Spotlight Series at the 13th World Congress of Music Therapy

July 6, 2011
9:00-11:00 a.m.
The Idea

Featuring

- Sixteen renowned music therapists
- Expertise spans
  - Generations
  - WFMT’s eight regions
- Selection of Topics
Moderators

- Music Therapy and Medicine
  Dr. Annie Heiderscheit

- Music Therapy and Special Education
  Dr. Petra Kern

- Music Therapy and Older Adults
  Dr. Gene Behrens

- Music Therapy and Research
  Dr. Petra Kern

Organized by the WFMT Council
Spotlight Session: Music Therapy and Medicine

July 6, 2011
9:00-11:00 a.m.

Moderator: Dr. Annie Heiderscheit, MT-BC, LMFT
Secretary/Treasurer
Dr. Concetta M. Tomaino, DA, MT-BC, LCAT

Executive Director/Co-founder, Institute for Music and Neurologic Function, New York, USA

Music, Attention and Memory
How does Music Influence Attention and Memory in the Normal Brain?"

- Meaningful sounds call attention from background noise
- Repetitive structure and form aids in holding attention
- Held attention can convert to long term memory
Music and Memory in the Clinic

- Sensory integration
- Language acquisition
- Stroke rehabilitation
- Traumatic Brain injuries
- Alzheimer's Disease and other dementias
Arousal: Novel vs. Familiar

- Novel sounds, rhythms, harmonies and melodies – aid to arouse and hold attention

- Familiar sounds (including music) can also arouse and hold attention, stimulate recall, and associations
Episodic (explicit) vs Procedural (implicit) Memory

Larry Squire’s Memory Taxonomy

- Memory
  - Declarative (explicit)
    - Facts
    - Events
  - Nondeclarative (implicit)
    - Nonassociative Learning
    - Priming
    - Skills and Habits
    - Simple Classical Conditioning

http://www.ageworks.com/course_demo/520/module3/module3.htm#rp
Procedural Memory

- Some examples:
  - Priming: Predictable lyrics aid in word retrieval in speech rehabilitation
  - Skills and Habits: Walking to rhythmic music bypasses executive motor planning allowing for increased mobility in stroke rehabilitation
Episodic: Structure and pattern of music provides cue for information to be stored and retrieved
- Phone numbers
- Names
- Addresses
- Phrases
Familiar + Autobiographical Music:

- Brain regions in green responded more strongly to familiar versus unfamiliar songs. Regions in red responded most strongly to strongly memory-evoking songs. Areas in blue responded more when a song was experienced as pleasing. The dorsomedial prefrontal cortex (DMPFC) shows combined effects of familiarity and autobiographical salience (shown in yellow).

Familiar + Autobiographical Music:

- Key experiences are paired with music throughout life thereby strengthening how the memory is encoded.

- Music of personal importance provides the necessary cues to aide in memory recall of past events.

- The strong emotional connection between music and memory aides in recognition memory even if recall is no longer possible. This has implications for persons with dementia and Alzheimer’s disease.
In Summary
Resources

- www.imnf.org
- www.ageworks.com/course_demo/520/module3/module3.htm#rp
Dr. Gerhard Tucek

Program Director of Music Therapy, Department for Health Sciences, IMC University of Applied Sciences in Krems, Austria

TRANSFER OF HISTORICAL ORIENTAL MUSIC THERAPY PERSPECTIVES INTO MODERN CLINICAL UNDERSTANDING
Transfer of Traditions cannot be achieved by studying historical scripts alone. Reflected practical experience is needed.

Focus lies on: the practitioners & researchers acting (action research)

Therapeutic system he is working with
When we think about therapy and research. We have also to think about culture and appropriate research techniques.

Bio-medical research is just one of many perspectives!
4 Transfer-Steps

1. „hot phase“: first contact, inner resonance
2. „cooling down“: incubation- & reflection; „trail & error“
3. working in different fields: Turkey, Usbekistan, Austria
4. „synthesis“: transfer & translation
historical artefacts in museums
scripts
Ray (Iran), um 1200
role of music therapy in scripts

- music is a reflection of cosmic laws
- Effects of makam
- music as a medical assisting discipline
- theory of „four liquids“
- giving hope & joy
- music as a tool for ethical & moral values
main idea: regulation
Riyazed: multi-sensorial

Sense of Hearing  music, poetry: music therapy & storytellers, birds

Eyes  garden as symbol of paradise, architecture

Olfactory sense  oils & flower essences

Digestion  special nutrition for diseases, fasting periods

Sense of Touch  soft & round surfaces, soft materials

Speech  talking, singing, laughing, poetry

General Wellbeing  dancing, dietary, music, hope-giving conversation
<table>
<thead>
<tr>
<th>MAQUAM</th>
<th>EMOTION</th>
<th>BODY-ORGAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAST</td>
<td>WELL BEING, CALMNESS, HAPPINESS</td>
<td>HEAD, FACE, EYES, AGAINST PARALISATION</td>
</tr>
<tr>
<td>REHAVI</td>
<td>FEELING OF ENDLESSNESS</td>
<td>BREAST, STOMACH, HEART, SIDE</td>
</tr>
<tr>
<td>HÜSEYNI</td>
<td>PEACE, REPOSE, RELAXATION</td>
<td>SHIN-BONE, LOWER LEGS, LIVER, INNER ORGANS, AGAINST THIRST</td>
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<tr>
<td>IRAQ</td>
<td></td>
<td>SHOULDERS, ARMS, HANDS</td>
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<tr>
<td>BUSELIK</td>
<td>POWER, PEACE</td>
<td>HIPS, THIGHS (LENDEN), UPPER LEGS, BLOOD CIRCULATION, HARA</td>
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<tr>
<td>USSAK</td>
<td>HAPPINESS AND SMILE</td>
<td>HEART, LEGS, SLEEPING DISORDERS</td>
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<td>ZANGULA</td>
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<td>HIPS, SHIN-BONES, NECK, LOWER LEGS, SHOULDERS</td>
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<td>ISFAHAN</td>
<td>SELF-CONSCIENCE, FLEXIBILITY, AGAINST NEGATIVE THOUGHTS</td>
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<td>NAWA</td>
<td>TASTE AND COMFORT (TROST)</td>
<td>KIDNEYS, SPINE, THIGHS, UPPER LEGS</td>
</tr>
<tr>
<td>BUZURK</td>
<td>FEAR</td>
<td>BREAST, STOMACH, HEART, SIDES</td>
</tr>
<tr>
<td>ZIRAFKAND</td>
<td></td>
<td>HEART, BREAST, LUNGS, ABDOMEN (UNTERLEIB)</td>
</tr>
</tbody>
</table>
Basic Decision

Tradition
theoretical perspective
idea of rebuilding a great history
static tendency
instruments, methods, repertoire are fixed

Clinical Situation
practical perspective
idea to follow the patients needs that appear at the moment
dynamic tendency
instruments, methods, repertoire may change

Need to look at the different (clinical) contexts as they appear today
Transfer & Translation

bringing idea of oriental music therapy back to life

conceptual adaptation & translation: idea of resonance, regulation, synchronization

recognition by Austrian Law

recognition of regulation in biomedical clinical settings

research in Austria / collecting data

re-transfer (Uzbekistan, Turkey)
Europe: Transfer to Today’s Ideas

- “Bringing oneself into form” (Aldridge) by musical expression & personal relation

- vegetative & social regulation:
  - patient & therapist get into resonance (autonomous nerve system / ANS) by musical „dialoging“

- idea of joy, harmony & beauty in therapy
Transfer into Modern Understanding

3 anthropological aspects and 3 examples
main therapeutic challenge ...

... in clinical settings:

stress & fear

stress relieve / feeling safe
The inflammatory reflex

Kevin J. Tracey

Laboratory of Biomedical Sciences, North Shore-LIJ Research Institute, 250 Community Drive, Manhasset, New York 11030, USA.

E-mail: K.Tracey@nymet.com

Inflammation is a local, protective response to microbial invasion or injury. It must be fine-tuned and regulated precisely, because deficiencies or excesses of the inflammatory response cause morbidity and shorten lifespan. The discovery that cholinergic neurons inhibit acute inflammation has qualitatively expanded our understanding of how the nervous system modulates immune responses. The nervous system reflexively regulates the inflammatory response in real time, just as it controls heart rate and other vital functions. The opportunity now exists to apply this insight to the treatment of inflammation through selective and reversible "hard-wired" neural systems.

"Thermichaeasueinflammationoverthebody,andalsofastenhavesthereoriginthere"Moliere(1622-1673).

Survival is impossible without vigilant defense against attack and injury. The innate immune system continuously surveys the body for the presence of invaders. When it encounters an attack, it involuntarily sets in motion a discrete, localized inflammatory response to thwart most pathogenic threats. The magnitude of the inflammatory decrease their heart rate by increasing parasympathetic outflow. Recent insights have identified a basic neural pathway that reflexively monitors and adjusts the inflammatory response. Inflammatory stimuli activate sensory pathways that relay information to the hypothalamus. Like a knee-jerk reflex, in which the stretching of a patellar tendon

self healing is stimulated only in a parasympathetic mood (reduction of Stress)

bio-medical treatment cannot stimulate „Nervus Vagus“ physiological
example 1: after stroke

“performance”

bringing oneself „into form“ (Aldridge)

3 examples for emotional regulation

focus: abilities, not deficites
MUSIKALISCH

MUSIK

ALLE VÖGLEIN BLEIBEN DA

ALLE VÖGLEIN BLEIBEN DA

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Example 1: after stroke

A short video clip was shown
experience of joy, harmony & beauty in therapy
example 2: isolation room
pediatric oncology

A short video clip was shown
example 3: TBI resonance by „dialoging“ with music

Music is not just what it is; it is only, what it means to the people ... working with music can show humans what connects them with other
Example 3: TBI resonance by “dialoging” with music

A short video clip was shown
Evaluation of therapy-outcome

combination of EKG-analyse, video-documentation & protocol
Sympathetic

„fight/flight reaction“

blood circulation (muscles)
breathing
pupils
heart frequency

Parasympathetic

„recreation“

blood circulation (digestive system)
breathing
pupils
heart frequency
Vegetative Reaction

healthy person: flexible & dynamic answer to an external stimulus (eustress)

sick person: reduced & stiff biological rhythms (distress)
stress, depression, fear ... cause ... disturbed cyclic functions (breathing, menstruation, awake/sleep rhythm)

These disturbed functions derive from disturbed dynamics of vegetative regulation
Clinical Therapeutic Goal

to reach a higher level of energy
synchronization of inner physiological rhythms
to cope with the hospital-situation
to develop awareness of own needs, fear, limits
EKG: Heart Rate Variability
ICU, university hospital Vienna
Vienna Philharmonic Orchestra: Making music together

Musiker 1
Musiker 2
Musiker 3
Musiker 4

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Idea:

effects of „quality“ of therapeutic relation are reflected in psycho-physiological data-effects shown by chrono-biological measurement (HRV, EMG, Skin-Potential, Skin-Resistance)
Thank you for your attention

For further information:

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Tel.: +43 (0) 2732-802-367

Email: musiktherapie@fh-krems.ac.at
Dr. Wendy Magee, NMT-F

BEST PRACTICE APPROACHES TO MUSIC THERAPY IN NEUROPALLIATIVE REHABILITATION
Neuropalliative rehabilitation’ is a proposed model for the relationship of neurology, rehabilitation and palliative care for people with long term neurological conditions

Turner-Stokes et al., 2007
Neuropalliative rehabilitation

Populations include:
- Acquired brain injury (TBI; stroke)
- Parkinson’s Disease
- Multiple Sclerosis / insert US name
- Huntington’s Disease
- Motor Neuron Disease
- Low awareness states
- Locked-in syndrome
Neuropalliative rehabilitation

Providing long-term care and support, often over many years, in the more slowly progressive or stable conditions.

As the patient’s condition becomes more advanced, rehabilitation and palliative care approaches often overlap.

Turner-Stokes et al., 2007
Care Settings

Hospital settings
Rehabilitation units
Nursing care facilities
Community settings
Improving quality of life

Improve
Optimise
Maintain

Physical, cognitive, communication functioning and emotional well-being

To optimise independence and enhance quality of life
Current challenges for MT in neurology

Evidence base
Knowledge transfer from research to practice
Ensuring equity & access to training
Measuring effects
Communicating outcomes
When working with people with brain damage, treatment methods must consider how brain damage might affect music perception and other cognitive functions.
When working with people with brain damage, *treatment models* must include those which *draw on knowledge of brain functions*
Influencing factors

Treatment models will be affected by the care facility and its broader program aims.
Gabrielle Giffords: How music therapy is helping her recovery

As US congresswoman continues her rehabilitation, Philip Sherwell is granted rare access to the clinic supervising her treatment.
Emotional well-being

Mood regulation

Behaviour management

Identity reformation
Music may recruit neural mechanisms

• Similar to those associated with pleasant/unpleasant emotional states
• Different from those underlying other components of music perception, and other emotions such as fear
  Blood et al., 1999

• Activates brain regions involved in reward, motivation, emotion, arousal similar to other euphoria inducing stimuli
  Blood & Zatorre, 2001
More evidence required!

More work needed to determine specific appropriate methods, particularly for emotional needs and cognitive rehabilitation.

Validating measurement tools will help with research.

When efficacy of an intervention is established, RCTs may help determine optimal:
• Dosage
• Setting
• And compare against other treatments.
Types of evidence: Recommendations

Randomized controlled trials and other quantitative methodologies are not necessarily best suited to research questions involving long-term outcomes, varied populations with complex needs and assessment of impact on quality of life rather than cure

National Service Framework for Long Term Neurological Conditions, 2007
Types of evidence

National Service Framework Typology
(Dept of Health, UK)

• Values opinions of service users, their families/caregivers and professionals
• Qualitative, quantitative and mixed studies can have equal validity when used in the appropriate
• Emphasis on the quality of the study design and its relevance to the population
Dr. Ju Young Lee

Graduate School of Music Therapy,
Sookmyung Women’s University
Seoul, Korea.

MUSIC THERAPY IN KOREAN
INTEGRATIVE MEDICINE
Conventional Medicine

- Western
- Mainstream
- Orthodox
- Biomedicine
- M.D. degrees & Nurse
- Health practitioners
CAM

Alternative Medicine
In place of conventional medicine

+ 

Complementary Medicine
Together with conventional medicine

= 

Complementary and Alternative Medicine
## Korean Medical Law

<table>
<thead>
<tr>
<th>Legal Medical System</th>
<th>Illegal Medical System</th>
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<tr>
<td>Conventional Medicine</td>
<td>Complementary Medicine</td>
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<tr>
<td>Oriental Medicine</td>
<td>Medicine</td>
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<tr>
<td></td>
<td>Alternative Medicine</td>
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![World Federation of Music Therapy](image)
Medical Practice from Legal Perspectives

Only Medical Agents may perform medical practice

- Doctors, Nurses, and Midwives
- Limitations of laws defined by medical agents
Medical Practice from Legal Perspectives

Medical Agents \[\downarrow\] Medical Practice \text{Yes}

Non Medical Agents \[\downarrow\] Medical Practice \text{No}
Cam in South Korea

- Unauthorized as medical practice
- High supply and demand
- Effectiveness and consumer satisfaction
- Increasing awareness of need to integrate CAM into conventional medicine
High supply and demand

- Increased supply of CAM oriental medical service and collaborative practice between conventional/traditional Korean medicine
- Increased demand for CAM treatment from cancer patients for better chances of survival, quality of life, and treatment costs
High supply and demand

- A number of clinics or oriental medical clinics provide direct CAM service
- Conflict between medical professions
  - Pharmacists authorized prescribe oriental medicine, and vice versa
  - Conventional medicine vs. Oriental medicine
  - Doctors vs. Pharmacists vs. CAM practitioners
CAM Use by South Koreans

How Many People Use CAM?
74.8 percent of adults and children are using some form of CAM.
CAM Therapies Used the most

- 31.7%: Mind-Body medicine
- 65.4%: Unclassified therapies
- 5.1%: Whole medical system
- 2.1%: Biologically based CAM
- 2.1%: Manipulative and body-based therapies
CAM Use by South Koreans

Reasons for receiving CAM

- Improve their general health or prevent ill health: 78.8%
- To treat an illness and condition: 20.3%

Cost:
- 203$ per year

Sun Myung Ok (2006)
CAM Use by South Koreans

CAM 500,000 won
Conventional M 499,000 won

CAM 367,000 won
Oriental M 188,000 won

KSCIM (2006)
CAM Use by Cancer Patients

How Many Patients Use CAM?
84.2 percent (1535/1822)
CAM Therapies Used the Most

- Biologically based CAM: 44.8%
- Whole medical system: 17.7%
- Mind-Body medicine: 13.3%
- Spiritual therapies: 4.7%

National Survey (2008)
Trends of CAM Use
### Table 1: Research design in the area of CAM research (2000-2005)

<table>
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<th>Korea</th>
<th>International</th>
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<td>(original article)</td>
<td>(original article)</td>
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<td>Experimental</td>
<td>202 (161)</td>
<td>99 (62)</td>
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<td>Descriptive</td>
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<td>247</td>
<td>287</td>
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<td>346</td>
<td>588</td>
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### Table 2: Major field of Researchers, characteristics of subjects, CAM modalities, and main theme of study

<table>
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<th>Characteristics</th>
<th>Value</th>
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<td>Medicine</td>
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<td>58.1</td>
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<td>18.9</td>
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<td>Major related to CAM</td>
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<td>Others (Pharmacology etc.)</td>
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<td>Subjects</td>
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<td>Patient</td>
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<td>Healthy person</td>
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<td>27.5</td>
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<td>Others</td>
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<td>Biologically Based Practices</td>
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<td>Total</td>
<td>46</td>
<td>100</td>
<td>202</td>
<td>100</td>
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<td>Theme of study</td>
<td>CAM utilization</td>
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<td>Perception and satisfaction</td>
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<td>Total</td>
<td>40</td>
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</table>
Integrative Medicine

- Combines Conventional and CAM treatments that show evidence of safety and effectiveness
- Treatment and prevention of disease
- Promotes a more comprehensive concept of health
Integrative Medicine in South Korea

- Education in Medical Colleges
- Foundation of Integrative Medicine Research Centers
- Necessity for a Government Organization for CAM Research
Music Therapy in I.M

- Opening of Integrative Medicine center in Korea University Hospital (2005)
- Bureaucratic issues and the closing of Korea University I.M clinic (2009)
Subject

Cardiovascular patients
Brain-Spinal injury patients
Recovering patients
High blood pressure and diabetes patients
Psychiatric patients
Chronic pain patients
Cancer and hospice patients
Rare disease patients
Pregnant Woman
Music Therapy in I.M

Standalone Approach

Psychological music therapy
Neurological music therapy
Music wellness
Music Therapy in I.M

Combinational Approach
Restorative movement and music therapy
Yoga and music therapy
Meditation and music therapy
Therapeutic Service
Procedures
MT Research in I.M

Orofacial Pain and Temporomandibular Disorders

A Study of Microvascular Changes in Masticatory Muscles of Myofascial Pain Patients During Music Listening

Jung-Fyeong Hong, D.M.D., M.S.D., Ph.D.3

1Dept. of Oral Medicine, College of Dentistry, Kyung-Hae University
2Center of Music Therapy, Soo-Myung University

The use of music as a means of inducing positive emotion and subsequent relaxation has been extensively studied by researchers. A great deal of research has focused on the use of music as a means of reducing feelings of anxiety and stress as well as aiding in the relief of numerous pathologies.

The purpose of this study was to evaluate the effect of music using laser doppler flowmeter that monitors relative changes in the muscular blood cell perfusion, concentration of moving blood cells, mean velocity of the myofascial pain

Table 3: Paired-Samples T Test

<table>
<thead>
<tr>
<th>Pair</th>
<th>Before-During of Affected Part</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Dev</th>
<th>5th &amp; 95th Confidence Interval of the Mean</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
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<td>Before-During of Affected Part</td>
<td>3.12</td>
<td>2.52</td>
<td>6.29</td>
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<td>2.18</td>
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<tr>
<td>Pair 2</td>
<td>Before-During of Unaffected Part</td>
<td>1.26</td>
<td>2.97</td>
<td>6.19</td>
<td>0.28</td>
<td>1.23</td>
<td>0.24</td>
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<tr>
<td>Pair 3</td>
<td>Before-During of Unaffected Part</td>
<td>1.14</td>
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<td>6.25</td>
<td>0.87</td>
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MT Research in I.M
The Development of a Music Analgesic Model using a System Dynamics Approach

Ju Young Lee (2009)
The purpose of this study is to develop a music analgesic model which predicts and evaluates the factors of music that influence pain perception.
MT Research in I.M

The system dynamics approach was used to evaluate the causal relationship between music influential factors affecting pain perception and to create a simulation model based on this relationship.
A Modeling Tool of SD

This study uses a simulation language called Vensim 5.0b DSS to solve homogeneous differential equations.

Development of a system dynamics model and its application should contribute to prediction of pain perception and enhancement of the music analgesic system.
Music Analgesic Model

Integral module CLD

Pain Perception Module

World Federation of Music Therapy
Federación Mundial de Musicoterapia
Music Analgesic Model

Cognitive module SFD

Emotional module SFD
Music Analgesic Model
Equation

(001) active attention diffusion to music = MIN(Potential Attention Level to Music/TIME STEP; active diffusion to music coeff * Potential Attention Level to Music * intervention start) Units: Index/Hour

(002) active diffusion to music coeff = p active diffusion to music coeff nom * music preference level dmn!^s active diffusion music preference coeff Units: 1/Hour [0,0.01]

(003) Attention decrease via perceived control = MAX(0, Attention Level - Attention diffusion to music*TIME STEP) * perceived control Units: Index/Hour

(004) Attention diffusion to music = active attention diffusion to music + passive attention diffusion to music Units: Index/Hour

(005) attention effect = Attention Level/dc max 10 Units: Dmnl [0.5,2]
Simulation Analysis
Scenario Analysis
Scenario Analysis
This model can be used to understand the music analgesic mechanism and to predict the optimal flow of intervention.
Music Therapy in Medicine

Public hospitals
- Elderly
- Children
- Psychiatry

Polyclinics
- Rehabilitation
- Dental
- Psychiatry
Music Therapy in Medical Hospital

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## Current research in MT

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Music Therapist Education and Training
Future of Music Therapy in IM

- Scientific and Evidence-based Research
- Standardization of education process
- Creation of a License System
- Organization of a reliable system for guidance and supervision