is a relationship between the presence of sound vibrations and coagulation of blood cells. The goal of this research is to access less invasive methods of understanding human functions. Prior research trials had indicated a strong correlation between sound vibration and positive physical changes in the blood with an association to elevated emotional and psychological affects. This process is non invasive. A second objective is to determine if live blood analysis is a useful tool to investigate human physiology. Healthy blood samples examined through Darkfield microscopy have an appearance of uniform roundness with active cell mobility and lack of aggregation. This would indicate that the blood cells are representing a healthier state.

When health is not at its optimum, adverse physiological conditions take place in the body. This study examines the physical state of depressed individuals' blood through the process of live blood analysis. A finger is punctured to obtain a blood sample. The blood is dropped onto a glass slide and a cover slip is placed over blood. Immersion oil is applied on top of the slide to improve the viewing field of the Darkfield condenser. The blood sample image is recorded on a Sony VHS video recorder within the thirty-minute time frame allowed for active life of the blood sample. A blood sample is taken before and after the treatment is applied to determine treatment effects. The problem with such conditions is the blood cells lose their mobility. Trial testing indicated increased aggregation is often seen in individuals who have a diagnosis of depression, due to other physiological conditions of health.

Healthy blood has good motility with little aggregation. The blood cells appear round in shape without clustering or fusing with each other. There are many conditions that can be observed through the process of live blood analysis such as nutritional deficiencies, fungal or bacterial infection and parasites.

However, this study uses this method to observe the level of aggregation in blood samples of depressed individuals. This healthier action will transform major areas of the body, including the brain and brain chemistry [20]. The result will be increased ability to optimize health and emotional issues.

Statement of Hypothesis

There are two objectives in this research. First, to determine if visible changes in the level of aggregation in the blood sample occurs due to exposure of sound vibrations. Second, to determine if reduced blood cell aggregation is associated with heightened mood change in depressed individuals. The hypothesis states low frequencies through sound vibration have a positive effect on the red blood cell aggregation and heighten the mood of a depressed person. Null hypothesis would indicate vibration through sound would have no effect on red blood cell aggregation or mood state. Null hypothesis, would indicate no significant change in either experimental or control group. It would support that after intervention trials; results would suggest the sound vibration did not have a significant effect on either red blood cell aggregation or mood state. Depression was chosen to study the relationship between emotional conditions and observation of physical changes in the blood cells, which may draw a parallel to the mind/body continuum. The more we learn to work with the natural bodily functions, such as listening to physical signals, the more success can be achieved to further understand human awareness.

The brain processes and transmits information through the use of chemical transmitters. Catecholamines are a group of biogenic amines that are neural transmitters, which include dopamine, norepinephrine and epinephrine (adrenaline). An imbalance of catecholamines can result in autonomic dysfunction. Shealy, in the study "The Neurochemistry of Depression", determined that depression is a "real" illness with chemical abnormalities that are more extensive than diseases such as diabetes [21]. Shealy has applied cranial electrical stimulation with a high success rate in the treatment of depression. The current study uses a less intensified stimulation to the whole body. Sound stimulation may dislodge or rearrange aggregation or clumping in the blood. When blood cells are less aggregated, they have the opportunity to relay and activate

neurotransmitters within the brain, which can then contribute to a heightened elevation of mood, thus decreasing the level of depression in the individual.

Conceptual Background for Research Proposal

Music has always had a mystical quality that has been the driving force behind many historical events. It evokes emotional memories both happy and forlorn. It can engulf and inspire as witnessed throughout the Renaissance era. Music is both audible and tactile. Place your hands on a balloon filled with air while listening to your stereo. The sound vibrates through the medium with guided force. Many forms of music therapy has been advocated with positive results [22].

Sound has some physiological effect on brain waves and brain chemistry in the body [23]. This factor could impact on our present views of mind/body connection and can have a tremendous influence on health and well-being. Kvam, found that low frequency acoustic vibrations in the 40Hz to 80Hz range were transmitted using a music chair.

Elevated oxygen saturation in the blood was seen after exposure to audio vibrations. All participants spoke highly of the relaxation effect of the chair with the experimental group expressing a more positive attitude post intervention [24]. The potential is present for the treatment of many disorders of the body using vibration through sound, depression being one of them. In a very limited state, music can heighten and elevate the mood of an individual. Sitting and listening to music can have a positive effect on mood as well as physical conditions in the body. Music has the ability to affect the neurotransmitters in the brain, which contributes to the process of increased endorphins [25]. The body responds well to the natural supply of endorphins by heightened moods and increased immunity. In a study of adolescents, it was found that music shifts frontal Electroencephalogram (EEG) readings in depressed adolescents [26]. The study indicated the subjects did not report changes in mood yet a physiological change was recorded in EEG and cortisol levels, suggesting less control over biochemical changes.

Shealy has investigated the effects of sound on an emotional and physiological level through his device of a "Music Bed". This study uses a similar bed, which allows the sound of specifically chosen music to vibrate through an air mattress placed over speakers. Shealy's bed used two speakers placed under an air mattress, while this study used five speakers and controlled the level of frequency delivered into each speaker. This technique has a tremendous capacity to relax the individual who occupies the bed, for a period of one hour. Shealy also completed a study using Cranial Electrical Stimulation (CES) as therapy for depressed individuals [27]. Results indicated an increase in serotonin and beta-endorphin levels promoting conditions congruent to decreased depression. He reported evidence indicating a relationship between blood levels of neurotransmitters and the central nervous system. Shealy correlates altered neurochemicals in patients with clinical depression [28].

There is speculation of the New Age movement of understanding human function and behaviour, which suggests there is some evidence supporting a relationship between suppressed emotions and depression. The use of sound as a vibratory feature has the potential to alter the blood cells of the participant as viewed through live blood microscopy. The sample in this study would represent

levels of depression as being familiar ground. After experiencing the treatment of one hour of music vibrating through body, individuals may create some change, whether physical or emotional, conscious or unconscious.

Previous research acknowledges a relationship between application of sound frequencies and brain waves. The sound frequencies can have a favourable effect on promotion of neurotransmitters in the brain. Improved electrical brain activity has been proven to elevate moods and decrease depressed conditions [29].

Endnotes:

¹ Video Of Sound Mind and Body: Music and Vibrational Healing

² The Mozart Effect, pp72

³ Journal of Music Therapy, 1993; 30: 194-209

⁴ The Mozart Effect, pp71

⁵ Radical Healing, pp383

⁶ Radical Healing, pp384

⁷ The Mozart Effect, pp65

⁸ The Mozart Effect, pp65

⁹ The Mozart Effect, pp65

¹⁰ The Mozart Effect, pp72

¹¹ The Mozart Effect, pp72

¹² The Mozart Effect, pp72

¹³ Darkfield Warriors, pp7

¹⁴ Darkfield Warriors, pp7

¹⁵ The Cancer Cure That Worked, pp130

¹⁶ Chemical Community, 2001, 2224-2225

¹⁷ Medical Clinical North American, 1988; 72(4): 765-90, July

¹⁸ Anatomy of the Spirit, p68

¹⁹ CD, Chakra Chants, 1998

²⁰ Medical Clinics of North America 1988; 72(4): 765-90, July

²¹ American Journal of Pain Management 1992; 2 (1): 16

²² The Mozart Effect, pp78

²³ Adolescence, spring, 1998

²⁴ Berg Rehabilitation Center, Oslo

²⁵ Health Psychology 1997; 16:390-400

²⁶ Adolescence, spring, 1998

²⁷ Depression: A Diagnostic, Neurological Profile and Therapy with Cranial Electrical Stimulation; November 1988

²⁸ American Journal of Medical Practice (AJPM) 1992; 2: 13-16

²⁹ Health Psychology 1997; 16:390-400

Review of Literature

Population

Although depression often goes undetected and untreated among the general population, it is estimated that between 2% and 4% of all people suffer from clinical depression at any one time. In hard figures this means that during the course of a year, 17.5 million Americans suffer from clinical depression. The figures are even higher among specific populations. An estimation of 5% to 10% of patients under primary care suffer from clinical depression and among hospital inpatients, the chronically ill and confined elderly, the rate ranges from 10% to 14% of the population. In recent years, researchers have shown that physical changes in the body can be accompanied by mental changes as well. Medical illnesses such as stroke, heart attack, cancer, Parkinson's disease, and hormonal disorders can cause depressive illness, making the sick person apathetic and unwilling to care for their physical needs, thus prolonging the recovery period. Also, a serious loss, difficult relationship, financial problem, or any stressful change in life patterns can trigger a depressive episode.

Often a combination of genetic, psychological or environmental factors is involved in the onset of a depressive disorder.

While men and women each suffer from depression and experience the same symptoms, women are disproportionately affected by depression, experiencing it at roughly twice the rate of men. During any six-month period, approximately 6.6% of women and 3.5% of men will have a depressive disorder. Men with clinical depression are more than twice as likely to develop coronary artery disease as their non-depressed counterparts. Depression often goes undetected because patients do not report their symptoms, or when they do, they are often misinterpreted as symptoms of a medical illness. Even when depression is recognized, it often goes untreated because older adults are more likely than any other group to try to "handle it themselves". Only 38% of Americans over the age of 65 believe that depression is a "health" problem. There has been a long-standing stigma toward imbalances with mental or emotional disorders and therefore, recognition or treatment was not dealt with effectively, if at all [1].

Depression In Children

Only since the 1980's has depression in children been taken seriously. The depressed child may pretend to be sick, refuse to go to school, cling to a parent, or worry that the parent may die. Older children may sulk, get into trouble at school, be negative or grouchy, and feel misunderstood. Because normal behaviours vary from one childhood stage to another, it can be difficult to tell whether a child is just going through a temporary "phase" or is suffering from depression. Sometimes the parents become worried about how the child's behaviour has changed.

The National Institute of Mental Health (NIMH) identified the use of medications for depression in children as an important area for research. The NIMH supported Research Units on Pediatric Psychopharmacology (RUPPs) from a network of seven research sites where clinical studies on the effects of medications for mental disorders can be conducted in children and adolescents. Among the medications being studied are antidepressants, some of which have been found to be effective in treating children with depression, if properly monitored by the child's physician [2].

Field in a study on adolescence indicated the use of music as therapy shifted frontal EEG in depressed teens [3]. The study also concluded that music reduced stress.

Depressive Disorders

A depressive disorder is an illness that involves the body, mood, and thoughts. It affects the way a person eats and sleeps, the way one feels about oneself, and the way one thinks about things. A depressive disorder is not the same as a passing blue mood. It is not a sign of personal weakness or a condition that can be willed or wished away. People with a depressive illness cannot merely "pull themselves together" and get better. Without treatment, symptoms can last for weeks, months, or years. Appropriate treatment, however, can help most people who suffer from depression [4].

Types of Depression

Depressive disorders come in different forms, just as is the case with other illnesses such as heart disease. Three of the most common types of depressive disorders are described below. However, within these types there are variations in the number of symptoms, their severity and persistence.

Major depression is manifested by a combination of symptoms that interfere with the ability to work, study, sleep, eat, and enjoy once pleasurable activities. Such a disabling episode of depression may occur only once but more commonly occurs several times in a lifetime. A less severe type of depression, *dysthymia*, involves long-term, chronic symptoms that do not disable, but keep one from functioning well or from feeling good. Many people with *dysthymia* also experience major depressive episodes at some time in their lives. Another type of depression is *bipolar disorder*, also called manic-depressive illness. Not nearly as prevalent as other forms of depressive disorders, bipolar disorder is characterized by cycling mood changes: severe highs (mania) and lows (depression). Sometimes the mood switches are dramatic and rapid, but most often they are gradual. When in a depressed cycle, an individual can have any or all of the symptoms of a depressive disorder. When in the manic cycle, the individual may be overactive, over talkative, and have a great deal of energy. Mania often affects thinking, judgment, and social behaviour in ways that cause serious problems and embarrassment.

Symptoms of Depression and Mania

Not everyone who is depressed or manic experiences every symptom. Some people experience a few symptoms, some many. Severity of symptoms varies with individuals and also varies over time.

Depression - Some individuals may experience some of the following symptoms, which could be indicative of depression:

- Persistent sad, anxious, or “empty” mood
- Feelings of hopelessness, pessimism
- Feelings of guilt, worthlessness, helplessness
- Loss of interest or pleasure in hobbies and activities that were once enjoyed, including sex
- Decreased energy, fatigue, being “slowed down”
- Difficulty concentrating, remembering, making decisions
- Insomnia, early-morning awakening, or oversleeping. Appetite and/or weight loss or overeating and weight gain
- Thoughts of death or suicide; suicide attempts
- Restlessness, irritability
- Persistent physical symptoms that do not respond to treatment, such as headaches, digestive disorders, and chronic pain

Mania – symptoms individuals may experience when not in an opposing state of depression:

- Abnormal or excessive elation
- Unusual irritability
- Decreased need for sleep
- Grandiose notions
- Increased talking
- Racing thoughts
- Increased sexual desire
- Markedly increased energy
- Poor judgment
- Inappropriate social behavior

Causes of Depression

Some types of depression run in families, suggesting that a biological vulnerability can be inherited. This seems to be the case with bipolar disorder. Studies of families in which members of each generation develop bipolar disorder found that those with the illness have a somewhat different genetic makeup than those who do not get ill. However, the reverse is not true: not everybody with the genetic

makeup that causes vulnerability to bipolar disorder will have the illness. Apparently additional factors, possibly stresses at home, work, or school, are involved in its onset [5].

Predominant treatments for depression have been sought through sources of pharmaceutical and psychological methods. It had been the understanding that origins of depression began with chemical imbalance causing irregular brain activity and thus exhibiting depressed states. Depression is commonly seen in postpartum women where hormonal levels are altered and may cause effects of mood changes [6]. For many years these conditions went untreated and individuals were not encouraged to express, let alone seek treatment for anything less than presenting a happy image. This type of behaviour may very well have been the start of emotional suppression, which would inadvertently have less than positive effects on overall well-being, including depressed mood levels.

Modern times have returned us to a more holistic way of thinking and taking in not only conditions of the body and the mind, but also the soul. A recent National Institute of Mental Health (NIMH) study showed that in the case of severe premenstrual syndrome (PMS), women with a pre-existing vulnerability to PMS experienced relief from mood and physical symptoms when their sex hormones were suppressed. Shortly after the hormones were re-introduced, they again developed symptoms of PMS. Women without a history of PMS reported no effects of the hormonal manipulation.

Many women are also particularly vulnerable after birth. The hormonal and physical changes, as well as the added responsibility of a new life, can be factors that lead to postpartum depression in some women. While transient “blues” are common in new mothers, a full-blown depressive episode is not a normal occurrence and requires active intervention. Treatments by a physician and the family’s emotional support for the new mother are prime considerations in aiding her to recover her physical and mental well-being and her ability to care for the infant [7].

Psychotherapies

Psychodynamic therapies, which are sometimes used to treat depressed persons, focus on resolving the patient’s conflicted feelings. These therapies are often reserved until the depressive symptoms are significantly improved. In general, severe depressive illnesses, particularly those that are recurrent, will require medication or Electro Convulsive Therapy (ECT) under special conditions along with, or preceding, psychotherapy for the best outcome.

Dossey provides evidence of the spiritual dimension working in our healing process. For many centuries now, the spiritual content of our existence has been neglected. Since the introduction of science as a primary foundation of understanding our well-being, a shift took place where information bypassed mythical and mystical understanding. Dossey explains the many eras of medicine and human awareness from the mechanical to the mind/body, which he refers to as “eternity medicine” [8]. The study of energy medicine incorporates Eastern Philosophy with Western Technology. The implications of this can have several benefits. As the Dalai Lama explains, our modern living demands at least possible direct dependence on others, and this dependence makes it hard to show emotions such as basic affection [9]. He feels this lack of ability can lead to feelings of loneliness and alienation. This predominantly western cultural behaviour is an adverse component in our overall

lifestyle choices and limits the internalizing that we require to create a fuller understanding of ourselves. He feels instilled in all humans is our basic survival, which is goodness. This basic level of goodness is connected to the internal function within us, which is a quest for human happiness. In order to successfully achieve this state, there must be a balance between science (which represents our external perception) and religion (which is used to connect with our internal function). In North America, the influence of religion of any sort is marginal [10].

North American culture tends to establish expectations that may not always be in harmony with the way we would see things from our own perspective [11]. If we are not understanding and relating to things based on the truths from within us, this would suggest some critical, mixed messages that would be transforming and developing, causing miscommunication between our external and internal worlds. The Dalai Lama has three basic understandings of how he believes things come to be:

- Cause and effect.
- Mutual dependence. Which exists between the parts and the whole.
- All phenomena can be understood to be dependently originated because once analyzed, they lack independent identity.

The lack of these apparent conditions within North American culture could contribute to depression. Because we tend to view things from a predominantly external perception, we are neglecting the internal reflections, which could be mandatory for connecting with the substance within us. It would be evident when depression is prevalent, that humans are making choices based on a strong foundation in the external or material world. This is known as materialism. Problems arise not necessarily from materialism, but from the assumption that personal satisfaction can come from gratifying the senses alone. If we desire things for no real reason beyond the enjoyment they give us, they tend to bring us more problems. Not understanding the concept and basis of how to create a stable inner environment draws us away from conditions, which are necessary to create inner peace and balance. Inner peace can be developed by relating to external circumstances and the actions we undertake in our pursuit of happiness.

Our thoughts are more important than we realize. The Dalai Lama demonstrated how negative thoughts destroy peace and health. The Tibetan Medical System has found that anger is a primary source of illness [12]. The progress in understanding Eastern philosophy may assist as we enter a new era of connectedness as we learn to raise our level of consciousness. This relationship between eastern and western philosophy adds not only to the association of the mind and body, but also to the suggestion that spirituality, or the soul plays a significant role in our consciousness. The Dalai believes that how we live and direct our thoughts can affect all of society [13].

Traditionally, North American culture treats conditions of depression based on Western philosophy using medication and psychotherapy [14]. There are a variety of antidepressant medications and psychotherapies that can be used to treat depressive disorders. Electro convulsive therapy (ECT) has been used, particularly for individuals whose depression is severe or life threatening or who cannot take antidepressant medication. ECT is often effective in cases where antidepressant medications do not provide sufficient relief from symptoms [15]. In recent years, ECT has been much

improved. A muscle relaxant is given before treatment, which is done under brief anesthesia. Electrodes are placed at precise locations on the head to deliver electrical impulses. The stimulation causes a brief (about 30 seconds) seizure within the brain. The person receiving ECT does not consciously experience the electrical stimulus. For full therapeutic benefit, at least several sessions of ECT, given at the rate of three per week, are required [16].

Many forms of psychotherapy, including some short-term (10-20 weeks) therapies, can help depressed individuals. Talking therapies help patients gain insight into and resolve their problems through verbal exchange with the therapist sometimes combined with homework assignments between sessions. Behavioural therapists help patients learn how to obtain more satisfaction and rewards through their own actions and how to unlearn the behavioural patterns that contribute to their depression [17].

Two of the short-term psychotherapies that research has shown helpful for some forms of depression are interpersonal and cognitive/behavioural therapies. Interpersonal therapists focus on the patient's disturbed personal relationships that both cause and exacerbate (or increase) the depression. Cognitive/behavioural therapists help patients change their negative styles of thinking and behaving, which are often associated with depression [18]. Nunley describes the use of Symbolic Processing as a useful form of therapy to understand and transform deep rooted programming which has resulted from emotional trauma, into productive behaviour [19].

Medications

There are several types of antidepressant medications used to treat depressive disorders. These include newer medications – chiefly the selective serotonin reuptake inhibitors (SSRIs), the tricyclics, and the monoamine oxidase inhibitors (MAOIs). The SSRIs and other newer medications that affect neurotransmitters such as dopamine or norepinephrine, have fewer side effects than tricyclics [20].

One of the most prescribed antidepressants is a serotonin uptake Paroxetine (Paxil) [21]. A double blind, placebo controlled study was conducted to determine the effects of antidepressants over placebo [22]. The results indicated efficacy to pharmaceutical response over placebo effect.

Nutrition

Nutrition has been an overlooked factor of well-being. Old adages such as “You are what you eat” have gone neglected. However, a study conducted through the Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, looked at depressed moods and excessive carbohydrate intake of patients who claim to suffer from severe premenstrual syndrome (PMS). Mood was assessed with the Hamilton Depression Scale. Subjects with PMS increased carbohydrate intake during the late luteal phase. Results showed consumption of a carbohydrate-rich, protein-poor evening test meal during the late luteal phase improved depression [23].

Rogers studied nutrition and weight loss with poor eating habits associated with major depressive illness. They determined that increased levels of caloric intake exceeding basal energy expenditure resulted in major improvements in depressive symptoms [24].

Rogers suggests that polyunsaturated fatty acids can affect mood [25]. Slow weight reduction in overweight women can help to elevate mood [26]. Evidence suggests that an imbalance in the intake level of essential fatty acids may be responsible for heightened depressive symptoms [27].

Cranial Electric Stimulation

Shealy in conjunction with the Shealy Institute and Forest Institute of Professional Psychology on Depression examined blood levels to extend knowledge of neurochemicals and interrelations between norepinephrine, serotonin, beta-endorphins and cholinesterase [28]. The use of Cranial Electrical Stimulation (CES) with the Liss Pain Suppressor was used on all patients for 20 minutes each morning for two weeks. An attempt was made to find a biochemical “marker” of depression. Shealy reports neurochemical changes in patients with chronic pain when almost all patients were depressed. A neurochemical imbalance was noted with combinations of Norepinephrine/Cholinesterase (NE/CHE), Serotonin/Beta-Endorphin (ST/BE) and Norepinephrine (NE) divided by Serotonin/Beta-Endorphin (ST/BE) in the depressed person. Results indicated that with two weeks treatment with CES, clinical lifting of depression in 60% of depressed patients was noted.

Shealy evaluated neurochemical profiles of patients treated for depression in a non-pharmacological manner [29]. The study concluded there was a significant difference indicating broad-based chemical and neurochemical abnormalities in patients with depression.

Using the Zung Test for Depression, Shealy used CES as therapy to determine that Cranial Electrical Stimulation may be of therapeutic value in depression and chronic pain [30].

Herbal Therapy

Interest has risen in the use of herbs for the treatment of both depression and anxiety. St. John’s Wort (*Hypericum perforatum*), an herb used extensively in the treatment of mild to moderate depression in Europe. St. John’s Wort is an attractive bushy, low-growing plant covered with yellow flowers in summer. It has been used in folk and herbal remedies. In Germany, *Hypericum* is used to treat depression more than any other antidepressant [31]. Scientific studies that have been conducted on its use have been short-term and have used several different doses [32].

The National Institutes of Health (NIH) conducted a 3-year study, sponsored by three NIH components – the National Institute of Mental Health, the National Center for Complementary and Alternative Medicine, and the Office of Dietary Supplements. The study included 340 patients with major depression, randomly assigned to an 8-week trial with one-third of patients receiving a uniform dose of St. John’s Wort, another third a selective serotonin reuptake inhibitor commonly prescribed for depression, and the final third a placebo (a pill that looks exactly like the SSRI and the St. John’s Wort, but has no active ingredients). The study participants, who responded positively, were followed for an additional 18 weeks. The trial found no significant difference between St. John’s Wort and placebo on improvement in HAM-D scores or percentage of complete responses. The percentage of participants in remission from major depression at the end of the 8-week initial treatment phase was approximately 24% for St. John’s Wort and about 32% for placebo [33].

Further Information

Whether it’s a prescribed medication or a placebo, a successful treatment for depression must trigger a common pattern of brain activity changes. Using functional brain imaging, Mayberg and colleagues found increased activity in the cortex accompanied by decreases in limbic regions in patients who responded to either the popular antidepressant fluoxetine or to a placebo [34].

Chopra examines the relationship between depressed individuals and their brain receptors. Chopra describes the receptors in these individuals as “not fixed,” and compares them to looking like lily pads that have floated up from the depths of the cell [35]. DNA deals with biochemical messages and makes new receptors, which are floated up to the cell wall. Chopra has recently discovered that a neurotransmitter called imipramine is produced abnormally in the brains of depressed people. When searching for the origins of the imipramine receptors, he found them not only in the brain cells, but also in skin cells as well. This information led them to a connection between brain cells and to what is referred to as a mental molecule. A mental molecule contributes to create a depressed person with a sad brain, sad skin, sad liver, and so on.

Myss and Shealy draw an association between depression and the spiritual function of the sixth chakra [36]. They looked at the component of the spiritual connection required for optimum health as a process of paying attention to deeper capacities and qualities of human nature. Myss associates depression with a symptom that all is not well [37]. Myss describes depression as associated with an emotional and mental disorder. In energetic terms, she describes depression as being a release of energy, or life force, without consciousness. Therefore, if we do not have a good understanding and connection to our conscience level, we may be depleting valuable energy, which could contribute toward depression within the body. Understanding the association between energy and the physical component of our well-being is a function of Energy Medicine. The progress of evaluating human awareness, on a spiritual level, is assisting in the process of raising the level of consciousness on a global level. This contributes to a system that incorporates not only the physical and mental well-being, but also the necessity of a spiritual connectedness.

Studies have been done on the effects of intercessory prayer, positive visualization, and expectancy on the well-being of patients with many disorders. Mathews studied individuals with kidney disorders and the effects of intercessory prayer [38]. The results concluded psychological and physiological well-being were related to a patient’s expectancy that intervention such as prayer would lead to an improvement in health. This suggests that a belief in spiritual connection will have a positive effect.

Placebo Effect

First used in a 1907 study to investigate the influence of alcohol on fatigue, the placebo is now a common element of modern drug trials. The ability of a sugar pill to cure disease in some patients has been fairly accepted in medicine. Called the “placebo effect”, science has sought to understand the mysterious situations in which a patient has a positive response to a “fake” treatment. Beecher after reviewing 26 clinical trials in which placebos were used to test medicinal treatments, discovered that 32.5% of the time people got better when taking nothing more than a sugar pill [39]. In the years since, studies have shown placebos to be up to 60% effective, especially

in cases studying subjective conditions like pain and depression.

The potential is there for a placebo effect to take place. Whenever there is interaction between individuals the circumstance of such reactions can play on all people involved. It is possible that environmental factors could play on the outcome of some research projects. For example, when working with depressed individuals, if the environmental factors surrounding the conditions where the research is to be conducted indicate negative or depressing circumstances, these circumstances could transmit to the individual being examined. Contrary to the negative approach would be a more positive approach where conditions are happy and joyful. A certain air of relaxation could also skew the effects of the outcome of the research project. This could possibly pertain to placebo effects that could potentially direct the outcome of any research project.

There could also be conditions of a “self-fulfilling prophecy.” The individuals being treated in this research could possess undisclosed reasons for allowing their condition to persist. Known or unknown at a conscious level, their condition of depression may serve a purpose in their life. This could have an adverse effect on the results of the research.

A placebo effect could also be noted for the individual who strongly desires change. Their mental processing of a specific positive outcome, may affect the results of the research. However, this would be viewed as an encouraging outcome; the blood analysis might show similar effects as the intervention. As indicated in the adolescence study of depression, Field unknown to the individuals tested, there was a physiological change in biochemistry taking place prior to any behavioural changes [40]. This change indicates a lack of placebo effect.

Peptide Therapeutics, a British biotech company, saw its stock price drop 33% when studies showed that their new food-allergy medication was no more effective than placebos. While the trials were being conducted the company spokesperson avidly reported that 75% of the patients in the trial had improved so much that they could eat foods they had never been able to tolerate before, but when the data from the control group was reported, it showed that 75% of those patients had improved as well [41]. In a similar fashion, Merck halted the development of its MK-869 antidepressant because placebos proved to be every bit as effective. In the most stunning case, Genetech, a company that created a genetically engineered heart drug, found that patients actually did significantly better on the placebo than they did on the drug. “As the 20th century draws to a close, physicians may be ready to harness the placebo effect and apply its benefits to clinical practice”. Brown wants to prescribe placebos to patients. That idea has sparked lively debate [42].

The Relationship Of Spirituality To Coronary Heart Disease

Several studies suggest that religious involvement may affect health outcomes [43]. Morris investigated whether the scores from a questionnaire measuring spiritual well-being correlated with coronary heart disease as measured with computerized cardiac catheterization data. Participants were given the “Spiritual Orientation Inventory”. Scores on the Spiritual Orientation Inventory differed markedly between the control group and the experimental group. The control group had a mean score of 381; the experimental group had a mean score of 474. The total scores for the Spiritual Orientation Inventory correlated significantly with the change in

percent stenosis from baseline for all participants, regardless of group. The Pearson correlation coefficient was -.459, which is significant at the 95% confidence level. Scores on the transcendent dimension and the awareness of the tragic subscales of the Spiritual Orientation Inventory also correlated significantly with the change in percentage of stenosis.

Music / Sound Therapy

The use of music, or vibrational sound, used in the evaluation of depression has been explored by Tomatis, who has researched the use of Mozart’s music. Campbell utilizes music and vibratory sound as a method of treatment for serious conditions such as AIDS and cancer. Merritt began using music and imagery sessions to treat depression and found the use of both modalities increased inner sensitivity and awareness to suppressed emotions. Berard suggested treatment of depression through the use of an audiogram, which is an electronic hearing profile [44]. An audiogram is a level of measurement of hypersensitivity to sound. Berard discovered that the audiogram measured a 2-8 curve, or hypersensitivity to sounds of 2000Hz and 8000Hz. He also found that the absence of strength in a high frequency range between 3000Hz and 7000Hz might indicate signs of depression. He reports having treated 233 depressed patients with suicidal tendencies; 217 were cured of their depression after the first course of treatment, 11 healed after two or three treatments, and five patients failed the treatment [45].

Kvam studied the effect of vibroacoustic therapy and a music chair on cerebral palsy [46]. The study was based on the principles of music therapy, which has grown largely as an interactional medium between the therapist and the client, based on observations that music can influence a person’s emotions. The effect of sound waves has also been of interest for the treatment of disabilities and pain. At 100Hz, the body absorbs approximately 2% of the sound energy. The music chair used in Kvam’s study had four built-in speakers placed at the junction of the neck and shoulders, in the small of the back, over the buttocks and alongside the legs. The sounds of the cassette tapes that were played were in a range of 40Hz and 80Hz. The purpose of the vibration was to give an inner massage to the organic tissue and organs. The effect of the vibroacoustic treatment supports many anecdotal, positive results. The study reports that there is no literature to explain the physiological effect and the effect has not been adequately documented. Kvam claims that the human body can be compared to a leather bag filled with water. If such a bag is placed on the top of loudspeakers reflecting low frequency sounds, vibrations can be felt just by touching the top surface of the bag. All parts of the body will be affected in a similar way by vibrations caused by the low frequency sounds. Conditions such as oxygen saturation, gross and fine movements, drawing and writing tests showed improvement. of the neck and shoulders, in the small of the back, over the buttocks and alongside the legs. The sounds of the cassette tapes that were played were in a range of 40Hz and 80Hz. The purpose of the vibration was to give an inner massage to the organic tissue and organs. The effect of the vibroacoustic treatment supports many anecdotal, positive results. The study reports that there is no literature to explain the physiological effect and the effect has not been adequately documented. Kvam claims that the human body can be compared to a leather bag filled with water. If such a bag is placed on the top of loudspeakers reflecting low frequency sounds, vibrations can be felt just by touching the top surface of the bag. All parts of the body will be affected in a similar way by vibrations caused by the low frequency sounds. Conditions

such as oxygen saturation, gross and fine movements, drawing and writing tests showed improvement.

Young conducted a double blind study on the effects of everyday lifestyle stresses on the human red blood cells and the Q-link device to buffer stress [47]. Human blood cells were examined for cellular organization and disorganization in which live and dry blood samples were tested before and after wearing Q-link pendants. Through the use of a live blood micrograph, this organization and disorganization of matter present in the blood plasma, such as red blood cells, white blood cells, bacteria, yeast, mould and acid crystals could be seen and characterized. Young investigated the potential of the Clarus Q-link Pendant as a device for buffering everyday stresses and maintaining the integrity of the human red blood cell. On the eight subjects tested, there was significant impact on the red and white blood cells after 72 hours of wearing the Q-link Pendant. There appeared to be a reduction in the presence of bacteria, yeast, acid crystals and colloid symplasts in the blood plasma.

Profile of Mood States Questionnaire for Depression

Uehara, Sato and Sakado investigated correlations among depression rating scales and a self-rating anxiety scale in depressive outpatients: Investigations among the Hamilton Rating Scale for Depression (HRSD), the Beck Depression Inventory (BDI), the Inventory to Diagnose Depression (IDD), and the Self-rating Anxiety Scale (SAS) for 44 outpatients with major depression. The IDD showed significant correlation with the HRSD ($r = .57, P = .001$), the BDI ($r = .41, P = .006$), and the SAS ($r = .38, P = .010$). The BDI showed significant correlation with the HRSD ($r = .39, P = .009$), and the SAS ($r = .40, P = .008$).

Many of these methods were used for evaluating the severity of symptoms but have been misused for diagnosing depression. The Profile of Mood States Questionnaire is a self-administered evaluation of mood based on such variations of tension, depression, anger, vigor, fatigue and level of confusion, and was used for the current study. The questionnaire was based on answers from 0 to 4 ratings – 0 representing “not at all”, 1 representing “a little”, 2 representing “moderately”, 3 representing “quite a bit” and 4 represented “extremely”. Adding all the above scores and subtracting the vigor score from the total calculated a total mood disturbance score. Vigor was subtracted from the score because of its positive effect measured against the negative factors of the other components. The raw numbers are rated on separate sliding scales for male and female subjects and those numbers are calculated to find the total mood disturbance score (TMD).

Psychological mood measurements, through the Profile of Mood States Questionnaire, as well as physiological measurements through live blood analysis have indicated the positive effects of sound not only to alter depressed mood levels, but also to measure physiological changes through visible structure in the blood. The Profile of Mood States Questionnaire indicated decreased levels of depression after use of music and sound through a sound bed apparatus.

Darkfield Microscopy

A compound microscope was used for live blood analysis. In standard microscopy, light is shone directly through the sample (specimen) and viewed against a bright background. Darkfield microscopy is a method of microscopy which refracts the light in a way to make objects under observation appear to glow by using a

special oil immersion condenser creating an illumination transmitted horizontally, resulting in light passing around the object and not directly into it. Thus illuminated objects are seen on a completely black background giving a maximum contrast for viewing blood or other phenomenon.

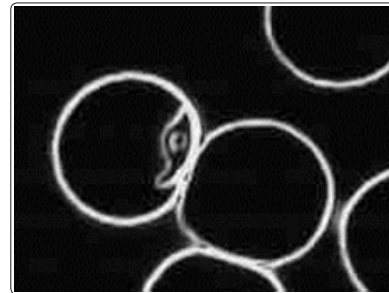


Figure 1: Red blood cells as seen in Darkfield

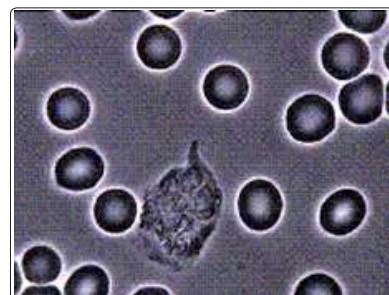


Figure 2: Red blood cells are observed and a highly contrasted image is obtained

A Quebec scientist, Gaston Naessens invented a microscope using a complex UV light source. He called it a “somatoscope” and with it he was able to examine living material at 30 times the resolution available with conventional microscopes. This led him to the discovery of what he calls “somatids,” which means “tiny bodies.” According to Naessens somatids are found in all living creatures. In a healthy organism somatids have a simple three-stage life-cycle (somatid, spore, and double spore). In this “microcycle” somatids are symbiotic; they perform essential functions in the regulation of cell division [48].

However, when we are ill the somatids elaborate into a complex sixteen-stage “macrocycle”. This change of form is called pleomorphism. Naessens’ theory says that we see the macrocycle in ill health or with impending illness. It is also claimed that with the Darkfield microscope we may see the disease pattern in the blood up to two years before a disease (for example cancer) manifests. The somatid cycle can be observed and monitored with Darkfield microscopy. We can use this to alert us to incipient problems, or to monitor a patient’s response to therapies.

A second approach to live-blood analysis has been assembled from many sources by Prof. Lida Mattman of the Wayne State University and her colleague Dr. Phil Hockstra. Microorganisms, when challenged, shed their cell walls. While this leaves them less virulent it also makes them less vulnerable. In shedding their skins they lose most of the markers that identify them as foreign bodies to our immune systems. They can also now change their shape - this simple change of shape is also called pleomorphism - and this means they can easily invade and hide in the body’s own cells, which is called cell-wall deficient bacteria.

In live-blood analysis, as taught by Hockstra, attention is paid to the microbes, to the shape and activity of the white blood cells (WBC) and red blood cells (RBC). By observing the RBC we can tell a lot about the state of metabolism in general and of the liver in particular. Meanwhile, observing the WBC gives us a reading on the state of the immune system, and the pattern of microbes tells us if disease is overwhelming the body's defences. Note that while we call this "live-blood" analysis it is really dying blood that we are observing. In a sense we are watching how quickly deterioration sets in after we take the drop of blood out of the body and this tells us how much resilience and vitality there is in the body - it is one measure of the body's health.

In both Naessens' and Hockstra's systems the blood is observed for 30 minutes. Some practitioners, who observe the live-blood for about five minutes with a "phase-contrast" microscope, are then able to make a "nutritional assessment". While one can observe the RBC equally as well with a phase contrast condenser as with Darkfield, WBC, microbes, platelets and other blood elements are not as well seen with Darkfield. For instance, emphasis is put on the fact that red blood cells clump together in coin-like stacks (or rouleau formation) wherever space allows. This is done to reduce the viscosity of the blood and for the protection that the red blood cells receive by traveling in these train-like processions.

Primarily, Darkfield live-blood analysis is a way of monitoring general health [49]. It is particularly useful, as mentioned above, in tracking a patient's response over time to their treatments indicating at the earliest moment a need to change a medication or therapy. In certain conditions, especially cancer or other life threatening diseases, where time is a crucial factor, Darkfield microscopy may help in choosing and monitoring the most effective therapy.

Endnotes:

- ¹ The Noonday Demon; pp178
- ² The Noonday Demon, pp181
- ³ Adolescence, Spring 1998
- ⁴ The Noonday Demon; pp16
- ⁵ The Noonday Demon; pp130
- ⁶ The Noonday Demon; pp138
- ⁷ The Noonday Demon; pp174
- ⁸ Reinventing Medicine; pp19
- ⁹ Ethics For a New Millennium; pp 7
- ¹⁰ Ethics For a New Millennium; pp 20
- ¹¹ Ethics For a New Millennium; pp 35
- ¹² Ethics from a New Millennium; pp 92
- ¹³ Ethics from a New Millennium; pp 179
- ¹⁴ The Noonday Demon; pp120
- ¹⁵ The Noonday Demon; pp121
- ¹⁶ The Noonday Demon; pp101
- ¹⁷ The Noonday Demon; pp101
- ¹⁸ The Noonday Demon; pp101
- ¹⁹ Inner Counselor; pp248
- ²⁰ The Noonday Demon; pp118
- ²¹ The Noonday Demon; pp60
- ²² International Clinical Psychopharmacology, 7, pp 91-94, 1992
- ²³ American Journal of Obstetrics & Gynecology. 161(5): 1228-34, 1989 November
- ²⁴ Journal of the American Dietetic Association. 88(1): 63-5, 1998 Jan
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- ³¹ The Noonday Demon; pp146
- ³² The Noonday Demon; pp146
- ³³ Journal of American Medical Association (JAMA), 2002; 287:1807-14
- ³⁴ American Journal of Psychiatry 159:728-737, May
- ³⁵ Quantum Healing; pp85
- ³⁶ The Creation of Health; pp116
- ³⁷ Anatomy of the Spirit; pp41
- ³⁸ Alternative Therapies in Health and Medicine; 0901/2001; V.7 N.5; pp42-46, 48-52
- ³⁹ Journal of American Medical Association (JAMA), 1955
- ⁴⁰ Adolescence, Spring, 1998
- ⁴¹ Cambridge, UK - 5 July 1999
- ⁴² Miroslav, Backonja and Brown, Hospital Practice, 1998
- ⁴³ Alternative Therapies in Health & Medicine; 09/01/2001; V.7 N.5; pp.96-98
- ⁴⁴ The Mozart Effect; pp249
- ⁴⁵ The Mozart Effect; pp249
- ⁴⁶ National Hospital, Berg Habilitation Centre, Bergsalleen 21, N-0584 Oslo, Norway
- ⁴⁷ Young, Robert Ph.D., D.Sc., Research Study for Everyday Lifestyle Stressors and the Q-link Pendant, January 2001
- ⁴⁸ Darkfield Warriors, pp11
- ⁴⁹ Darkfield Warriors, pp29

Research Methods

Method

The history of the first microscope dates back to 1590 with Dutch eye glassmakers, Hans and Zacharias Janssen. Robert Hooke, 1635-1703, was an English chemist, who improved on the compound microscope, which is the type used in the current study. Today, the main varieties of microscopy include light, laser and electron. The experimental group was measured pre and post intervention on levels of blood aggregation as well as level of mood through administration of the Profile of Mood States Questionnaire.

The study was designed to test the effect of mood and physiological changes to the blood cell appearance through the intervention of sound frequencies. Measurements were obtained through the Profile of Mood States Questionnaire (POMS), which is a standardized and validated test to measure mood disorders.

This study took place at Fort Langley, British Columbia, from October 2002 to December 2002. Males and females with a minimum six-month diagnosis of depression were randomly selected for an experimental and a control group. Subjects completed an informed consent form prior to intervention. Treatments consisted of one visit of approximately 1½ hours. A small drop of blood was taken from the fingertip and placed on a slide under a Darkfield microscope to observe the live blood patterns.

Pre and post finger blood tests were taken, as well as pre and post questionnaires (Profile of Mood States, Self-Rating Depression Scale). The treatment consisted of relaxing for one-hour on a music bed (for the experimental group) or the chair (for the control group).

Both the experimental and control group listened to the same music. No food or drink (other than water) was to be ingested for a two-hour period prior to and during the procedure.

Subject Inclusion and Exclusion

The subjects participating were 7 males and 37 females between the ages of 20 and 75 with a mean age of 48 and standard error of 12.11. Subjects were selected from the Vancouver, British Columbia area. All subjects had a prior diagnosis of depression for a minimal time period of six months. The study was carried out under a protocol approved by the Quantum Institutional Review Board.

The following are the criteria used to select possible participants of the study:

Inclusion Criteria

- Participants may be male or female.
- Participants must have received a clinical diagnosis of depression at least six months prior to participating in the study.
- Participants must sign a voluntary informed consent form.
- Participants must have been diagnosed and include name of professional health care provider.
- Participants must include their date of diagnosis.
- Participants must disclose method of current treatment.

Exclusion Criteria

- Participants must not have ingested food or liquid other than water for a two-hour time period prior to intervention.

Discontinuation Criteria

- Participants may choose to not take part in the study at their own request.
- If adverse reactions occur during the course of intervention the researcher will determine whether the participant should discontinue the study and a formal written report will be sent to the Institutional Review Board (IRB).

Procedure

The procedure consisted of one visit of approximately 1½ hours. There were pre and post finger blood tests, as well as a pre and post questionnaires (Profile of Mood States, Self-Rating Depression Scale). The intervention consisted of relaxing for one-hour on a specially designed music bed for the experimental group. The control group listened to the same music while sitting on a chair. No food or drink (other than water) was to be ingested for a two-hour period prior to or during the procedure. A compound light microscope Model BX40 Olympus was used to a magnification of 100X objective.

A drop of blood from the finger was taken and observed using live blood analysis technique, both before and after the intervention. Observations from the live blood analysis were noted for any signs of change in the physical appearance of the blood, such as red blood cell shape through level of aggregation. Positive changes were indicated by less aggregation of red blood cells. Other observations indicated no change noted in the level of aggregation and measurement would remain the same.

Research Design

The experimental group pre and post- test design was measured against the control group. Level of blood aggregation was scored. Levels were measured with a value of 1 (1/3 of red blood cells affected), 2 (2/3 of red blood cells affected) and 3 (a majority of red

blood cells affected). Both groups underwent administration of a pre and post -test measuring the dependent variable Profile of Mood States Questionnaire (POMS) and blood samples to observe level of aggregation, which were the dependant variables. Application of the intervention treatment, the independent variable, was administered to the subjects. Differences in mood and level of depression as well as physical changes in the blood sample scores on the pre-test and post-test measures were then compared.

The analyses was done using SAS® version 8.02. All comparisons of mean differences between control and experimental groups were analyzed using a paired T-test. Correlation of differences in POMS scores and blood aggregation scores were analyzed. Differences in scores were calculated by subtracting the pre score from the post score for both the POMS and live blood scores.

Results

Poms Scores

A relationship was found between the vibrational effects of music and sound on the body. The POMS scores show no significant difference in pre and post scores between the experimental and the control group (p-value= 0.6422). The control group shows a mean POMS difference that is significantly different from zero (p-value= 0.0017). The estimate of the mean difference in the POMS score for the control group is -36.24 (se= 9.61); thus there is evidence to suggest a reduction in POMS scores in the control group. Similarly, the mean difference in POMS score for the experimental group is significantly different from zero (p-value < 0.0001) with a mean difference of -41.48 (se=6.53). Thus, on average, the experimental group also shows a reduction in the POMS scores. The null hypothesis is partially supported determining the experimental and control group interventions had some effect but there was no discernable difference between the experimental and control groups.

Live blood analysis

For the live blood analysis data, there is a significant difference in the mean difference between the pre and post scores, for the experimental and control groups (p-value< .0001). In the control group, there is no evidence to suggest that the mean difference in live blood scores was significantly different from zero (p-value=0.7175) whereas, in the experimental group there is evidence to suggest that the mean difference in blood scores is significantly different from zero (p-value <0.0001).

The correlation between the difference in live-blood score and the difference in the POMS score was $r=0.11$ (p-value=0.57) for the experimental group and $r=0.27$ (p-value=0.30) for the control group. Thus, in both the experimental and control groups, the correlations are not significantly different from zero. This indicates that there is no evidence to suggest that POMS and blood scores are correlated.

Null hypothesis is disproved as indicated through sound vibration having a highly significant effect on the red blood cell aggregation.

Poms Data

Results of the POMS T-scores obtained from the experimental group are shown in Table 1. Results from the control group are shown in Table 2

- In the first column, tension is defined by adjective scales descriptive of heightened musculoskeletal tension.
- The second column represents depression as defined by levels

of feeling unhappy, sad, sorry or other described associations of personal inadequacies.

3. The third column represents a mood of anger or hostility. This section describes feelings of intense, overt anger, resentment and bitterness.
4. Column four consists of vigor or activity. It represents a positive affect factor and is measured against the other mood states.
5. The fifth column represents fatigue and inertia described as a

feeling of tiredness.

6. Column six relates to levels of confusion and bewilderment. There is doubt as to whether this factor represents a trait of cognitive inefficiency.
7. To obtain a Total Mood Disturbance score, tension, depression, anger, fatigue and confusion scores were added and the score for vigor was subtracted to obtain a final score.

Table 1: Profile of Mood States questionnaire results of the experimental group

Subject	A= Pre-test B= Post-test	T Scores						Total Mood Disturbance Score (TMD)
		Tension +	Depress-ion +	Anger +	Vigor -	Fatigue +	Confus-ion +	
1-E	A	39	44	53	46	49	46	185
	B	38	41	38	53	43	43	150
2-E	A	38	41	44	62	43	39	143
	B	30	32	37	78	34	32	87
3-E	A	48	55	54	62	60	52	207
	B	46	44	40	46	56	51	191
4-E	A	41	46	41	50	66	54	198
	B	31	38	37	48	68	51	177
5-E	A	47	53	46	61	49	39	173
	B	45	55	47	59	46	40	174
6-E	A	49	56	54	37	63	58	243
	B	42	49	47	43	56	49	200
7-E	A	36	43	40	73	40	40	126
	B	31	44	38	56	48	46	151
8-E	A	53	68	53	43	57	66	254
	B	50	63	55	42	51	63	240
9-E	A	37	40	41	67	57	40	148
	B	32	35	38	73	55	42	129
10-E	A	46	52	47	65	50	54	184
	B	45	45	40	65	49	51	165
11-E	A	40	41	44	67	43	39	140
	B	30	33	37	70	35	32	97
12-E	A	50	46	47	50	59	54	206
	B	40	46	42	64	42	48	154
13-E	A	45	50	39	62	53	37	162
	B	35	39	37	66	43	35	123
14-E	A	42	37	52	80	55	45	151
	B	40	34	43	78	52	40	131
15-E	A	58	62	57	51	68	70	264
	B	41	53	54	56	51	51	194
16-E	A	44	44	44	51	55	40	176
	B	30	41	40	38	54	46	173
17-E	A	48	53	57	56	51	51	204

	B	39	46	50	69	44	43	153
18-E	A	36	35	42	72	44	36	121
	B	30	32	37	53	43	37	126
19-E	A	39	41	46	67	50	37	146
	B	30	32	37	62	40	32	109
20-E	A	54	45	48	38	66	49	224
	B	33	36	38	45	59	39	160
21-E	A	50	55	61	66	55	57	212
	B	39	35	39	67	39	42	127
22-E	A	46	46	68	71	54	45	188
	B	32	36	43	69	42	36	120
23-E	A	60	48	51	48	63	51	225
	B	40	39	40	53	51	42	159
24-E	A	61	55	56	51	62	57	240
	B	30	36	37	42	47	46	154
25-E	A	53	60	65	51	65	51	243
	B	30	33	37	66	37	34	105
26-E	A	32	32	39	48	52	37	144
	B	30	32	37	69	38	33	101
27-E	A	53	47	49	54	54	61	210
	B	33	39	38	56	44	49	147

Table 2: Profile of Mood States questionnaire results of the control group

Subject	A= Pre-test B= Post-test	T Scores						Total Mood Disturbance Score (TMD)
		Tension +	Depress-ion +	Anger +	Vigor -	Fatigue +	Confus-ion +	
1-C	A	47	49	48	48	63	51	210
	B	39	42	40	47	49	40	163
2-C	A	37	32	38	62	42	37	124
	B	30	33	40	42	55	40	156
3-C	A	42	44	42	62	35	49	150
	B	31	36	39	70	34	34	104
4-C	A	50	51	47	48	52	60	212
	B	38	42	41	48	49	57	179
5-C	A	54	60	39	38	62	60	237
	B	39	44	37	59	43	43	147
6-C	A	44	44	53	59	50	48	180
	B	30	37	40	75	43	40	115
7-C	A	49	38	47	64	45	46	161
	B	46	37	45	62	45	43	154
8-C	A	58	56	46	45	67	63	245
	B	35	46	38	64	63	54	172
9-C	A	35	37	40	78	46	37	117
	B	35	34	39	80	43	36	107
10-C	A	48	64	54	35	65	66	262
	B	44	53	44	40	57	57	215

11-C	A	46	38	46	53	47	40	164
	B	31	35	37	44	47	42	148
12-C	A	33	36	38	42	44	37	146
	B	30	34	37	37	37	37	138
13-C	A	48	46	73	69	37	40	175
	B	30	37	40	54	45	42	140
14-C	A	40	46	40	61	52	39	156
	B	36	42	40	59	46	40	145
15-C	A	32	34	37	40	37	39	139
	B	31	32	37	38	39	39	140
16-C	A	49	54	48	40	62	61	234
	B	30	33	37	77	37	37	97
17-C	A	39	42	38	38	63	51	195
	B	30	36	37	40	63	45	171

Profile of Mood States Questionnaire Results

Pre and post-test scores were obtained from the experimental group as shown in Table 3. Total Mood Disturbance (TMD) scores indicated the experimental group had less mood disturbance after intervention of the music bed as specified in the results. The mean score for the pre-test was 189.50 and post-test was a mean of 148.04.

Table 3: Profile of Mood States (POMS) questionnaire Total Mood Disturbance (TMD) scores for the experimental group. Both the pre and post TMD scores are provided

Subject	Total Mood Disturbance (TMD) Scores	
	Pre-Test	Post-Test
1-E	185	150
2-E	143	87
3-E	207	191
4-E	198	177
5-E	173	174
6-E	243	200
7-E	126	151
8-E	254	240
9-E	148	129
10-E	184	165
11-E	140	97
12-E	206	154
13-E	162	123
14-E	151	131
15-E	264	194
16-E	176	173
17-E	204	153
18-E	121	126
19-E	146	109
20-E	224	160
21-E	212	127
22-E	188	120

23-E	225	159
24-E	240	154
25-E	243	105
26-E	144	101
27-E	210	147
Total	5117	3997
Mean	189.52	148.04

Pre and post- POMS scores were obtained from the control group Table 4. Results indicated less change in Total Mood Disturbance (TMD) in the control group. The mean score for the pre-test was 182.76 and post-test was a mean of 146.53.

Table 4: Profile of Mood States (POMS) questionnaire, Total Mood Disturbance (TMD) scores for the control group. Both the pre and post TMD scores are provided

Subject	Total Mood Disturbance (TMD) Scores	
	Pre-Test	Post-Test
1-C	210	163
2-C	124	156
3-C	150	104
4-C	212	179
5-C	237	147
6-C	180	115
7-C	161	154
8-C	245	172
9-C	117	107
10-C	262	215
11-C	164	148
12-C	146	138
13-C	175	140
14-C	156	145
15-C	139	140
16-C	234	97

17-C	195	171
Total	3107	2491
Mean	182.76	146.53

Table 5: Total Mood Disturbance score mean and standard error for the experimental and control groups before (Pre-test) and after treatment (Post-test)

		Pre-test		Post-test	
	n	Mean	SE	Mean	SE
Experimental	27	189.52	7.92	148.04	6.84
Control	17	182.76	10.71	146.53	7.27

Live Blood Analysis Data

Blood aggregation score definitions were indicated to obtain a

Table 6: Analysis of live blood samples for the experimental (mean age= 47.77 yrs, se=2.33, range= (20, 75)) and control groups (mean age= 47.71 yrs, se=3.30, range= (20, 75)). A level of aggregation score of 1 indicates mild aggregation (1/3 of the red blood cells affected), 2 indicates moderate aggregation (2/3 of the red blood cells affected), and 3 indicates severe aggregation (majority of the red blood cells affected). Aggregation is defined as the clustering or coming together of red blood cells.

EXPERIMENTAL GROUP					CONTROL GROUP					
Subject	Gender	Age	Levels of Aggregation		Subject	Gender	Age	Levels of Aggregation		
			Pre-test	Post-test				Pre-test	Post-test	
1-E	F	50	2	1	1-C	M	61	1	1	
2-E	F	55	2	1	2-C	F	28	1	2	
3-E	F	43	1	1	3-C	F	42	1	2	
4-E	F	47	1	1	4-C	F	46	2	2	
5-E	F	61	3	1	5-C	F	61	1	1	
6-E	F	40	3	2	6-C	F	28	2	1	
7-E	F	48	1	1	7-C	F	20	1	2	
8-E	F	60	3	1	8-C	F	47	2	2	
9-E	F	57	3	1	9-C	F	75	2	2	
10-E	M	39	1	1	10-C	F	48	2	2	
11-E	F	62	2	1	11-C	M	48	1	1	
12-E	F	44	2	1	12-C	F	51	2	1	
13-E	M	57	2	1	13-C	F	53	2	1	
14-E	F	75	2	1	14-C	F	61	1	2	
15-E	F	28	3	1	15-C	F	52	2	2	
16-E	F	20	2	1	16-C	F	41	1	1	
17-E	F	53	2	1	17-C	F	49	1	1	
18-E	F	55	1	1						
19-E	F	47	2	1						
20-E	F	51	2	1						
21-E	F	42	1	1						
22-E	M	36	2	1						
23-E	M	39	2	2						
24-E	M	44	3	1						
25-E	F	63	2	1						
26-E	F	28	3	1						
27-E	F	46	2	2						

level of measurement for observation of aggregation in the blood sample as viewed through Darkfield analysis. Less aggregation in the appearance of the blood sample is indicative of a healthier state of blood.

Table 6 shows the mean level of the live blood score for the experimental and control groups before and after intervention.

Table 8 indicates a decreased level of aggregation post intervention in the experimental group. The difference in pre and post blood scores was calculated (pre-test score – post-test score) and there is evidence to suggest that there is a significant difference in means between the experimental (mean difference=-0.93, se=0.14) and control groups (mean difference =0.06, se=0.16) (p-value<0.0001).

Table 7: Live blood analysis score mean and standard error for the experimental and control groups before (Pre-test) and after treatment (Post-test)

	n	Pre-test		Post-test	
		Mean	SE	Mean	SE
Experimental	27	2.04	0.14	1.11	0.06
Control	17	1.47	0.12	1.53	0.12

Table 8: Combined Summary of Live Blood (B) and POMS (P) Results – Experimental Group

SUBJECT	GENDER	AGE	PRE-TEST B	POST-TEST B	PRE-TEST P	POST-TEST P
1-E	F	50	2	1	185	150
2-E	F	55	2	1	143	87
3-E	F	43	1	1	207	191
4-E	F	47	1	1	198	177
5-E	F	61	3	1	173	174
6-E	F	40	3	2	243	200
7-E	F	48	1	1	126	151
8-E	F	60	3	1	254	240
9-E	F	57	3	1	148	129
10-E	M	39	1	1	184	165
11-E	F	62	2	1	140	97
12-E	F	44	2	1	206	154
13-E	M	57	2	1	162	123
14-E	F	75	2	1	151	131
15-E	F	28	3	1	264	194
16-E	F	20	2	1	176	173
17-E	F	53	2	1	204	153
18-E	F	55	1	1	121	126
19-E	F	47	2	1	146	109
20-E	F	51	2	1	224	160
21-E	F	42	1	1	212	127
22-E	M	36	2	1	188	120
23-E	M	39	2	2	225	159
24-E	M	44	3	1	240	154
25-E	F	63	2	1	243	105
26-E	F	28	3	1	144	101
27-E	F	46	2	2	210	147
TOTAL		1290	55	30	5117	3997
MEAN		47.77	2.04	1.11	189.52	148.04
SE		12.11	0.71	0.32	41.11	35.53

Discussion

Assessment of Results

The purpose of conducting this research project was to determine if vibration through sound had an effect on individuals with a diagnosis of depression. The study examined the effects of sound vibration on the levels of mood and red blood cell aggregation. An adaptation of a music bed device was chosen and designed for two main reasons.

First, the air filled mattress had the potential of being an ideal medium for transmitting vibrations from sound. And second, the size and shape of the music bed allowed for maximum contact with the posterior position of the human body.

The concept of the chair parallels the similarity of a comfort device such as the bed, but designed without the ability to transfer sound

vibrations as capably as the music bed method. Previous studies, such as the Kvam research, used a similar method that consisted primarily of a music chair design, which vibrated sound into the back area, only. The use of low frequency sound was found to be most effective in this study as well. Results of this study indicated positive levels of increased oxygenation in the blood as well as elevated motor skills.

The music bed was designed to support the hypothesis based on levels of low frequency sound vibrating through the body. The design of the chair model confined levels of vibration to promote less absorption through the body. Any sound vibration that was transmitted was primarily through an auditory process.

The hypothesis was supported by a significant change measured through live blood analysis. However, POMS scores indicated there was no such effect. This research was set to determine and measure the effects of vibration through an air mattress music bed device and test the difference against subjects sitting in a chair, listening to the same music. The assumption indicated a significant difference from the music bed device. Results indicated no improvement in mood states however, there was a significant difference of a decrease in the red blood cell aggregation from the music bed treatment.

Evidence from the live blood data would suggest that sound vibration through transfer of the bed apparatus was more effective than the sound vibration through the chair method. However, the POMS score data suggest that there is no difference between the experimental and control groups where depression was concerned, therefore it would appear music has an instantaneous effect on mood.

This method implies sound vibration may have a positive effect on blood aggregation. Theoretically, altering the physical chemistry of blood through application of sound may alter the physiology of the body promoting a healthier state. Long-term conditioning could have a positive effect on the emotional levels one experiences. Ongoing research in this area could result in less invasive approaches to treating conditions such as depression. More research is needed on the effects of various sound frequencies and types of music to find optimum levels, which will alter depressed mood states in a positive manner.

Further Investigation

The hypothesis may have been further supported with no sound intervention in the control group. The use of another intervention, such as having the control group do one hour of mathematical questions may have altered the results and supported the hypothesis more. Another method would involve having the control group lie on the music bed for the same time period without the music playing. Both suggested interventions would encourage left-brain activities with increased thought processing taking place. These methods would induce more mental stimulation and may create increased aggregation in the blood and more mood disturbances. This would further support the hypothesis.

The results suggest that the music bed has a physiological effect on red blood cells compared to sitting in a chair. The current study also determined that music appears to have a positive effect on depression as measured in the immediate post music stage. However, as there was no true control for this experiment, laying on a bed versus sitting in a chair is confounded with the effects of acoustic

vibration. Thus, it cannot be said that acoustic vibrations have an effect on blood physiology or state of depression.

Further experiments must be done where the treatment consists of laying on the musical bed, listening to music through the bed speakers for 1 hour and the control is laying on the musical bed, listening to music through alternative speakers (rather than the bed speakers) for 1 hour. A double blind study would be conducted to eliminate a confound effect.

Other studies conducted in humans have been done with favourable results in the area of sound vibration and chronic pain relief. In an uncontrolled study using an experimental electrical pain model where vibration was applied to sites distal to stimulation, pain was significantly reduced when compared to proximal application. Several studies have also been conducted on subjects with chronic pain syndrome. One study used 108 patients with chronic neurological pain and reported 72 (66.6%) had a reduction in pain following a 45-minute trial session of vibration. In the same study, the investigators sought to identify the best vibratory conditions to achieve maximum pain relief.

They discovered the following:

1. The time frame of applying vibratory stimulation for a 45-minute period created pain relief that lasted for several hours and longer periods of stimulation did not prolong the relief of pain.
2. The frequency range of 50Hz to 150Hz was associated with pain relief.
3. The best relief from pain was achieved when vibration was applied near the area of pain.

The current study was conducted on subjects with a previous diagnosis of depression to observe physical and psychological changes when vibratory frequencies were applied through the use of music. The results indicated, as with the above-mentioned studies, that vibration to the body has some favourable results in the area of pain relief or measurable physiology of the red blood cell.

Conclusion

Relationship between Blood aggregation scores and POMS scores

There was no significant difference noted between the blood analysis and the Profile of Mood States Questionnaire Results (POMS). The results suggest that the music bed has a physiological effect on red blood cells when compared to sitting in a chair. Null hypothesis, would indicate no significant change in either experimental or control group. It would support that after intervention trials, results would suggest the sound vibration did not have a significant effect on mood state, however, the results indicate a highly significant effect upon red blood cell aggregation.

Relationship between Chair and Music Bed

The music that was chosen for this experimental design is Jonathan Goldman's Chakra Chants. Experimental pre-testing and research indicated that low frequency sounds between the range of 64Hz and 80Hz. produce the most effect to support this experimental design. The music bed encasement for the speakers allows for enhanced sound to distribute vibrations to the majority of the body. Vibration of the sound was felt throughout the body in comparison to slight or little vibration experienced while sitting in the chair. Subjects expressed feelings of more relaxation after the intervention of the

music bed, whereas those who experienced the chair felt little or no difference. Both the chair and the music bed were placed in the same environments to control for the effects of experimental confounds. Headphones were placed over subjects in both the experimental and control groups.

Post-test results indicated a significant change in the blood score for the music bed compared to the chair. Examples given in Figures 9, 10, 11 and 12 show the changes in blood aggregation in the experimental group. There was less change indicated in the control group as is seen in Figures 13 and 14. Profile of Mood States Questionnaire Results (POMS) indicated no significant difference in the treatment groups.

Table 9: Combined Summary of Live Blood (B) and POMS (P) Results, Control Group

SUBJECT	GENDER	AGE	PRE-TEST B	POST-TEST B	PRE-TEST P	POST-TEST P
1-C	M	61	1	1	210	163
2-C	F	28	1	2	124	156
3-C	F	42	1	2	150	104
4-C	F	46	2	2	212	179
5-C	F	61	1	1	237	147
6-C	F	28	2	1	180	115
7-C	F	20	1	2	161	154
8-C	F	47	2	2	245	172
9-C	F	75	2	2	117	107
10-C	F	48	2	2	262	215
11-C	M	48	1	1	164	148
12-C	F	51	2	1	146	138
13-C	F	53	2	1	175	140
14-C	F	61	1	2	156	145
15-C	F	52	2	2	139	140
16-C	F	41	1	1	234	97
17-C	F	49	1	1	195	171
TOTAL		811	25	26	3107	2491
MEAN		47.71	1.47	1.53	182.76	146.53
SE		13.6	0.51	0.51	44.15	29.99

Graphs

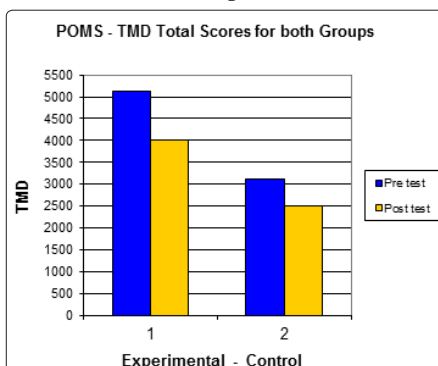


Figure 3: Profile of Mood States (POMS) and Total Mood Disturbance (TMD). Total Scores for both Experimental and Control Groups

of the intervention of the vibrational sound bed as opposed to just listening to the music while sitting in a chair.

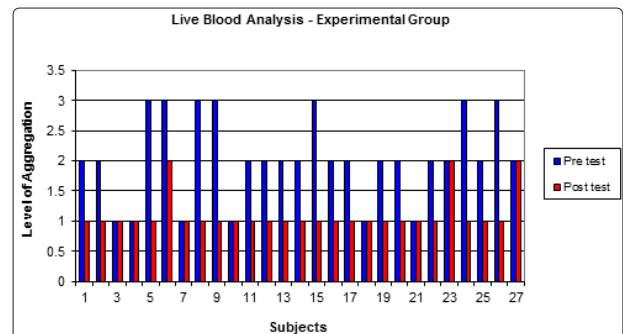


Figure 4: Live Blood Analysis Experimental group

The pre and post difference in POMS scores comparison between the experimental and control groups indicates that there is no effect

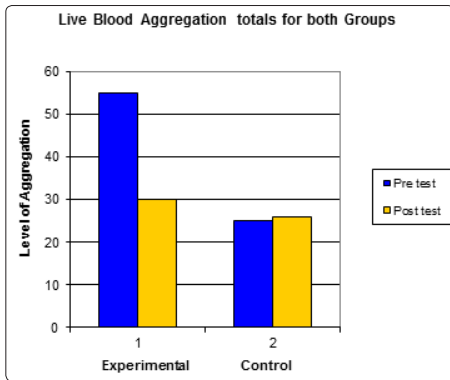


Figure 5: Live Blood Aggregation Totals for both groups

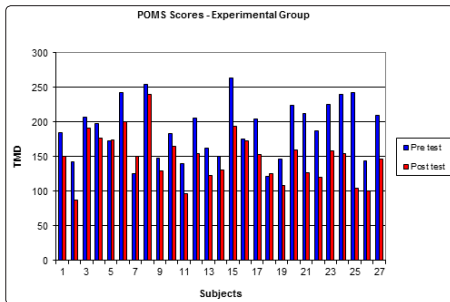


Figure 6: POMS Scores Experimental Group

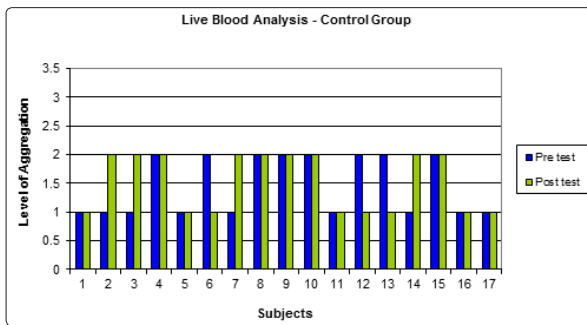


Figure 7: Live Blood Analysis Control Group

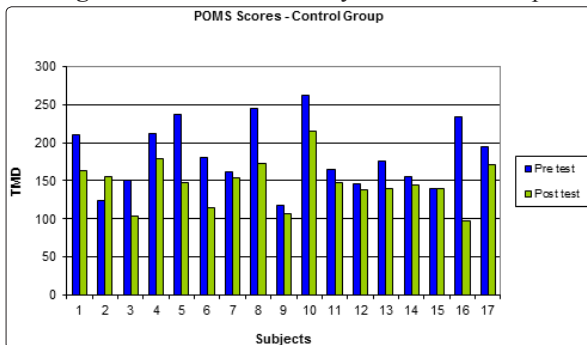


Figure 8: POMS Scores Control Group

**VHS Video Views of Live Blood Analysis
Experimental Group**

Figures 9, 10, 11 and 12, show still shot examples taken from the VHS video views, which were used to obtain reproduction of the blood samples from the experimental group. Both pre and post-experimental intervention are shown for each example. The examples show visible changes in the appearance of the level of aggregation in the blood.

Example A

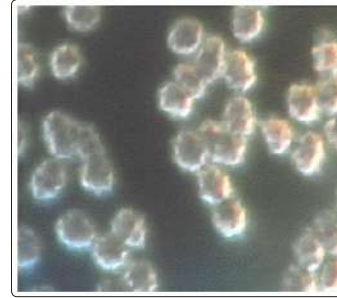


Figure 9: VHS video image of pre-test live-blood analysis Experimental Group-Level 2

Example A

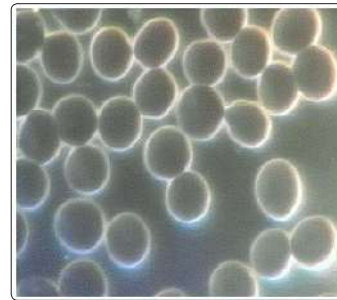


Figure 9A: VHS video image of post-test live-blood analysis Experimental Group-Level 1

Example B

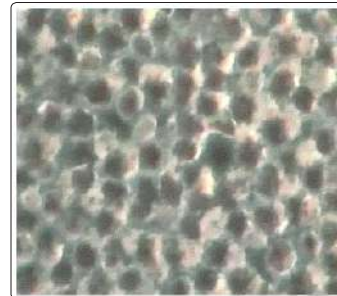


Figure 10: VHS video image of pre-test live-blood analysis Experimental Group-Level 3

Example B

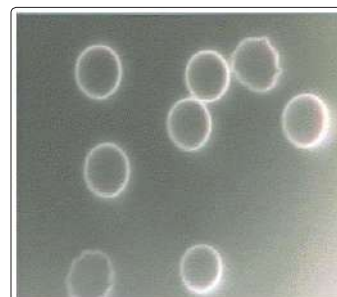


Figure 10A: VHS video image of post-test live-blood analysis Experimental Group-Level 1

Example C

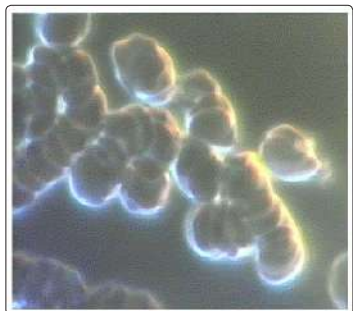


Figure 11: VHS video image of pre-test live-blood analysis Experimental Group-Level 2

Example C

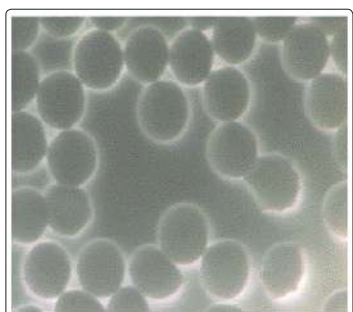


Figure 11A: VHS video image of post-test live-blood analysis Experimental Group-Level 1

Example D

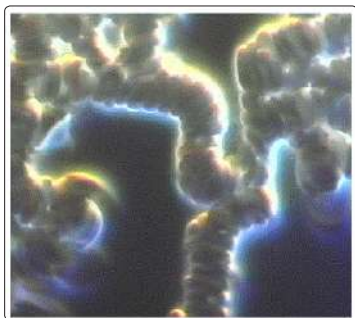


Figure 12: VHS video image of pre-test live-blood analysis Experimental Group-Level 2

Example D

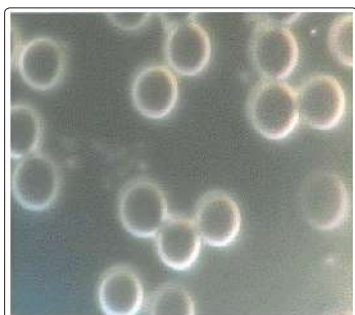


Figure 12A: VHS video image of post-test live-blood analysis

**Experimental Group-Level 1
Control Group**

Figures 13 and 14 show still shot examples taken from the VHS video views, which were used to obtain reproduction of the blood samples from the control group. Both pre and post-control intervention are shown for each example. The examples show less or no visible changes in the appearance of the level of aggregation in the blood. The examples below are still view shots taken from a VHS video recorder, which was used to reproduce the live blood analysis samples of the control group. The control group were administered a pre and post blood analysis observing level of aggregation after intervention of listening to music while sitting in a chair.

Example A

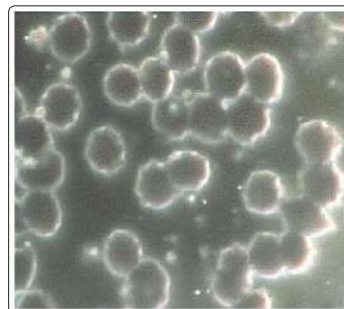


Figure 13: VHS video image of pre-test live-blood analysis Control Group – Level 1

Example A

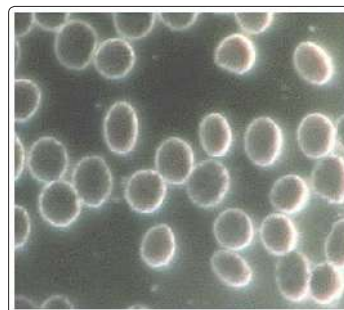


Figure 13A: VHS video image of post-test live-blood analysis Control Group – Level 1

Example B

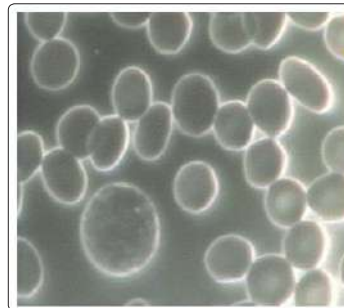


Figure 14A: VHS video image of pre-test live-blood analysis Control Group – Level 1

Example B

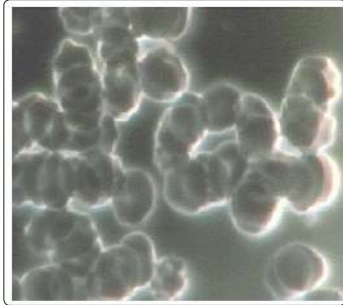


Figure 14A: VHS video image of post-test live-blood analysis Control Group – Level 2

* Note increased level of aggregation after intervention

Still Shots of Blood Samples Video Recording Example A

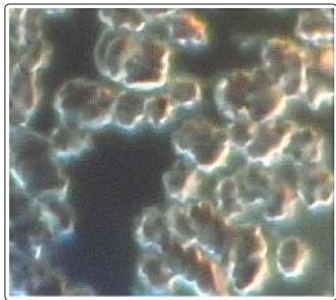


Figure 15: Still shot of video footage prior to music bed intervention
Example A

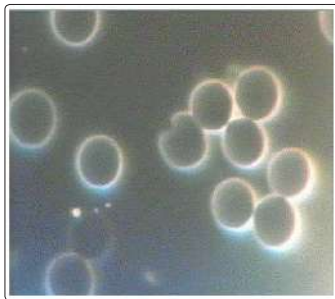


Figure 15A: Still shot of video footage after the music bed intervention

Example B

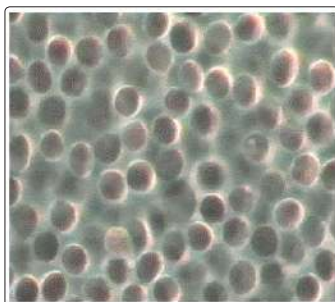


Figure 16: Still shot of video footage before the chair intervention

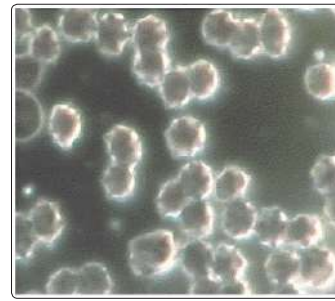


Figure 16A: Still shot of video footage after the chair intervention

Acknowledgements

Edited by Laura Cowen, Simon Fraser University Burnaby, British Columbia

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