Research on Benefits of Drumming

1) QUALITY OF LIFE IMPROVEMENTS IN AT-RISK ADOLESCENTS

HealthRhythms Adolescent Protocol is a catalyst for quality of life improvement

Despite the devotion of significant resources to rehabilitate juvenile delinquents (youth who have committed offenses that would be considered criminal in adults) a limited number of effective, replicable, evidence-based treatment strategies exist, which are supported by peer-reviewed research. This new research published in Advances Journal demonstrates significant improvements in these youths through the use of the HealthRHYTHMS adolescent protocol. In fact this is the first strategy we are aware of which may actually hold hope for reducing what some refer to as "the columbine effect" which has driven so many adolescents to commit horrible violent acts. (Instrumental Anger) see below

"This is an accessible, affordable and sustainable strategy that can positively impact juvenile rehabilitation." Barry Bittman, MD

Creative Musical Expression as a Catalyst for Quality-of-life Improvement in Inner-city Adolescents Placed in a Court-referred Residential Treatment Program

Barry Bittman, MD; Larry Dickson, MA; Kim Coddington, PhD

ABSTRACT

Background: Obstacles to effectively rehabilitate inner-city adolescents in staff-secure residential treatment centers should not be underestimated. Effective evidence-based protocols are lacking to help juveniles who are often angry, detached, frustrated, and in direct conflict with their peers. Facing a myriad of issues ranging from youth delinquency offenses to trauma, abuse, drug/ alcohol use, peer pressure/gang-related activities, lack of structure in home environments, mental health diagnoses, and cognitive functioning difficulties, these adolescents present extraordinary challenges to an over-stressed juvenile justice system.

Material/methods: A randomized controlled crossover study is utilized to comprehensively evaluate the effectiveness of a novel creative musical expression protocol as a catalyst for nonverbal and verbal disclosure leading to improvements in quality of life for inner-city youth in a court-referred residential treatment program. A total of 52 (30 females and 22 males) African-American, Asian, Caucasian, and Puerto Rican subjects ranging in age from 12 to 18 (mean age 14.5) completed the study.

Results: Dependent variable measures included the Child and Adolescent Functional Assessment Scale (CAFAS), the Adolescent Psychopathology Scale (APS), the Adolescent Anger Rating Scale (AARS), the Reynolds Adolescent Depression Scale, 2nd edition (RADS 2), and the Adolescent Visual-Analog Recreational Music Making Assessment (AVARMMA). Statistically significant (experimental vs control) improvements in multiple parameters include school/work role performance, total depression, anhedonia/negative affect, negative self-evaluation, and instrumental anger. In addition, extended impact (experimental vs control) is characterized by statistically significant improvements 6 weeks
after completion of the protocol, for school/work role performance, behavior toward others, anhedonia/negative affect, total anger, instrumental anger, anger, and interpersonal problems.

**Limitations:** The primary limitations of this study include an extended follow-up period of only 6 weeks post completion of the protocol, and the inability to blind the counselors performing standardized assessments.

**Conclusions:** This study is the first of its kind to test a replicable creative musical expression protocol as a catalyst for nonverbal and verbal disclosure leading to improved quality of life for inner-city youth in a court-referred residential treatment program. With substantial potential for widespread dissemination, this innovative protocol for adolescents can be readily utilized by behavioral health professionals without prior musical experience.

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2) EMPLOYEE BURNOUT & TURNOVER REDUCTION

Improves Mood States and Reduces Burnout (2003)

Working in the long-term care environment can be very stressful. Lower employee stress and turnover rates translate into better care for residents and cost savings for employers. The U.S. Department of Health and Human Services (HHS) estimates there is an annual turnover rate of between 70 to 100 percent in nursing homes (Wilner 1999).

In this 6-session (HealthRHYTHMS) study of 112 long-term care workers 46% demonstrated significant mood improvement. When follow-up testing was done 6 weeks after the end of the study, the improvement in mood had continued to grow increasing to 62%. Based upon what is already known from previous studies of factors that influence an employee’s decision to quit, an independent team of economic-impact analysts projected these improvements would result in an 18.3% reduction in turnover. When follow-up was done with this facility the annual turnover experienced was actually reduced even more than these projections. Read the Abstract (next)

Effectiveness for Employee Burnout & Turnover Reduction

Improves Mood States and Reduces Burnout

**Abstract:**


Bittman MD, Karl T. Bruhn, Christine Stevens, MSW, MT-BC, James Westengard, Paul O. Umbach, MA

Advances in Mind-Body Medicine Fall/Winter 2003, Vol. 19 No. 3/4

**Hypothesis:** a cost-effective Yamaha Clavinova-based HealthRHYTHMS® Recreational Music-Making protocol reduces burnout and improves mood states in long-term care workers.

**What we studied:** At Westbury United Methodist Retirement Community we studied 112 employees’ mood states (POMS-Profile of Mood States & MBI-Maslach Burnout Inventory) including: tension/anxiety (T/A), depression/dejection
(D/D), anger/hostility (A/H), vigor/activity (V/A), fatigue/inertia (F/I) and confusion/bewilderment (C/B). Total Mood Disturbance (TMD) is the sum of the above mood parameters weighing V/A negatively.

**What we found:** A 46% improvement in total mood disturbance and 62% improvement 6 weeks post intervention. Economic Impact projections – a typical 100 bed long-term care facility would expect to experience an 18.3% overall reduction in employee turnover. Retention of 11 of 60 positions predicted to be lost each year would result in an average cost savings of $89,100 per year. Total annual savings to the industry based on an 18.3% decrease in turnover at every long-term care facility is therefore projected at $1.46 billion. More...

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**3) REDUCING STUDENT DROP-OUT RATE**

**Retains Students: Mood Improvement & Burnout Reduction (2004)**

In July 2007, a report released by the PricewaterhouseCoopers’ Health Research Institute found that though the average nurse turnover rate in hospitals was 8.4%, the average voluntary turnover for first-year nurses was 27.1%. (GIH, 2008) Drop-out rates for nursing schools are rising further compounding this problem.

In this study the mood states of 75 first year associate degree **nursing students** were evaluated including: tension/anxiety, depression/dejection, anger/hostility, vigor/activity, fatigue/inertia and confusion/bewilderment. In spite of the fact that being required to participate in the study added additional time requirements to their schedule a 28.1% improvement in total mood disturbance was reported. Analysts project that these reductions in burnout and improvements in mood would likely reduce drop-out rates. This has the potential to positively impact the number of nurses completing nursing school and entering the nursing profession. Read the Abstract below

**Reducing Student Drop-out Rate (nursing students)**

**Retains Students: Mood Improvement & Burnout Reduction**

**Abstract:**
International Journal of Nursing Education Scholarship: Vol. 1: No. 1, Article 12

**Hypothesis:** a cost-effective Mind-Body Wellness Exercise-based HealthRHYTHMS Recreational Music-Making protocol reduces burnout and improves mood states in First Year Associate Degree Nursing Students.

What we studied: At Allegany College of Maryland we studied 75 first year associate degree nursing students’ mood states (POMS-Profile of Mood States & MBI-Maslach Burnout Inventory) including: tension/anxiety, depression/dejection, anger/hostility, vigor/activity, fatigue/inertia and confusion/bewilderment. Total Mood Disturbance (TMD) is the sum of the above mood parameters weighing V/A negatively.
What we found: A 28.1% improvement in total mood disturbance. Economic Impact projections – a typical 105-student program would expect to retain 2 additional students each year. This improvement in retention rates would result in a projected annual savings of $29.1 million to US Nursing Schools. Extending this analysis to the healthcare arena, these projected retention improvements could result in cost savings of $322,000 for the typical acute care hospital, and more than 1.5 billion for the US healthcare industry. More...

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4) CORPORATE EMPLOYEE WELLNESS BENEFITS

Strengthens the Immune System of Corporate Employees (2007)

Growing evidence linking job stress to illness emphasizes the importance of finding an effective means of stress management. This study of Corporate Employees in Japan was conducted to assess whether or not this wellness strategy demonstrated a positive effect on stress biology in the corporate environment.

HealthRHYTHMS has significant potential for utilization in the corporate wellness environment. (Masatada, W., Koyama, M., Utsuyama, M., Bittman, B., Kitagawa, M., Hirokawa, K., 2007) Read the Abstract see below

Corporate Employee Wellness Impact

Strengthens the Immune System of Corporate Employees

Abstract
Recreational music-making modulates natural killer cell activity, cytokines, and mood states in corporate employees
Masatada Wachi, Masahiro Koyama, Masanori Utsuyama, Barry Bittman, Masanobu Kitagawa, Katsuiku Hirokawa
ICID: 473761

Background: With growing evidence linking job stress to illness, finding an effective means of stress management has become a challenging international endeavor. Although music therapy has attracted the attention of various fields as a promising method for alleviating stress, lack of standardization and paucity of data have served as impediments to widespread utilization.

Material/Methods: The effects of a Recreational Music-Making (RMM) group drumming protocol was evaluated on Japanese male corporate employees. A total of 20 volunteers participated in a one-hour RMM session while 20 volunteers engaged in leisurely reading for one hour (controls). After a six-month interval, the groups switched activities and underwent one session each. Pre- and post-intervention data were collected using mood state questionnaires and blood samples. Individual and group mean values for natural killer (NK) cell activity, NK cell percentage, and cytokine gene expression were analyzed.

Results: NK cell activity in the RMM group increased among individuals with low pre-intervention levels, and decreased among those with high pre-intervention levels. A significant correlation was established between changes in NK cell activity and the changes in the level of gene expressions for interferon-γ and interleukin-10. The RMM group
demonstrated enhanced mood, lower gene expression levels of the stress-induced cytokine interleukin-10, and higher NK cell activity when compared to the control.

Conclusions: Based upon documented changes in NK cell activity, coupled with gene expression changes for interferon-γ, interleukin-10, and improved mood, this RMM protocol has significant potential for utilization in the corporate wellness environment.

5) STRESS REDUCTION GENOMIC IMPACT

Reverses Stress on the Genomic Level (2005)

"Stress is really a component of every disease," says James Rosenbaum, MD.
For more information about stress-related illness click here.(link to: STRESS IMPACT: RESEARCH SUMMARY)

This groundbreaking study published in the February 2005 issue of the international research journal Medical Science Monitor shows for the first time that playing a musical instrument can reverse multiple components of the human stress response on the genomic level. We know from previous studies that HealthRHYTHMS Group Empowerment Drumming Protocol (RMM) reduces stress, burnout, improves mood states and boosts the immune system. This study looked at the effects of Recreational Music Making (RMM) at the genomic level and demonstrated not simply a reduction in stress but a reversal in 19 genetic switches that turn on the stress response believed responsible in the development of common diseases. This study also "extends our understanding of individualized human biological stress responses on an unprecedented level".(Bittman, B., 2005) Read the Abstract  see below

Individualized Genomic Stress Reduction Signature Impacts
Reverses Stress on the Genomic Level (2005)

Abstract:
Recreational music-making modulates the human stress response: a preliminary individualized gene expression strategy
Barry Bittman, Lee Berk, Mark Shannon, Muhammad Sharaf, Jim Westengard, Karl Guegler, David Ruff
ICID: 14140

Meadville Medical Center, Mind-Body Wellness Center, Meadville, PA, U.S.A.
Department of Health Promotion & Education, School of Public Health and Department of Pathology, School of Medicine, Loma Linda University, Loma Linda, CA, U.S.A.
Applied Biosystems, Foster City, CA, U.S.A.
Department of Pathology, School of Medicine, Loma Linda University, Loma Linda, CA, U.S.A.

Background: A central component of the complex human biological stress response is the modulation of the neuroendocrine-immune system with its intricate feedback loops that support homeostatic regulation. Well-documented marked gene expression variability among human and animal subjects coupled with sample collection timing and delayed effects, as well as a host of molecular detection challenges renders the quest for deciphering the human biological stress response challenging from many perspectives.
**Material/Methods:** A novel Recreational Music-Making (RMM) program was used in combination with a new strategy for peripheral blood gene expression analysis to assess individualized genomic stress induction signatures. The expression of 45 immune response-related genes was determined using a multiplex preamplification step prior to conventional quantitative Real Time Polymerase Chain Reaction (qRT-PCR) mRNA analysis to characterize the multidimensional biological impact of a 2-phase controlled stress induction/amelioration experimental protocol in 32 randomly assigned individuals.

**Results:** In subjects performing the RMM activity following a 1-hour stress induction protocol, 19 out of 45 markers demonstrated reversal with significant (P=0.05) Pearson correlations in contrast to 6 out of 45 markers in the resting control group and 0 out of 45 in the ongoing stressor group.

**Conclusions:** The resultant amelioration of stress-induced genomic expression supports the underlying premise that RMM warrants additional consideration as a rational choice within our armamentarium of stress reduction strategies. Modulation of individualized genomic stress induction signatures in peripheral blood presents a new opportunity for elucidating the dynamics of the human stress response.

6) **CREATIVITY & BONDING IN SENIORS**

**Recreational Music-Making Inspires Creativity & Bonding in Long-Term Care Residents**


This study demonstrates the efficacy of recreational music-making as a means of inspiring creativity and helping long term care residents bond. Residents reported that RMM activities produced far more favorable effects, when compared with antidepressants or mood-stabilizing drugs.

To test this hypothesis, two real-world laboratories were established at Wesbury United Methodist Retirement Community, Meadville, Pa., a facility with independent living, skilled nursing, assisted living, and memory support (skilled and assisted); and Fredericka Manor, Chula Vista, CA., a retirement campus with independent living, assisted living, and skilled nursing, including 60 beds for persons with dementia.

While ongoing RMM programs are currently offered at both facilities, the data collection period extended from 2002 through 2003. A total of 550 seniors participated in the study. All subjects (or family members when appropriate) signed informed consents, and the protocol was approved by the Institutional Review Board for Human Studies of Meadville Medical Center. The program was conducted by an interdisciplinary facilitation team that included a physician, two music therapists, a music teacher, musicians, and members of the facilities’ activities staffs. The program included a Yamaha Clavinova Keyboard assisted drum circle which followed the HealthRHYTHMS Protocol.

**Resident Observations:** After completion of the program, many residents noted the immediate benefits of creating connections with staff and other residents. Participation in just one RMM session often promoted identifiable and meaningful connections. The predominant conclusion was that there are no "strangers" at the end of an RMM session. Several residents remarked that their ability to more effectively deal with the loss of a loved one or friend was enhanced through RMM sessions. The acknowledgement of a person who had recently passed on served as an effective
means for honoring an important relationship through empathetic group support. A number of participants commented that RMM positively influenced their overall perspectives and expectations for living in a long term care environment. In addition, residents reported that RMM activities produced far more favorable effects, when compared with antidepressants or mood-stabilizing drugs. Read the Abstract see below

**Inspiring Creativity & Bonding in Seniors**

RMM Inspires Creativity & Bonding in Long-Term Care Residents

Recreational Music-Making (RMM) Inspires Creativity & Bonding in Long-Term Care Residents

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**Resident Observations**

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7) **STRENGTHENS THE IMMUNE SYSTEM** (2001)

A healthy immune system is the key component to preventing infectious diseases. We are all exposed to millions of germs every day, so our reliance on our own immune system to fight off most potential infections is indisputable.

What do we mean it can strengthen the immune system? The study of 111 HealthRHYTHMS Group Empowerment Drumming participants showed a statistically significant increase in natural killer cell activity after a one-hour group session. Natural Killer cells (NK) are the white blood cells that seek out and destroy cancer and virally infected cells. Additionally, the protocol appears to reverse specific neuroendocrine and neuroimmune patterns of change associated
with the classic stress response. Read the Abstract ~ Read Remo Belli's Interview with Researcher, Barry Bittman, MD
(see end of these pages for more of full interview)

This last article is relative to the paragraph above. It is a partial version as it is too long to attach the full article here. For full version go to:
http://www.remo.com/portal/pages/hr/research/Interview+Immune+System.html

Interview - Impact on the Immune System
Strengthens the Immune System

Composite Effects Of Group Drumming Music Therapy On Modulation Of Neuroendocrine-Immune Parameters In Normal Subjects - 2001

Barry B. Bittman, MD; Lee S. Berk, DrPH, MPH; David L. Felten, MD, PhD; James Westengard, BS; O. Carl Simonton, MD; James Pappas, MD and Melissa Ninehouser, BS Alternative Therapy Health Med 2001: 7:38-47

The study’s principal investigator, Barry Bittman, MD, Neurologist, was interviewed by Remo Belli, founder of Remo Inc., the company that funded the project.

Mr. Belli – Dr. Bittman, would you begin by summarizing the principal findings of your study?

Dr. Bittman – Our project entitled, Composite Effects of Group Drumming Music Therapy on Modulation of Neuroendocrine-Immune Parameters in Normal Subjects presents, for the very first time, important scientific evidence documenting potential health benefits associated with a single group drumming session. Statistically significant increases in the activity of cellular immune components responsible for seeking out and destroying cancer cells and viruses were noted in normal subjects who drummed.

Mr. Belli – Would you discuss the relevance of your findings?

Dr. Bittman – Over the last few decades, leading medical scientists throughout the world have discovered many of the biological underpinnings of what has been termed the “mind-body connection.” Extensive medical research in animals and humans has revealed that what goes on in the mind clearly affects the body and visa versa. This inseparable connection is being studied by leading medical scientists exploring the mechanisms by which the immune system responds to and can be conditioned by what the individual is experiencing. In essence, an important aspect of health is reflected by a delicate balance that is constantly tweaked within us according to what we are experiencing. This contention is supported by a number of leading scientific investigations which have disclosed that the perception of stress negatively impacts the immune system, and in some instances, survival. Chronic stressors such as care giving for a loved-one with Alzheimer’s disease, marital separation and divorce, and examination stress in medical students appear to have a suppressive influence on many measures of immunologic reactivity. In a similar manner, heightened sense of control, nurturing, mirthful laughter and moderate exercise have been shown to boost key immune system components. Essentially, we set forth to determine whether or not group drumming could alter stress-related hormones and neural mediators, which would, in turn, produce a subsequent positive impact on cellular immunologic function. We asked ourselves whether or not group drumming had the potential to reverse specific negative biological effects associated with the classic stress response.