1. Drumming Strengthens Immune System

- N=111 non-drummers. Tested five conditions: Listening Control, Drum circle, Impact Drumming, Shamanic, Composite Drumming
- Natural Killer NK cell activity was boosted in subjects who drummed compared to controls.
- Natural Killer cell activity stimulated by Cytokines (Interleukin II and Gamma Interferon - Helper (Th1) cells) was boosted in subjects who drummed compared to controls.
- Drumming changed cellular biology and reversed the stress response.

2. Drumming Reduces Employee Burnout

- N=112 employees in Long Term Care. Interdisciplinary teams drumming once a week for one hour for a 6-week series.
- Significantly decreased burnout on Maslach Burnout Scale.
- Improved employee mood states by 46% on POMS Profile of Mood States – sustained effect of 62% six weeks post intervention.
- Economic Impact – saved $89,000 for typical 100-bed medical facility through employee retention and reduced turnover.
- 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.
3. **Drumming Reduces Nursing Student Burnout**


- N = 75 first year associate degree nursing students.
- **Improved mood states by 28.1% on POMS Profile of Mood States.**
- Economic Impact projections – retention of 2 students annually per a typical 105-student program, resulting in a **projected annual savings of $29.1 million to US Nursing Schools.**
- Projected cost savings of $322,000 for the typical acute care hospital, and more than 1.5 billion for the US healthcare industry.

4. **Drumming strengthens Immune System in Japanese employees**


- N = 40 Yamaha employees. 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.

5. **Group Drumming reduces Instrumental Anger in Adolescents.**

Creative Musical Expression as a Catalyst for Quality of life Improvement in Inner-city Adolescents Placed in a Court-referred Residential Treatment Program (Bittman, et al) *ADVANCES Spring 2009, VOL. 24, NO. 1 Creative Musical Expression*

- Adapted HealthRHYTHMS™ program
- N = 52 ages 12 to 18. Pre/Post test matched controls.
- Measured Child and Adolescent Functional Assessment Scale (CAFAS) Adolescent Psychopathology Scale (APS), Adolescent Anger Rating Scale (AARS), Reynolds Adolescent Depression Scale, 2nd edition (RADS 2)
- Improved scores in school/work role performance, total depression, anhedonia/negative affect, negative self-evaluation, and instrumental anger.
- Extended impact - improvements 6 weeks after completion of the protocol

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