

Come la musica parla al sistema corpo



programma

1. Analisi letteratura medico scientifica sull'utilizzo della musicoterapia. (Tesi del master sulla grave cerebro lesione acquisita: ricerca bibliografica sull'utilizzo della musicoterapia nell'ambito delle GCA).
2. Salute e malattia come frequenze?
3. Medicina quantistica, medicina dell'informazione, medicina vibrazionale, frequenze curative?
4. Diversi tessuti diverse frequenze?
embriologia biodinamica vs embriologia classica
- 5.
6. Limiti del metodo scientifico nell'indagare nuove visioni (nulla è realmente ripetibile nel nostro universo, ogni esperienza è unica)
7. Il significato dell'intenzione (anche il pensiero è frequenza) l'impronta dell'osteopatia

1. utilizzo musicoterapia in letteratura

- Analisi letteratura medico scientifica sull'utilizzo della musicoterapia.
- (Esperienza tesi del master-ricerca bibliografica sull'utilizzo della musicoterapia nell'ambito delle GCA).

How does music affect the human body?

- Tidskr Nor Laegeforen. 2000 Apr 10; 120(10):1182-5.
- **How does music affect the human body?].**
- [Article in Norwegian]
- [Myskja A](#)¹, [Lindbaek M](#).
- **Abstract**
- Music therapy has developed its practice and research approaches within a qualitative framework more related to humanistic traditions than to medical science. Music medicine has therefore developed as a separate discipline, endeavouring to incorporate the legitimate therapeutic use of music within a medical framework. This paper argues that more extensive communication and collaboration between the methods developed within the music therapy community, and research based on medical science, could lead to a better understanding of the place of music as a therapeutic tool, both as regards its efficacy and its limits. Research has shown that music may influence central physiological variables like blood pressure, heart rate, respiration, EEG measurements, body temperature and galvanic skin response. Music influences immune and endocrine function. The existing research literature shows growing knowledge of how music can ameliorate pain, anxiety, nausea, fatigue and depression. There is less research done on how music, and what type of music, is utilized and administered specifically for optimum effect in specific clinical situations.

How does music affect the human body?

- La musico terapia si è sviluppata in ambito più umanistico che medico
- Una maggiore comunicazione tra l'ambito musicoterapico e la scienza medica potrebbe aiutare a definire meglio il ruolo della musica come strumento terapeutico
- Sono noti gli effetti su pressione, ritmo cardiaco, respirazione, tracciati EEG, temperatura, sistema endocrino e immunitario, dolore, ansia, fatica, depressione
- Meno chiaro è come la musica agisca e quali tipi di musica utilizzare in diverse situazioni.

Music therapy: proposed physiological mechanisms and clinical implications.

- [Clin Nurse Spec.](#) 1997 Mar;11(2):43-50.
- **Music therapy: proposed physiological mechanisms and clinical implications.**
- [Watkins GR](#)¹.
- **Abstract**
- ALTHOUGH STILL CONTROVERSIAL, studies suggest that music therapy can be an effective nursing intervention in stressful situations for decreasing anxiety, blood pressure, and heart rate. This article (1) reviews research related to the effect of music on anxiety, blood pressure, and heart rate; (2) proposes a potential physiological framework for the effects of music; and (3) suggests clinical implications for the use of music therapy in acute- and chronic-care settings by clinical nurse specialists (CNSs). Findings from clinical research suggesting that music may facilitate a reduction in the stress response include decreased anxiety levels, decreased blood pressure and heart rate, and changes in plasma stress hormone levels. Findings from laboratory research using animal models, provide beginning, although speculative, support for a physiological framework of music's influence on the stress response. Music therapy may be useful in a wide range of clinical settings with patients experiencing health problems as diverse as hypertension/cardiovascular disease, migraine headaches, and gastrointestinal ulcers. Suggestions for development of a music therapy procedure and for areas in need of additional research are offered.

Music therapy: proposed physiological mechanisms and clinical implications.

- Pur se controverso, la musica sembra avere un effetto nel ridurre ansia, parametri pressori, ritmo cardiaco e livelli di ormoni dello stress
- Viene proposto un meccanismo fisiologico che spiega l'effetto della musica sui meccanismi di risposta allo stress
- Ipotizzato l'impiego della musica in situazioni cliniche di ipertensione, alterazioni del ritmo cardiaco, cefalee e ulcere gastriche.

The psychoneuroimmunological effects of music: a systematic review and a new model.

- [Brain Behav Immun.](#) 2014 Feb;36:15-26. doi: 10.1016/j.bbi.2013.10.014. Epub 2013 Oct 21.
- **The psychoneuroimmunological effects of music: a systematic review and a new model.**
- [Fancourt D](#)¹, [Ockelford A](#)², [Belai A](#)³.

- **Abstract**

- There has been a growing interest over the past decade into the health benefits of music, in particular examining its psychological and neurological effects. Yet this is the first attempt to systematically review publications on the psychoneuroimmunology of music.
- Of the selected sixty-three studies published over the past 22 years, a range of effects of music on neurotransmitters, hormones, cytokines, lymphocytes, vital signs and immunoglobulins as well as psychological assessments are cataloged. Research so far points to the pivotal role of stress pathways in linking music to an immune response. However, several challenges to this research are noted: (1) there is very little discussion on the possible mechanisms by which music is achieving its neurological and immunological impact; (2) the studies tend to examine biomarkers in isolation, without taking into consideration the interaction of the biomarkers in question with other physiological or metabolic activities of the body, leading to an unclear understanding of the impact that music may be having; (3) terms are not being defined clearly enough, such as distinctions not being made between different kinds of stress and 'music' being used to encompass a broad spectrum of activities without determining which aspects of musical engagement are responsible for alterations in biomarkers. In light of this, a new model is presented which provides a framework for developing a taxonomy of musical and stress-related variables in research design, and tracing the broad pathways that are involved in its influence on the body.

The psychoneuroimmunological effects of music: a systematic review and a new model.

- Nell'ultima decade è emerso un crescente interesse sugli effetti benefici della musica soprattutto dal punto di vista degli effetti psicologici e neurologici
- Questa è la prima review sistematica sulla psiconeuroimmunologia della musica
- Selezionati 63 studi nell'arco degli ultimi 22 anni
- Sono stati catalogati effetti su neurotrasmettitori, ormoni, citochine, linfociti, parametri vitali, immunoglobuline e aspetti psicologici
- Un ruolo fondamentale che collega la musica alla risposta immune dell'organismo sembra essere quello dei sistemi di risposta allo stress:
 - Non è chiaro però quale sia il meccanismo attraverso cui la musica produce questo effetto sul sistema nervoso e immunitario
 - Nei diversi studi ogni marker è studiato in modo isolato senza tener conto delle interazioni con il resto delle attività metaboliche
 - La terminologia non è ben definita rispetto a quale tipo di stress e a quali aspetti della musica siano responsabili delle modificazioni dei biomarkers

Mental health implications of music: insight from neuroscientific and clinical studies

- [Harv Rev Psychiatry](#). 2011 Jan-Feb;19(1):34-46. doi: 10.3109/10673229.2011.549769.
- **Mental health implications of music: insight from neuroscientific and clinical studies.**
- [Lin ST¹](#), [Yang P](#), [Lai CY](#), [Su YY](#), [Yeh YC](#), [Huang MF](#), [Chen CC](#).
- **Abstract**
- Neuroscientific and clinical studies of music over the past two decades have substantially increased our understanding of its use as a means of therapy. The authors briefly review current literature related to music's effect on people with different mental illnesses, and examine several neurobiological theories that may explain its effectiveness or lack thereof in treating psychiatric disorders. Neuroscientific studies have shown music to be an agent capable of influencing complex neurobiological processes in the brain and suggest that it can potentially play an important role in treatment. Clinical studies provide some evidence that music therapy can be used as an alternative therapy in treating depression, autism, schizophrenia, and dementia, as well as problems of agitation, anxiety, sleeplessness, and substance misuse, though whether it can actually replace other modes of treatment remains undetermined. Future research should include translational studies involving both neuroscience and clinical medicine that investigate the long-term effects of music intervention and that lead to the development of new strategies for music therapy.

Mental health implications of music: insight from neuroscientific and clinical studies

- La musica capace di influenzare complessi processi neurobiologici e livello cerebrale.
- Studi clinici evidenziano che la musica può essere utilizzata come trattamento alternativo in situazioni di depressione, autismo, schizofrenia e demenza così come per problemi di agitazione, ansia, disturbi del sonno e abuso di sostanze.
- Non è chiaro se può sostituirsi ad altre terapie
- Importante sviluppare studi di neuroscienze e clinici volti a chiarire gli effetti nel lungo termine e sviluppare nuove strategie di musicoterapia.

Neurophysiology and neurobiology of the musical experience.

- [Funct Neurol.](#) 2006 Oct-Dec;21(4):187-91.
- **Neurophysiology and neurobiology of the musical experience.**
- [Boso M](#)¹, [Politi P](#), [Barale F](#), [Enzo E](#).

- **Abstract**

- Music, a universal art form that exists in every culture around the world, is integral to a number of social and courtship activities, and is closely associated with other creative behaviours such as dancing. Recently, neuroimaging studies have allowed researchers to investigate the neural correlates of music processing and perception in the brain. Notably, musical stimuli have been shown to activate specific pathways in several brain areas associated with emotional behaviours, such as the insular and cingulate cortex, hypothalamus, hippocampus, amygdala, and prefrontal cortex. In addition, neurochemical studies have suggested that several biochemical mediators, such as endorphins, endocannabinoids, dopamine and nitric oxide, may play a role in the musical experience. A growing body of evidence also indicates that music therapy could be useful in the clinical management of numerous neurological and psychiatric disorders. Indeed, music therapy could be effective in patients with neurodegenerative disorders, such as Alzheimer's dementia and Parkinson's disease, as well as in psychiatric illnesses, such as schizophrenia, depression, anxiety and autism spectrum disorders. Unfortunately, there is still a shortage of rigorous scientific data supporting the clinical application of music therapy, and there is thus a need to confirm and expand the preliminary findings regarding the potential and actual effectiveness of music therapy. This need should be addressed through prospective, randomized, controlled, single-blinded investigations of the short- and long-term effects of music therapy in diverse clinical conditions.

Neurophysiology and neurobiology of the musical experience.

- Gli studi di neuroimmagine hanno permesso di studiare i correlati neurali della musica sul cervello.
- Gli stimoli musicali attivano specifiche vie in diverse aree associate all'emozione come l'insula, il giro cingolato, l'ipotalamo, l'ippocampo, l'amigdala e la corteccia prefrontale.
- Molti mediatori biochimici come endorfine, oppiacei endogeni, dopamina e ossido nitrico giocano un ruolo nell'esperienza musicale.
- La musicoterapia può essere di aiuto nella gestione clinica di numerosi disturbi neurologici e psichiatrici (disordini neurodegenerativi, come Alzheimer e Parkinson, patologie psichiatriche come schizofrenia, depressione, ansia, autismo).
- Pochi al momento gli studi supportati da rigorosi dati scientifici.
- Occorrono studi prospettici, randomizzati e controllati, a doppio cieco per analizzare gli effetti a breve e lungo termine della musicoterapia applicata a diverse condizioni cliniche.

Effects of music on immunity and physiological responses in healthcare workers: a randomized controlled trial.

- [Stress Health](#). 2013 Apr;29(2):91-8. doi: 10.1002/smi.2429. Epub 2012 Apr 11.
- **Effects of music on immunity and physiological responses in healthcare workers: a randomized controlled trial.**
- [Lai HL](#)¹, [Liao KW](#), [Huang CY](#), [Chen PW](#), [Peng TC](#).
- **Abstract**
- Research-based evidence supports the effectiveness of soothing music in improving stress-related psycho-physiological indices in a clinical setting. However, there is currently insufficient scientific knowledge of the effects of music on immune markers of stress in humans. Therefore, the aims of the study were to compare the effects of music and quiet rest on the levels of interleukin-6 (IL-6), tumour necrosis factor- α (TNF- α), interleukin-10 (IL-10), heart rate and mean arterial pressure among healthcare workers. By using a randomized controlled trial design, 60 nurses were randomly assigned to the stimulating or sedating music or rest groups for 30 min. Participants' psychoneuroimmunological parameters were measured using enzyme-linked immunosorbent assays. General estimating equation was used to analyse data. Results revealed that IL-6, TNF- α and IL-10 were not detectable in this population. No significance differences in heart rate were found among the three groups. However, the stimulating music group had significantly higher mean arterial pressure levels than the sedating music group but no differences between the quiet rest group and the sedating music group. Music with different tempi had little effect on mean arterial pressure. Any effect of music on immune markers of stress requires further research.

Effects of music on immunity and physiological responses in healthcare workers: a randomized controlled trial.

- Studio che confronta gli effetti della musica e del riposo con i livelli di interleuchina 6 (IL6), Tumor Necrosis Factor α (TNF- α), interleukin-10 (IL-10), ritmo cardiaco e pressione arteriosa tra lavoratori della sanità.
- Trial randomizzato controllato che include 60 infermieri assegnati casualmente al gruppo sottoposto a musica stimolante o a musica rilassante o al riposo per 30 minuti.
- IL 6, TNF e IL 10 non sono risultati misurabili in questa popolazione
- Il ritmo cardiaco non ha mostrato differenze significative nei tre gruppi.
- Il gruppo sottoposto a musica stimolante aveva valori significativamente più alti di pressione arteriosa rispetto al gruppo esposto a musica rilassante ma non c'erano differenze tra il gruppo a riposo e quello esposto a musica rilassante.
- Musiche con tempi diversi sembrano influire sui parametri della pressione arteriosa
- Ogni effetto sui markers immunitari necessita invece di ulteriori ricerche.

Music exposure and maturation of late preterm sleep-wake cycles: A randomized crossover trial.

- [Acta Paediatr.](#) 2017 Sep 20. doi: 10.1111/apa.14079. [Epub ahead of print]
- **Music exposure and maturation of late preterm sleep-wake cycles: A randomized crossover trial.**
- [Stokes A](#)^{1,2}, [Agthe AG](#)^{1,3}, [El Metwally D](#)¹.
- **Abstract**
- **AIM:**
- To determine the effect of music on sleep-wake cycle (SWC) patterns in late preterm neonates.
- **METHODS:**
- In a masked crossover study, infants between 32-36 6/7 weeks gestation were randomized to music exposure either during the first six or last six hours of a 12-hour observation period. SWC characteristics were determined by continuous amplitude integrated electroencephalography (aEEG) read by two coders masked to exposure sequence. Analysis was done in paired comparisons. ANOVA was used to assess the effects of music exposure, period and crossover on SWC outcomes: 1) Burdjalov Scores (BS) during active sleep (AS) 2) percent and duration of quiet sleep (QS).
- **RESULTS:**
- Thirty infants were studied. A total of 222 quiet sleep cycles (median seven per patient; range five to 12) were analyzed. Music exposure was associated with higher BS ($F= 10.60$, $p = 0.0019$) in active sleep and decreased interruptions during QS. The advanced post conceptual age (PCA) SWC pattern during AS was equivalent to a one-week mean. Number, duration and ratio of quiet sleep cycles did not change with music exposure.
- **CONCLUSION:**
- Music exposure elicits an increasing PCA pattern in active sleep and fewer interruptions in quiet sleep. Music may benefit sleep in late preterm infants. This article is protected by copyright. All rights reserved.

Music exposure and maturation of late preterm sleep-wake cycles: A randomized crossover trial.

- Analizza l'effetto dell'esposizione alla musica sul ciclo sonno veglia in neonati pretermine (tra le 32 e le 36+6 settimane).
- Studiati 30 neonati pretermine osservati per 12 ore e sottoposti per le prime 6 o le ultime 6 alla musica
- EEG, Burdjalov Scores (scala di valutazione della maturità del SNC nel prematuro) per valutare i periodi di sonno attivo e frequenza e durata dei periodi di sonno quieto
- I periodi di esposizione alla musica risultano associati a maggiori punteggi di BS nel sonno attivo e a meno interruzioni del sonno quieto
- Il pattern durante il sonno attivo risulta più maturo di una settimana e minori le interruzioni del sonno quieto
- La musica migliora il sonno nei bambini pretermine.

Listening to Relaxing Music Improves Physiological Responses in Premature Infants: A Randomized Controlled Trial.

- [Adv Neonatal Care](#). 2017 Oct 17.
- **Listening to Relaxing Music Improves Physiological Responses in Premature Infants: A Randomized Controlled Trial.**
- [Caparros-Gonzalez RA](#)¹, [de la Torre-Luque A](#), [Diaz-Piedra C](#), [Vico FJ](#), [Buela-Casal G](#).
- **Abstract**
- **BACKGROUND:** Premature infants are exposed to high levels of noise in the neonatal intensive care unit (NICU).
- **PURPOSE:** This study evaluated the effect of a relaxing music therapy intervention composed by artificial intelligence on respiratory rate, systolic and diastolic blood pressure, and heart rate.
- **METHODS:** A double-blind, randomized, controlled trial was conducted in the NICUs of 2 general public hospitals in Andalusia, Spain. Participants were 17 healthy premature infants, randomly allocated to the intervention group or the control group (silence) at a 1:1 ratio. To be included in the study, the subjects were to be 32 to 36 weeks of gestation at birth (M = 32.33; SD = 1.79) and passed a hearing screening test satisfactorily. The intervention lasted 20 minutes, 3 times a day for 3 consecutive days, while infants were in the incubator. Infants' heart rate, respiratory rate, and blood pressure were assessed before and after each intervention session.
- **RESULTS:** After each session, the respiratory rate decreased in the experimental group (main between-groups effect ($F_{1,13} = 6.73$, $P = .022$, $\eta^2_{\text{partial}} = 0.34$). Across the sessions, the heart rate increased in the control group (main between-groups effect, $F_{1,11} = 5.09$, $P = .045$, $\eta^2_{\text{partial}} = 0.32$).
- **IMPLICATIONS FOR RESEARCH:**
- Future studies can use this music intervention to assess its potential effects in premature infants.
- **IMPLICATIONS FOR PRACTICE:**
- Nurses can apply the relaxing music intervention presented in this study to ameliorate the impact of the stressful environment on premature infants.

Listening to Relaxing Music Improves Physiological Responses in Premature Infants: A Randomized Controlled Trial.

- I bambini prematuri sono spesso esposti a elevati livelli di rumore
- Questo studio valuta l'effetto dell'esposizione a musica rilassante creata da un sistema di intelligenza artificiale su ritmo di respiro, valori pressori e ritmo cardiaco.
- In doppio cieco, 17 bambini prematuri (32-36 settimane)
- Intervento di ascolto musicale di 20 min per 3 volte die per 3 gg consecutivi
- Dopo ogni sessione si osservava una diminuzione del ritmo di respiro
- Applicazione di musica potrebbe essere uno strumento per migliorare lo stress legato all'ambiente ospedaliero per I bambini prematuri

Music Listening Among Postoperative Patients in the Intensive Care Unit: A Randomized Controlled Trial with Mixed-Methods Analysis

- [Integr Med Insights](#). 2017; 12: 1178633717716455.
- **Music Listening Among Postoperative Patients in the Intensive Care Unit: A Randomized Controlled Trial with Mixed-Methods Analysis**
- [Nancy Ames](#),¹ [Rebecca Shuford](#),¹ [Li Yang](#),¹ [Brad Moriyama](#),² [Meredith Frey](#),¹ [Florescia Wilson](#),¹ [Thiruppavai Sundaramurthi](#),¹ [Danelle Gori](#),¹ [Andrew Mannes](#),³ [Alexandra Ranucci](#),¹ [Deloris Koziol](#),⁴ and [Gwenyth R Wallen](#)¹
- **Abstract**
- **Background:**
- Music listening may reduce the physiological, emotional, and mental effects of distress and anxiety. It is unclear whether music listening may reduce the amount of opioids used for pain management in critical care, postoperative patients or whether music may improve patient experience in the intensive care unit (ICU).
- **Methods:**
- A total of 41 surgical patients were randomized to either music listening or controlled non-music listening groups on ICU admission. Approximately 50-minute music listening interventions were offered 4 times per day (every 4-6 hours) during the 48 hours of patients' ICU stays. Pain, distress, and anxiety scores were measured immediately before and after music listening or controlled resting periods. Total opioid intake was recorded every 24 hours and during each intervention.
- **Results:**
- There was no significant difference in pain, opioid intake, distress, or anxiety scores between the control and music listening groups during the first 4 time points of the study. However, a mixed modeling analysis examining the pre- and post-intervention scores at the first time point revealed a significant interaction in the Numeric Rating Scale (NRS) for pain between the music and the control groups ($P = .037$). The Numeric Rating Score decreased in the music group but remained stable in the control group. Following discharge from the ICU, the music group's interviews were analyzed for themes.
- **Conclusions:**
- Despite the limited sample size, this study identified music listening as an appropriate intervention that improved patients' post-intervention experience, according to patients' self-report. Future mixed methods studies are needed to examine both qualitative patient perspectives and methodology to improve music listening in critical care units.

Music Listening Among Postoperative Patients in the Intensive Care Unit: A Randomized Controlled Trial with Mixed-Methods Analysis

- L'ascolto di musica riduce gli effetti fisiologici, emotivi e mentali di stress e ansia. Non è chiaro se riduca il ricorso a farmaci oppioidi per il dolore e se migliori l'esperienza del paziente ricoverato in terapia intensiva.
- 41 pazienti chirurgici ricoverati in terapia intensiva divisi in un gruppo a cui viene fatta ascoltare musica per 50 min 4 volte /die, ogni 4-6 ore nell'arco di 48 ore
- Non ci sono state differenze significative rispetto a dolore, assunzione di oppioidi, stress e ansia dopo la quarta somministrazione di musica, ma dopo la prima l'NSR si riduce per i pazienti esposti all'ascolto musicale.
- L'ascolto di musica è un intervento appropriato che migliora l'esperienza post-operatoria, soggettivamente riportata dal paziente
- Occorrono studi per esaminare sia gli aspetti qualitativi del miglioramento del paziente, sia con quale metodologia permettere l'ascolto di musica nelle unità di terapia intensiva.

The Effect of Music Therapy on Anxiety and Various Physical Findings in Patients With COPD in a Pulmonology Service.

- **The Effect of Music Therapy on Anxiety and Various Physical Findings in Patients With COPD in a Pulmonology Service.**
- [Horuz D¹](#), [Kurcer MA](#), [Erdoğan Z](#).
- **Abstract**
- This interventional study was carried out to determine the effect of music therapy on anxiety and the various physical findings in patients with chronic obstructive pulmonary disease in the pulmonary diseases service. Ninety-six patients (28 females, 68 males) of 114 adult patients who were hospitalized between November 10, 2013, and March 10, 2014, were included in the study. Ninety-six patients were separated in 3 groups. The data for the study were collected from a questionnaire form of sociodemographic and clinical characteristics, a patient follow-up form, and the Beck Anxiety Scale. SPSS 11.5 was used for data analysis. The Kolmogorov-Smirnov Test was used to determine whether the data showed normal distribution. The nonparametric Kruskal-Wallis Test was used to determine the differences between mean anxiety scores on day 0, day 5, and day 15, and the differences in physiological findings on day 0, day 5, and day 15. There was a significant decrease in anxiety level average on day 5 ($P \leq .0001$) and day 15 ($P \leq .0001$) of the study in both the Western classical music and Turkish classical music groups compared with control group. There was also a significant decrease in systolic blood pressure and diastolic blood pressure averages in both music groups compared with control group ($P \leq .005$). There was no significant difference in heart rates and respiration rate average between the Western classical music and Turkish classical music groups compared with the control group ($P > .05$).

The Effect of Music Therapy on Anxiety and Various Physical Findings in Patients With COPD in a Pulmonology Service.

- Valutazione dell'effetto della musicoterapia su ansia e vari parametri fisici in pazienti ricoverati per malattia polmonare ostruttiva cronica
- 96 pazienti (28 donne e 68 uomini) ospedalizzati e inclusi nello studio.
- Divisi in tre gruppi (western classical music, Turkish classical music e gruppo di controllo)
- Dimostrata una significativa riduzione dei livelli di ansia in entrambi i gruppi esposti a trattamento musicale rispetto ai controlli
- Riduzione dei valori pressori in entrambi i gruppi rispetto ai controlli
- Non significativa la differenza tra ritmo cardiaco e respiratorio

Music therapy for depression.

- [Cochrane Database Syst Rev.](#) 2017 Nov 16;11:CD004517. doi: 10.1002/14651858.CD004517.pub3. [Epub ahead of print]
- **Music therapy for depression.**
- [Aalbers S¹](#), [Fusar-Poli L](#), [Freeman RE](#), [Spreen M](#), [Ket JC](#), [Vink AC](#), [Maratos A](#), [Crawford M](#), [Chen XJ](#), [Gold C](#).
- 1Social Work and Arts Therapies, University of Applied Sciences, Rengerslaan 8, Leeuwarden, Friesland, Netherlands, 8917 DD.
- **Abstract**
- **BACKGROUND:**
- Depression is a highly prevalent mood disorder that is characterised by persistent low mood, diminished interest, and loss of pleasure. Music therapy may be helpful in modulating moods and emotions. An update of the 2008 Cochrane review was needed to improve knowledge on effects of music therapy for depression.
- **OBJECTIVES:**
- 1. To assess effects of music therapy for depression in people of any age compared with treatment as usual (TAU) and psychological, pharmacological, and/or other therapies.2. To compare effects of different forms of music therapy for people of any age with a diagnosis of depression.
- **SEARCH METHODS:**
- We searched the following databases: the Cochrane Common Mental Disorders Controlled Trials Register (CCMD-CTR; from inception to 6 May 2016); the Cochrane Central Register of Controlled Trials (CENTRAL; to 17 June 2016); Thomson Reuters/Web of Science (to 21 June 2016); Ebsco/PsycInfo, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, and PubMed (to 5 July 2016); the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP), ClinicalTrials.gov, the National Guideline Clearing House, and OpenGrey (to 6 September 2016); and the Digital Access to Research Theses (DART)-Europe E-theses Portal, Open Access Theses and Dissertations, and ProQuest Dissertations and Theses Database (to 7 September 2016). We checked reference lists of retrieved articles and relevant systematic reviews and contacted trialists and subject experts for additional information when needed. We updated this search in August 2017 and placed potentially relevant studies in the "Awaiting classification" section; we will incorporate these into the next version of this review as appropriate.
- **SELECTION CRITERIA:**
- All randomised controlled trials (RCTs) and controlled clinical trials (CCTs) comparing music therapy versus treatment as usual (TAU), psychological therapies, pharmacological therapies, other therapies, or different forms of music therapy for reducing depression

- **MAIN RESULTS:**

- We included in this review nine studies involving a total of 421 participants, 411 of whom were included in the meta-analysis examining short-term effects of music therapy for depression. Concerning primary outcomes, we found moderate-quality evidence of large effects favouring music therapy and TAU over TAU alone for both clinician-rated depressive symptoms (SMD -0.98, 95% CI -1.69 to -0.27, 3 RCTs, 1 CCT, n = 219) and patient-reported depressive symptoms (SMD -0.85, 95% CI -1.37 to -0.34, 3 RCTs, 1 CCT, n = 142). Music therapy was not associated with more or fewer adverse events than TAU. Regarding secondary outcomes, music therapy plus TAU was superior to TAU alone for anxiety and functioning. Music therapy and TAU was not more effective than TAU alone for improved quality of life (SMD 0.32, 95% CI -0.17 to 0.80, P = 0.20, n = 67, low-quality evidence). We found no significant discrepancies in the numbers of participants who left the study early (OR 0.49, 95% CI 0.14 to 1.70, P = 0.26, 5 RCTs, 1 CCT, n = 293, moderate-quality evidence). Findings of the present meta-analysis indicate that music therapy added to TAU provides short-term beneficial effects for people with depression if compared to TAU alone. Additionally, we are uncertain about the effects of music therapy versus psychological therapies on clinician-rated depression (SMD -0.78, 95% CI -2.36 to 0.81, 1 RCT, n = 11, very low-quality evidence), patient-reported depressive symptoms (SMD -1.28, 95% CI -3.75 to 1.02, 4 RCTs, n = 131, low-quality evidence), quality of life (SMD -1.31, 95% CI -0.36 to 2.99, 1 RCT, n = 11, very low-quality evidence), and leaving the study early (OR 0.17, 95% CI 0.02 to 1.49, 4 RCTs, n = 157, moderate-quality evidence). We found no eligible evidence addressing adverse events, functioning, and anxiety. We do not know whether one form of music therapy is better than another for clinician-rated depressive symptoms (SMD -0.52, 95% CI -1.87 to 0.83, 1 RCT, n = 9, very low-quality evidence), patient-reported depressive symptoms (SMD -0.01, 95% CI -1.33 to 1.30, 1 RCT, n = 9, very low-quality evidence), quality of life (SMD -0.24, 95% CI -1.57 to 1.08, 1 RCT, n = 9, very low-quality evidence), or leaving the study early (OR 0.27, 95% CI 0.01 to 8.46, 1 RCT, n = 10). We found no eligible evidence addressing adverse events, functioning, or anxiety.

- **AUTHORS' CONCLUSIONS:**

- Findings of the present meta-analysis indicate that music therapy provides short-term beneficial effects for people with depression. Music therapy added to treatment as usual (TAU) seems to improve depressive symptoms compared with TAU alone. Additionally, music therapy plus TAU is not associated with more or fewer adverse events than TAU alone. Music therapy also shows efficacy in decreasing anxiety levels and improving functioning of depressed individuals. Future trials based on adequate design and larger samples of children and adolescents are needed to consolidate our findings. Researchers should consider investigating mechanisms of music therapy for depression. It is important to clearly describe music therapy, TAU, the comparator condition, and the profession of the person who delivers the intervention, for reproducibility and comparison purposes.

Music therapy for depression.

- Update di una Cochrane Review sull'utilizzo della musicoterapia nella depressione
- Obiettivi:
 - Confrontare gli effetti della musicoterapia sulla depressione rispetto ad altri trattamenti (farmacologici, psicologici etc.)
 - Confrontare diversi tipi di musicoterapia utilizzati in pazienti con depressione
- Inclusi 9 studi con 421 partecipanti
- Da questa analisi emerge che la musicoterapia produce effetti benefici a breve termine per soggetti affetti da depressione.
- La musicoterapia aggiunta al normale trattamento per la depressione sembra migliorare i sintomi depressivi rispetto alla sola terapia abituale, senza incremento o riduzione di effetti collaterali.
- La musicoterapia è efficace nel ridurre i livelli di ansia e migliorare la funzionalità in soggetti depressi.

The anxiety- and pain-reducing effects of music interventions: a systematic review

- U Nilsson.
- **The anxiety- and pain-reducing effects of music interventions: a systematic review**
- Review published: 2008.
- This review concluded that music [interventions](#) can help reduce or control peri-operative patient [anxiety](#) and pain. Although the authors' conclusions were suitably cautious, given the potential for [bias](#) and the [heterogeneity](#) among studies, they should be interpreted with caution.

The anxiety- and pain-reducing effects of music interventions: a systematic review

- Review che conclude che l'utilizzo della musicoterapia possa aiutare a ridurre o a meglio controllare l'ansia e il dolore

Effect of movement music therapy with percussion instrument on physical and frontal lobe function in older adults with mild cognitive impairment: a randomized controlled trial.

- Aging Ment Health 2017 Sep 22:1-13. doi: 10.1080/13607863.2017.1379048. [Epub ahead of print]
- **Effects of movement music therapy with a percussion instrument on physical and frontal lobe function in older adults with mild cognitive impairment: a randomized controlled trial.**
- [Shimizu N](#)¹, [Umemura T](#)², [Matsunaga M](#)², [Hirai T](#)³
- **Abstract**
- **OBJECTIVES:**
- We tested the hypothesis that performing a rhythmic physical task accompanied by a cognitive task, such as multitask movement music therapy (MMT) involving repetitive rhythmic movement with a musical instrument (the Naruko clapper), may improve pre-frontal cortex (PFC) function and cognitive performance.
- **METHOD:**
- Forty-five older adult participants with MCI (74.62 ± 5.05 years) participated in this randomized, controlled, single-blind intervention trial. 35 were assigned to the MMT group and 10 to the control STT group. Before and after the 12-week exercise program, we administered six physical function tests, the Frontal Assessment Battery (FAB), and measured relative oxyhemoglobin concentrations using 45-multichannel functional near-infrared spectroscopy as a reflection of hemodynamic responses in the PFC.
- **RESULTS:**
- We observed significant improvements in FAB scores only in the MMT group. Cerebral blood flow (CBF) in the PFC during the exercise was significantly increased in the MMT group compared with the STT group. The CBF increase was significantly correlated among various channels in the MMT group.
- **CONCLUSIONS:**
- The MMT program appeared to stimulate the PFC and improve cognitive performance in our older adult participants with MCI, suggesting that the repetitive, rhythmic movements of MMT can activate the prefrontal area in older adults.

Effect of movement music therapy with percussion instrument on physical and frontal lobe function in older adults with mild cognitive impairment: a randomized controlled trial.

- La MMT (music movement therapy) sembra stimolare la corteccia prefrontale e migliorare le performances cognitive in un gruppo di 45 anziani con deficit cognitivo di grado medio
- Si è osservato un incremento del flusso cerebrale a livello della corteccia prefrontale e un significativo miglioramento dei valori della FAB (frontal Assesment Battery)
- Il movimento ritmico e ripetitivo della MMT sembra incrementare l'attività della corteccia prefrontale

The efficacy of music therapy for people with dementia

A meta-analysis of randomised controlled trials.

- [J Clin Nurs](#). 2015 Dec;24(23-24):3425-40. doi: 10.1111/jocn.12976. Epub 2015 Aug 24.
- **The efficacy of music therapy for people with dementia: A meta-analysis of randomised controlled trials.**
- [Chang YS](#)^{1,2}, [Chu H](#)^{3,4,5}, [Yang CY](#)^{1,6,7}, [Tsai JC](#)⁸, [Chung MH](#)¹, [Liao YM](#)¹, [Chi MJ](#)^{9,10}, [Liu MF](#)⁹, [Chou KR](#)^{1,8,9,11}.
- **Abstract**
- **AIMS AND OBJECTIVES:** To (1) perform a meta-analysis of randomised controlled trials pertaining to the efficacy of music therapy on disruptive behaviours, anxiety levels, depressive moods and cognitive functioning in people with dementia; and (2) clarify which interventions, therapists and participant characteristics exerted higher and more prominent effects.
- **BACKGROUND:** Present study was the first to perform a meta-analysis that included all the randomised controlled trials found in literature relating to music therapy for people with dementia over the past 15 years.
- **DESIGN:** A meta-analysis study design.
- **METHODS:** Quantitative studies were retrieved from PubMed, Medline, Cochrane Library Database, CINAHL, SCOPUS and PsycINFO. A meta-analysis was used to calculate the overall effect sizes of music therapy on outcome indicators.
- **RESULTS:** Music therapy significantly improved disruptive behaviours [Hedges' $g = -0.66$; 95% confidence interval (CI) = -0.44 to -0.88] and anxiety levels (Hedges' $g = -0.51$; 95% CI = -0.02 to -1.00) in people with dementia. Music therapy might affect depressive moods (Hedges' $g = -0.39$; 95% CI = 0.01 to -0.78), and cognitive functioning (Hedges' $g = 0.19$; 95% CI = 0.45 to -0.08).
- **CONCLUSION:** Music therapy exerted a moderately large effect on disruptive behaviours of people with dementia, a moderate effect on anxiety levels and depressive moods, and a small effect on cognitive functioning.
- **RELEVANCE TO CLINICAL PRACTICE:** Individual music therapy provided once a week to patients with cognitive functioning and manual guided in music intervention construction is suggested. Group music therapy is provided several times a week to reduce their disruptive behaviours, anxiety levels and depressive moods. Music therapy is a cost-effective, enjoyable, noninvasive therapy and could be useful for clinical nurses in creating an environment that is conducive to the well-being of patients with dementia.

The efficacy of music therapy for people with dementia

A meta-analysis of randomised controlled trials.

- Meta-analisi su studi che valutano l'efficacia della musicoterapia su comportamenti distruttivi, livelli di ansia, depressione dell'umore e funzioni cognitive in pazienti affetti da demenza
- Vengono valutati gli interventi e le caratteristiche di terapisti e partecipanti che mostrano avere maggiore efficacia.
- 15 trials randomizzati controllati che riguardano l'utilizzo della musicoterapia in pazienti con demenza negli ultimi 15 anni
- La musicoterapia migliora in maniera significativa i comportamenti distruttivi di pazienti affetti da demenza, una moderata efficacia è dimostrata per i livelli di ansia e sul tono dell'umore , minore efficacia sulle funzioni cognitive.
- **Viene proposto il trattamento musicoterapico individuale una volta la settimana e trattamenti in gruppo più volte a settimana per ridurre comportamenti distruttivi, livelli di ansia e depressione.**

Individualized Music Program is Associated with Improved Outcomes for U.S. Nursing Home Residents with Dementia.

- [Am J Geriatr Psychiatry](#). 2017 Sep;25(9):931-938. doi: 10.1016/j.jagp.2017.04.008. Epub 2017 Apr 14.
- **Individualized Music Program is Associated with Improved Outcomes for U.S. Nursing Home Residents with Dementia.**
- [Thomas KS¹](#), [Baier R²](#), [Kosar C³](#), [Ogarek J³](#), [Trepman A⁴](#), [Mor V⁵](#).
- **Abstract**
- **OBJECTIVES:** The objective of this study was to compare resident outcomes before and after implementation of an individualized music program, MUSIC & MEMORY (M&M), designed to address the behavioral and psychological symptoms associated with dementia (BPSD).
- **SETTING:** 98 nursing homes trained in the M&M program during 2013 and 98 matched-pair comparisons.
- **PARTICIPANTS:** Long-stay residents with Alzheimer's disease and related dementias (ADRD) residing in M&M participating facilities (N = 12,905) and comparison facilities (N = 12,811) during 2012-2013.
- **INTERVENTION:** M&M is a facility-level quality improvement program that provides residents with music specific to their personal histories and preferences.
- **MEASUREMENTS:** Discontinuation of anxiolytic and antipsychotic medications, and reductions in behavioral problems and depressed mood in 2012 (pre-intervention) and 2013 (intervention), calculated using Minimum Data Set (MDS) assessments.
- **RESULTS:** The proportion of residents who discontinued antipsychotic medication use over a 6-month period increased from 17.6% to 20.1% among M&M facilities, while remaining stable among comparison facilities (15.9% to 15.2%). The same trend was observed for anxiolytic medications: Discontinuation of anxiolytics increased in M&M facilities (23.5% to 24.4%), while decreasing among comparison facilities (24.8% to 20.0%). M&M facilities also demonstrated increased rates of reduction in behavioral problems (50.9% to 56.5%) versus comparison facilities (55.8% to 55.9%). No differences were observed for depressed mood.
- **CONCLUSIONS:** These results offer the first evidence that the M&M individualized music program is associated with reductions in antipsychotic medication use, anxiolytic medication use, and BPSD symptoms among long-stay nursing home residents with ADRD.

Individualized Music Program is Associated with Improved Outcomes for U.S. Nursing Home Residents with Dementia.

- Studio che confronta I risultati tra prima e dopo un trattamento di musicoterapia individuale MUSIC & MEMORY (M&M), studiato per pazienti con demenza
- Evidenza di riduzione dell'utilizzo di farmaci antipsicotici, di ansiolitici e riduzione dei sintomi comportamentali e psicologici associati a demenza in pazienti con diagnosi di Alzheimer con associata demenza.

Impact of Music Therapy on Dementia Behaviors: A Literature Review.

- [Consult Pharm.](#) 2017 Oct 1;32(10):623-628. doi: 10.4140/TCP.n.2017.623.
- **Impact of Music Therapy on Dementia Behaviors: A Literature Review.**
- [Fakhoury N](#), [Wilhelm N](#), [Sobota KF](#), [Kroustos KR](#).
- **Abstract**
- Worldwide, dementia is the most important contributor to disability in elderly patients. Treating patients with dementia can be challenging for clinicians because of the numerous behavioral and psychological symptoms of dementia (BPSD). The Dementia Action Alliance and American Geriatrics Society Beers criteria promote nonpharmacological and behavioral treatments as first-line therapy to manage BPSD to avoid adverse events associated with antipsychotic medications. Some of the nonpharmacologic therapies proposed for BPSD include: music therapy (MT), light therapy, acupressure, aromatherapy, massage, and animal-assisted therapy. However, several are supported with only limited literature findings. Among these, MT has the most substantial data. MT has demonstrated benefit throughout mild-severe stages of dementia. The extended impact is attributed to associated brain pathology. MT's mode of delivery is essential to the evidencebased use of music interventions and delivery methods. The literature citations show that adequately trained individuals should ideally conduct several forms of MT to obtain optimal benefit. There are several studies investigating the impact of the various forms of MT on alleviating BPSD. Among the numerous reviewed studies, six trials and three meta-analyses were included in this article. While the literature conflicts, MT is noninvasive, poses little to no risk to patients, requires minimal training, and offers large potential for implementation in the patient-care setting. In addition, MT can have an important role in fostering student pharmacist development, because an emphasis on the aging demographic is becoming increasingly important.

Impact of Music Therapy on Dementia Behaviors: A Literature Review.

- La demenza è una delle maggiori cause di disabilità tra pazienti anziani.
- Il trattamento può esser impegnativo in relazione ai numerosi sintomi psicologici e comportamentali
- La Dementia Action Alliance and American Geriatrics Society ha promosso dei trattamenti non farmacologici per ridurre gli effetti collaterali legati alla terapia antipsicotica. Tra essi: musicoterapia, agopuntura, aromaterapia, massaggio, PET therapy....
- Molti trattamenti sono supportati da pochi dati in letteratura.
- La MT è quella maggiormente supportata. evha dimostrato di essere efficace negli stadi medio-gravi di demenza.
- Dalla letteratura emerge che occorrono operatori adeguatamente formati capaci di condurre vari tipi di MT per ottenere il miglior beneficio. Diversi studi analizzano vari tipi di trattamento MT per alleviare i sintomi legati alla demenza.
- Inclusi in questo articolo 6 trials e 3 meta-analisi
- MT è una metodologia non invasiva, con basso/nullo rischio per il paziente, con necessità di minima preparazione e applicabilità al setting del paziente

Decreasing Delirium through Music (DDM) in critically ill, mechanically ventilated patients in the intensive care unit: study protocol for a pilot randomized controlled trial.

- [Trials](#). 2017 Nov 29;18(1):574. doi: 10.1186/s13063-017-2324-6.
- **Decreasing Delirium through Music (DDM) in critically ill, mechanically ventilated patients in the intensive care unit: study protocol for a pilot randomized controlled trial.**
- [Khan SH](#)^{1,2}, [Wang S](#)^{3,4}, [Harrawood A](#)⁵, [Martinez S](#)⁵, [Heiderscheit A](#)⁶, [Chlan L](#)⁷, [Perkins AJ](#)^{4,8}, [Tu W](#)⁹, [Boustani M](#)^{4,5,8,10,11}, [Khan B](#)^{12,5,10}.
- **Abstract**
- **BACKGROUND:**
- Delirium is a highly prevalent and morbid syndrome in intensive care units (ICUs). Changing the stressful environment within the ICU via music may be an effective and a scalable way to reduce the burden of delirium.
- **METHODS/DESIGN:**
- The Decreasing Delirium through Music (DDM) study is a three-arm, single-blind, randomized controlled feasibility trial. Sixty patients admitted to the ICU with respiratory failure requiring mechanical ventilation will be randomized to one of three arms (20 participants per arm): (1) personalized music, (2) non-personalized relaxing music, or (3) attention-control. Music preferences will be obtained from all enrolled participants or their family caregivers. Participants will receive two 1-h audio sessions a day through noise-cancelling headphones and mp3 players. Our primary aim is to determine the feasibility of the trial design (recruitment, adherence, participant retention, design and delivery of the music intervention). Our secondary aim is to estimate the potential effect size of patient-preferred music listening in reducing delirium, as measured by the Confusion Assessment Method for the ICU (CAM-ICU). Participants will receive twice daily assessments for level of sedation and presence of delirium. Enrolled participants will be followed in the hospital until death, discharge, or up to 28 days, and seen in the Critical Care Recovery Clinic at 90 days.
- **DISCUSSION:**
- DDM is a feasibility trial to provide personalized and non-personalized music interventions for critically ill, mechanically ventilated patients. Our trial will also estimate the preliminary efficacy of music interventions on reducing delirium incidence and severity.

Decreasing Delirium through Music (DDM) in critically ill, mechanically ventilated patients in the intensive care unit: study protocol for a pilot randomized controlled trial.

- Nelle unità di cure intensive sono frequenti gli episodi di delirium
- Modificazioni dello stress legate all'ambiente della TI attraverso l'utilizzo di ascolto di musica può ridurre gli episodi di delirium.
- The Decreasing Delirium through Music (DDM) study I è uno studio a tre braccia
- 60 pazienti ricoverati in TI con insufficienza respiratoria che ha richiesto ventilazione meccanica, divisi in tre gruppi di 20 pazienti trattati con 2 sessioni di 1 ora di ascolto di
 - Musica personalizzata
 - Musica rilassante non personalizzata
 - Gruppo di controllo
- Primo obiettivo valutare la fattibilità dello studio per arruolamento, adesione, tipo di intervento musicale)
- Valutare l'efficacia dell'ascolto di una musica preferita nella riduzione di insorgenza di delirium.
- DDM risulta applicabile per consentire ascolto di musica personalizzata o meno a pazienti critici meccanicamente ventilati e sembra dare un dato preliminare di efficacia nella riduzione del numero e della gravità degli episodi di delirium

Singing and Vocal Interventions in Palliative and Cancer Care: Music Therapists' Perceptions of Usage.

- [J Music Ther.](#) 2017 Nov 1;54(3):336-361. doi: 10.1093/jmt/thx010.
- **Singing and Vocal Interventions in Palliative and Cancer Care: Music Therapists' Perceptions of Usage.**
- [Clements-Cortés A](#)¹.
- **Abstract**
- **Background:** Music therapists in palliative and cancer care settings often use singing and vocal interventions. Although benefits for these interventions are emerging, more information is needed on what type of singing interventions are being used by credentialed music therapists, and what goal areas are being addressed.
- **Objective:** To assess music therapists' perceptions on how they use singing and vocal interventions in palliative and cancer care environments.
- **Method:** Eighty credentialed music therapists from Canada and the United States participated in this two-part convergent mixed-methods study that began with an online survey, followed by individual interviews with 50% (n = 40) of the survey participants.
- **Results:** In both palliative and cancer care, singing client-preferred music and singing for relaxation were the most frequently used interventions. In palliative care, the most commonly addressed goals were to increase self-expression, improve mood, and create a feeling of togetherness between individuals receiving palliative care and their family. In cancer care, the most commonly addressed goals were to support breathing, improve mood, and support reminiscence. Seven themes emerged from therapist interviews: containing the space, connection, soothing, identity, freeing the voice within, letting go, and honoring.
- **Conclusions:** Music therapists use singing to address the physical, emotional, social, and spiritual goals of patients, and described singing interventions as accessible and effective. Further research is recommended to examine intervention efficacy and identify factors responsible that contribute to clinical benefit.

Singing and Vocal Interventions in Palliative and Cancer Care: Music Therapists' Perceptions of Usage.

- I musicoterapeuti spesso utilizzano il canto e interventi vocali nel trattamento di pazienti tumorali o in cure palliative .
- Il beneficio di tali interventi sta emergendo, ma occorrono maggiori informazioni rispetto al tipo di canto utilizzato e in quali situazioni.
- Sono stati inclusi 80 musicoterapeuti tra Canada e USA attraverso una survey on line e per il 50% dei partecipanti seguita da una intervista individuale.
- Sia nell'ambito delle cure palliative che dei pazienti oncologici gli interventi più utilizzati sono il canto di musiche scelte dal paziente o di canto a scopo rilassante.
- Nell'ambito delle cure palliative gli obiettivi sono incrementare l'espressione di sé, migliorare l'umore e le relazioni tra pazienti e familiari.
- Per i pazienti tumorali spesso gli obiettivi sono supportare la respirazione, migliorare l'umore e rievocare ricordi
- Il canto è utilizzato dai musicoterapeuti per raggiungere obiettivi fisici, emozionali, relazionali e spirituali e gli interventi sono descritti come accessibili ed efficaci.
- Maggiori ricerche sono raccomandate per valutare l'efficacia degli interventi e i fattori responsabili dei benefici clinici.

Music therapy for mental disorder and mental health: the untapped potential of Indian classical music.

- [BJPsych Int.](#) 2017 May 1;14(2):31-33. eCollection 2017 May.
- **Music therapy for mental disorder and mental health: the untapped potential of Indian classical music.**
- [Hegde S¹.](#)
- [Author information](#)
- **Abstract**
- Music is a universal human trait. The healing power of music has been acknowledged in almost all traditions of music. Music therapy is moving from a social-science model focusing on overall health and well-being towards a neuroscience model focusing on specific elements of music and its effect on sensorimotor, language and cognitive functions. The handful of evidence-based music therapy studies on psychiatric conditions have shown promising results. Traditional music, such as Indian classical music, has only recently been evaluated in evidence-based research into music therapy. The need for systematic research in this area is underscored.
- PMID: 29093934 PMCID: [PMC5618810](#)

Music therapy for mental disorder and mental health: the untapped potential of Indian classical music.

- Il potere di guarigione della musica è conosciuto in tutte le tradizioni musicali e la musicoterapia da un modello socio-scientifico sta evolvendo verso un modello basato sulle conoscenze neuroscientifiche che analizzano gli effetti della musica sulle funzioni sensomotorie, sul linguaggio e sulle funzioni cognitive.
- Promettenti risultati in ambito di patologie psichiatriche.
- La musica tradizionale indiana è stata recentemente studiata mediante ricerche evidence based
- Occorrono ricerche sistematiche in tale ambito.

The effect of traditional Persian music on the cardiac functioning of young Iranian women.

- [Indian Heart J.](#) 2017 Jul - Aug;69(4):491-498. doi: 10.1016/j.ihj.2016.12.016. Epub 2017 Jan 10.
- **The effect of traditional Persian music on the cardiac functioning of young Iranian women.**
- [Abedi B](#)¹, [Abbasi A](#)², [Goshvarpour A](#)³, [Khosroshai HT](#)⁴, [Javanshir E](#)⁵.
- **Abstract**
- In the past few decades, several studies have reported the physiological effects of listening to music. The physiological effects of different music types on different people are not similar. Therefore, in the present study, we have sought to examine the effects of traditional Persian music on the cardiac function in young women. Twenty-two healthy females participated in this study. ECG signals were recorded in two conditions: rest and music. For each of the 21 ECG signals (15 morphological and six wavelet based feature) features were extracted. SVM classifier was used for the classification of ECG signals during and before the music. The results showed that the mean of heart rate, the mean amplitude of R-wave, T-wave, and P-wave decreased in response to music. Time-frequency analysis revealed that the mean of the absolute values of the detail coefficients at higher scales increased during rest. The overall accuracy of 91.6% was achieved using polynomial kernel and RBF kernel. Using linear kernel, the best result (with the accuracy rate of 100%) was attained.

The effect of traditional Persian music on the cardiac functioning of young Iranian women.

- Molti studi nell'ultimo ventennio hanno trattato gli effetti fisiologici dell'ascolto della musica. Diversi tipi di musica hanno dimostrato di avere diversi effetti sulle persone
- Questo studio analizza gli effetti della musica tradizionale Persiana sulla funzione cardiaca in un gruppo di 22 giovani donne.
- Sono stati studiati ECG a riposo e durante ascolto di musica.
- L'analisi dei tracciati mostra una riduzione del ritmo cardiaco, dell'ampiezza delle onde R, T, P in risposta allo stimolo musicale.

Effect of Turkish classical music on blood pressure: a randomized controlled trial in hypertensive elderly patients.

- [Complement Ther Med](#). 2013 Jun;21(3):147-54. doi: 10.1016/j.ctim.2013.03.005. Epub 2013 Apr 2.
- **Effect of Turkish classical music on blood pressure: a randomized controlled trial in hypertensive elderly patients.**
- [Bekiroğlu T¹](#), [Ovayolu N](#), [Ergün Y](#), [Ekerbiçer HC](#).
- **Abstract**
- **BACKGROUND:** Existing studies suggest that music therapy can have favorable effects on hypertension and anxiety. We therefore set out to investigate the effect of Turkish classical music.
- **OBJECTIVES:** To investigate whether Turkish classical music has positive effects on blood pressures and anxiety levels in elderly patients.
- **DESIGN, SETTING AND SUBJECTS:** This was a randomized controlled trial performed on 60 hypertensive patients living in a local elderly home in Adana, Turkey.
- **METHODS:** Following the completion of a socio-demographic form for each patient, Hamilton anxiety scale was applied. Thereafter, the subjects were randomly divided into two equal-size groups and were allowed to either listen to Turkish classical music (music therapy group) or have a resting period (control group) for 25 min.
- **OUTCOME MEASURES:** The primary and secondary outcome measures were blood pressure and Hamilton anxiety scale scores, respectively.
- **RESULTS:** The mean reduction in systolic blood pressure was 13.00 mmHg in the music therapy group and 6.50 mmHg in the control group. The baseline adjusted between treatment group difference was not statistically significant (95% CI 6.80-9.36). The median reductions in diastolic blood pressures were 10 mmHg both in the music therapy and control groups. The between treatment group difference was not statistically significant (Mann-Whitney U test, $P = 0.839$). The mean reduction in HAMA-A was 1.63 in the music therapy group and 0.77 in the control group. The baseline adjusted between treatment group difference was not statistically significant (95% CI 0.82-1.92).
- **CONCLUSION:**
- The study demonstrated that both Turkish classical music and resting alone have positive effects on blood pressure in patients with hypertension.

Effect of Turkish classical music on blood pressure: a randomized controlled trial in hypertensive elderly patients.

- Molti studi suggeriscono l'efficacia della musicoterapia sul controllo di ipertensione e ansia.
- Studio che analizza l'effetto della musica classica turca su ipertensione e ansia in pazienti anziani
- Trial randomizzato controllato su 60 pazienti ipertesi di una casa per anziani divisi in due gruppi, uno trattato con ascolto di 25 minuti di musica classica turca e l'altro con il riposo
- Misurazioni della PAO e Hamilton anxiety scale scores
- Riduzione dei valori pressori in entrambi i gruppi senza differenze statisticamente significative

Effect of Turkish classical music on prenatal anxiety and satisfaction: A randomized controlled trial in pregnant women with pre-eclampsia.

- [Complement Ther Med.](#) 2017 Feb;30:1-9. doi: 10.1016/j.ctim.2016.11.005. Epub 2016 Nov 18.
- **Effect of Turkish classical music on prenatal anxiety and satisfaction: A randomized controlled trial in pregnant women with pre-eclampsia.**
- [Toker E¹](#), [Kömürcü N²](#).
- **Abstract**
- **OBJECTIVES:** The present study aimed to evaluate the effect of music therapy on anxiety and satisfaction in pregnant women with preeclampsia.
- **DESIGN, SETTING AND SUBJECTS:** A randomized controlled trial was performed on 70 pregnant women with pre-eclampsia hospitalized in the research and application hospital of Kahramanmaraş Sütcü İmam University between December 2012 and February 2014. The subjects were allocated to experimental or control groups in a random manner (n=35 each).
- **INTERVENTIONS:** Pregnant women in the experimental group were subject to a 30min Turkish classical music therapy trial each day for a period of 7days (5days before and 2days after labor) whereas those in the control group received routine care and also were assigned to 30min of bed rest a day. The Personal Information Form, State-Trait Anxiety Inventory, and Newcastle Satisfaction with Nursing Scale were administered to participants. Data were analyzed using descriptive statistics, student t-test, and Mann-Whitney U test where appropriate.
- **MAIN OUTCOME MEASURES:** Outcome measures were anxiety scale scores, satisfaction scale scores, vital signs, fetal movement and fetal heart rate.
- **RESULTS:** The differences between anxiety scores were not statistically significant ($p>0.05$). On the other hand, Newcastle Satisfaction with Nursing Scale scores of the experiment group were higher than the control group ($p<0.01$). Finally, when considering fetal movement counts, a significant increase was determined in the experiment group, whereas Music Therapy had a minimalizing effect on fetal heart rate and a lowering effect on blood pressure ($p<0.05$).
- **CONCLUSION:**
- It may be suggested that nurses and midwives can utilize music therapy in the care and follow-up of pregnant women with preeclampsia in obstetrics units.

Effect of Turkish classical music on prenatal anxiety and satisfaction: A randomized controlled trial in pregnant women with pre-eclampsia.

- Studio che valuta l'efficacia della musicoterapia su ansia in donne gravide con preeclampsia
- 70 donne con preeclampsia ricoverate tra il 2012 e 2014, due gruppi
- gruppo sperimentale esposto all'ascolto di 30 minuti di musica classica turca per 7 giorni (5 gg prima e 2 gg dopo il travaglio)
- Gruppo di controllo 30 minuti di riposo a letto die
- Scale per la valutazione dell'ansia non hanno dato punteggi significativamente diversi nei due gruppi,
- Il grado di soddisfazione e il numero di movimenti fetali risultano invece più elevati nel gruppo sperimentale. La musicoterapia riduce il ritmo cardiaco fetale e la pressione arteriosa.
- Infermieri e ostetriche possono utilizzare la musicoterapia in pazienti gravide con preeclampsia

Music therapy in neurological rehabilitation settings.

- [Psychiatr Pol.](#) 2015;49(4):835-46. doi: 10.12740/PP/25557.
- **Music therapy in neurological rehabilitation settings.**
- [Article in English, Polish]
- [Galińska E](#)¹.
- **Abstract**
- The neurologic music therapy is a new scope of music therapy. Its techniques deal with dysfunctions resulting from diseases of the human nervous system. Music can be used as an alternative modality to access functions unavailable through non-musical stimulus. Processes in the brain activated by the influence of music can be generalized and transferred to non-musical functions. Therefore, in clinical practice, the translation of non-musical therapeutic exercises into analogous, isomorphic musical exercises is performed. They make use of the executive peculiarity of musical instruments and musical structures to prime, cue and coordinate movements. Among musical components, a repetitive rhythm plays a significant role. It regulates physiologic and behavioural functions through the mechanism of entrainment (synchronization of biological rhythms with musical rhythm based on acoustic resonance). It is especially relevant for patients with a deficient internal timing system in the brain. Additionally, regular rhythmic patterns facilitate memory encoding and decoding of non-musical information hence music is an efficient mnemonic tool. The music as a hierarchical, compound language of time, with its unique ability to access affective/motivational systems in the brain, provides time structures enhancing perception processes, mainly in the range of cognition, language and motor learning. It allows for emotional expression and improvement of the motivation for rehabilitation activities. The new technologies of rhythmic sensory stimulation (i.e. Binaural Beat Stimulation) or rhythmic music in combination with rhythmic light therapy appear. This multimodal forms of stimulation are used in the treatment of stroke, brain injury, dementia and other cognitive deficits. Clinical outcome studies provide evidence of the significant superiority of rehabilitation with music over the one without music.

Music therapy in neurological rehabilitation settings.

- Nuovo obiettivo della musicoterapia è il trattamento di pazienti con alterazioni neurologiche.
- Musica utilizzata per accedere a funzioni non valutabili con uno stimolo non musicale
- Attivazione di processi attivati dallo stimolo musicale e successivamente generalizzati e trasferiti a funzioni non-musicali: ad esempio utilizzo di strumenti e strutture musicali per coordinare i movimenti
- (attraverso utilizzo di ritmi ripetitivi che creano una sincronizzazione dei ritmi biologici con quelli della musica attraverso la risonanza acustica). Risulta molto efficace per pazienti che hanno perso il senso del tempo
- Additionally, regular rhythmic patterns facilitate memory encoding and decoding of non-musical information hence music is an efficient mnemonic tool. The music as a hierarchical, compound language of time, with its unique ability to access affective/motivational systems in the brain, provides time structures enhancing perception processes, mainly in the range of cognition, language and motor learning. It allows for emotional expression and improvement of the motivation for rehabilitation activities. The new technologies of rhythmic sensory stimulation (i.e. Binaural Beat Stimulation) or rhythmic music in combination with rhythmic light therapy appear. This multimodal forms of stimulation are used in the treatment of stroke, brain injury, dementia and other cognitive deficits. Clinical outcome studies provide evidence of the significant superiority of rehabilitation with music over the one without music.

Effects of active music therapy on the normal brain: fMRI based evidence.

- [Brain Imaging Behav.](#) 2016 Mar;10(1):182-6. doi: 10.1007/s11682-015-9380-x.
- **Effects of active music therapy on the normal brain: fMRI based evidence.**
- [Raglio A](#)¹, [Galandra C](#)², [Sibilla L](#)³, [Esposito F](#)⁴, [Gaeta F](#)⁵, [Di Salle F](#)⁶, [Moro L](#)⁷, [Carne I](#)⁸, [Bastianello S](#)⁹, [Baldi M](#)¹⁰, [Imbriani M](#)¹¹.
- **Abstract**
- The aim of this study was to investigate the neurophysiological bases of Active Music Therapy (AMT) and its effects on the normal brain. Twelve right-handed, healthy, non-musician volunteers were recruited. The subjects underwent 2 AMT sessions based on the free sonorous-music improvisation using rhythmic and melodic instruments. After these sessions, each subject underwent 2 fMRI scan acquisitions while listening to a Syntonic (SP) and an A-Syntonic (AP) Production from the AMT sessions. A 3 T Discovery MR750 scanner with a 16-channel phased array head coil was used, and the image analysis was performed with Brain Voyager QX 2.8. The listening to SP vs AP excerpts mainly activated: (1) the right middle temporal gyrus and right superior temporal sulcus, (2) the right middle frontal gyrus and in particular the right precentral gyrus, (3) the bilateral precuneus, (4) the left superior temporal sulcus and (5) the left middle temporal gyrus. These results are consistent with the psychological bases of the AMT approach and with the activation of brain areas involved in memory and autobiographical processes, and also in personal or interpersonal significant experiences. Further studies are required to confirm these findings and to explain possible effects of AMT in clinical settings.

Effects of active music therapy on the normal brain: fMRI based evidence.

- Studio che studia le basi neurobiologiche della Active Music Therapy (AMT) e i suoi effetti sul cervello sano.
- Reclutati 12 destrimani, in salute, non musicisti, volontari.
- Trattati con 2 sessioni di MT con improvvisazione musicale con strumenti ritmici e melodici.
- Valutazione con fMRI durante ascolto di musica sintonica e asintonica prodotta durante le sessioni.
- L'ascolto di musica sintonica attiva maggiormente una serie di aree cerebrali: giro temporale medio dx e il solco temporale superiore dx, il giro medio frontale dx e il giro precentrale dx, il precuneo bilateralmente, il solco temporale superiore sn e il giro temporale medio sn.
- I risultati confermano le basi psicologiche dell'AMT e la attivazione di aree cerebrali coinvolte nella memoria e nelle esperienze autobiografiche e relazionali significative.
- Sono necessari ulteriori studi per confermare questi dati e spiegare l'efficacia della AMT in ambiti clinici.

On one approach to health protection: Music of the brain.

- [J Integr Neurosci](#). 2017 Oct 18. doi: 10.3233/JIN-170053. [Epub ahead of print]
- **On one approach to health protection: Music of the brain.**
- [Fedotchev A](#)¹, [Radchenko G](#)², [Zemlianaia A](#)³.

- **Abstract**

- This review presents the current status of a method for prevention and timely correction of human functional disturbances that was first proposed by Russian neurologist Ya.I. Levin in 1998 and further developed by the authors. The approach is named "Music of the Brain" and is based on musical or music-like stimulation organized in strict accordance with the biopotentials of a patient's brain. Initial studies on the music of the brain approach were analyzed, and its limitations were noted. To enhance the efficiency and usability of the approach, several combinations of music therapy with neurofeedback technique - musical neurofeedback - were developed. Enhanced efficiency of the approach has been shown for correction of functional disturbances during pregnancy and for elimination of stress-induced states in high technology specialists. The use and advantages of musical neurofeedback technology for increasing human cognitive activity, correcting sleep disturbances and treatment of disorders of attention were verified. After further development and testing the approach may be suited for a wide range of therapeutic and rehabilitation procedures in the protection of public health.

On one approach to health protection: Music of the brain.

- Approccio chiamato "Music of the Brain" per trattare vari disturbi e basato su uno stimolo musicale in accordo con i biopotenziali del cervello del paziente.
- Per utilizzare questo approccio si utilizza una combinazione di musicoterapia e tecniche di neurofeedback
- Questo metodo è stato impiegato per trattare disturbi funzionali durante la gravidanza e per il trattamento dello stress.
- L'impiego del neurofeedback è utile per incrementare l'attività cerebrale, correggere disturbi del sonno e disturbi attentivi.
- Un corretto sviluppo della tecnica potrebbe essere utile in ambito terapeutico e riabilitativo.

The future of music in Therapy and Medicine

- Ann.N.Y.Acad:Sci.1060:303-308 (2005)
- **The future of music in Therapy and Medicine**
- MICHAEL H.THAUT
- The understanding of music's role and function in therapy and medicine is undergoing a rapid transformation, based on neuroscientific research showing the reciprocal relationship between studying the neurobiological foundations of music in the brain and how music behavior through learning and experience changes brain and behavior function. Through this research the theory and clinical practice of music therapy is changing more and more from a social science model, based on cultural roles and general well-being concepts, to a neuroscience-guided model based on brain function and music perception. This paradigm shift has the potential to move music therapy from an adjunct modality to a central treatment modality in rehabilitation and therapy.

The future of music in Therapy and Medicine

- Gli studi in ambito neuroscientifico sottolineano i fondamenti neurobiologici della musica e come la musica possa attraverso l'esperienza musicale modificare il cervello.
- La musicoterapia passa da un modello più sociale basato su un ruolo culturale e legato al benessere, ad un modello neuroscientifico basato sulle funzioni cerebrali e la percezione musicale
- la musicoterapia da trattamento aggiuntivo diventa così una modalità di trattamento a tutti gli effetti.

Music Therapy Practice Status and Trends Worldwide: An International Survey Study.

- [J Music Ther.](#) 2017 Nov 1;54(3):255-286. doi: 10.1093/jmt/thx011.
- **Music Therapy Practice Status and Trends Worldwide: An International Survey Study.**
- [Kern P¹](#), [Tague DB²](#).
- **Abstract**
- **Background:** The field of music therapy is growing worldwide. While there is a wealth of country-specific information available, only a few have databased workforce censuses. Currently, little to no descriptive data exists about the global development of the profession.
- **Objectives:** The purpose of this study was to obtain descriptive data about current demographics, practice status, and clinical trends to inform worldwide advocacy efforts, training needs, and the sustainable development of the field.
- **Method:** Music therapists (N = 2,495) who were professional members of organizations affiliated with the World Federation of Music Therapy (WFMT) served as a sample for this international cross-sectional survey study. A 30-item online questionnaire was designed, pilot tested by key partners, and translated into seven languages. Researchers and key partners distributed the online survey through e-mail invitations and social media announcements.
- **Results:** Professional music therapists worldwide are well-educated, mature professionals with adequate work experience, who are confident in providing high-quality services primarily in mental health, school, and geriatric settings. Due to ongoing challenges related to recognition and government regulation of the field as an evidence-based and well-funded healthcare profession, most individuals work part-time music therapy jobs and feel underpaid. Yet, many music therapists have a positive outlook on the field's future.
- **Conclusions:** Continued research and advocacy efforts, as well as collaborations with lobbyists, business consultants, and credentialing/licensure experts to develop progressive strategies, will be crucial for global development and sustainability of the field.

Music Therapy Practice Status and Trends Worldwide: An International Survey Study.

- I campi di applicazione della MT sono in crescita in tutto il mondo, ma non è noto lo sviluppo a livello globale della professione del musicoterapeuta
- Questo studio si propone di analizzare la situazione a livello globale da un punto di vista demografico, di status della pratica e di trend di sviluppo della professione
- Come riferimento la World Federation of Music Therapy (WFMT)
- Utilizzato un questionario on-line di 30-item tradotto in varie lingue e distribuito on line.
- I dati che emergono descrivono una situazione di operatori ben formati, con adeguata esperienza professionale e capaci di fornire un servizio di alta qualità.
- Molti operatori lavorano part-time come musicoterapeuti e sono sottopagati.
- Molti hanno comunque una visione ottimistica per il futuro della professione.
- La ricerca continua e la collaborazione è fondamentale per lo sviluppo del campo della musicoterapia.

Conclusioni dalla letteratura

- Spinta forte all'inserimento della musicoterapia in ambito clinico
- Tentativo di dimostrare validità del trattamento musicoterapico non solo come trattamento aggiuntivo ad altre terapie ma come trattamento alternativo
- Non esiste sufficiente chiarezza sugli effetti di diversi tipi di musica o diversi approcci musicoterapici.
- La maggior parte degli studi raggiunge evidenze parziali o comunque con necessità di ulteriori approfondimenti

- Quali siano i meccanismi che caratterizzano l'effetto della musica sull'uomo a giustificarne l'impiego come trattamento volto a migliorare lo stato di salute non sono ad oggi ben definiti
- La musica non ha una azione specifica?
- Occorre studiare aspetti diversi?
- Con una diversa prospettiva?

Tesi del Master Universitario di primo livello in Grave Cerebrolesione Acquisita

**La musicoterapia nella riabilitazione interdisciplinare
di un caso di Grave Cerebrolesione Acquisita:
*analisi del percorso dalla fase acuta a quella degli esiti
e rilevanza dell'approccio musicoterapico integrato.***

Ricerca bibliografica sull'utilizzo della musicoterapia nell'ambito delle GCA

- La GCA determina un quadro complesso e variabile di situazioni in cui possono essere presenti alterazioni dello stato di coscienza, deficit neuromotori, della comunicazione e del linguaggio, delle funzioni cognitive e comportamentali, alterazioni sensoriali e della sfera emotiva.
- Alla base vi è comunque un danno che coinvolge in modo significativo l'organo cerebrale.
- La **musicoterapia** è stata utilizzata in riabilitazione per stimolare il recupero delle funzioni lese e a **stimolare la neuro plasticità del SNC**.
- Numerosi studi sono iniziati in tempi recenti, in particolare negli ultimi 20-30 anni, parallelamente ad un maggiore interesse rispetto ai processi neurofisiologici coinvolti nell'ascolto e nella produzione musicale e allo sviluppo di ricerca in ambito neuro musicologico (3).

Shantala Hegde

Music-based cognitive remediation therapy for patients with traumatic brain injury.

Frontiers in neurology - MINI REVIEW ARTICLE published: 24 March 2014

- Già lavori più datati individuavano una certa **efficacia della musica nel favorire il recupero della deambulazione e delle funzioni motorie** .
- Hurt CP, Rice RR, McIntosh GC, ThautMH. Rhythmic auditory stimulation in gait training for patients with traumatic brain injury. *J MusicTher* (1998) **35**: 228–41.
- Una review del 2010 si è proposta di misurare l'efficacia degli interventi di musicoterapia in pazienti con GCA confrontati con le abituali terapie in uso a livello di cammino, funzionalità dell'AS, comunicazione e linguaggio, umore e sfera emotiva, abilità sociali, sfera comportamentale, dolore e ADL.
- Gli autori concludono che al momento ci sono dati sufficienti per indicare come **efficace la rhythmic auditory stimulation (RAS) nel migliorare i parametri del cammino** (velocità, ritmo, lunghezza e simmetria del passo) in pz con esiti di ictus, mentre per il momento **non vi sono dati sufficienti per dimostrare efficacia per il raggiungimento di outcomes diversi** (5).

Music therapy for acquired brain injury.

- [Cochrane Database Syst Rev](#). 2010 Jul 7;(7):CD006787. doi: 10.1002/14651858.CD006787.pub2.
- **Music therapy for acquired brain injury.**
- [Bradt J¹](#), [Magee WL](#), [Dileo C](#), [Wheeler BL](#), [McGilloway E](#).

Abstract

- **BACKGROUND:** Acquired brain injury (ABI) can result in impairments in motor function, language, cognition, sensory processing and emotional disturbances. This may severely reduce a survivor's quality of life. Music therapy has been used in rehabilitation to stimulate brain functions involved in movement, cognition, speech, emotions and sensory perceptions. A systematic review is needed to gauge the efficacy of music therapy as a rehabilitation intervention for people with ABI.
- **OBJECTIVES:** To examine the effects of music therapy with standard care versus standard care alone or standard care combined with other therapies on gait, upper extremity function, communication, mood and emotions, social skills, pain, behavioral outcomes, activities of daily living and adverse events.
- **SEARCH STRATEGY:** We searched the Cochrane Stroke Group Trials Register (February 2010), the Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 2, 2009), MEDLINE (July 2009), EMBASE (August 2009), CINAHL (March 2010), PsycINFO (July 2009), LILACS (August 2009), AMED (August 2009) and Science Citation Index (August 2009). We handsearched music therapy journals and conference proceedings, searched dissertation and specialist music databases, trials and research registers, reference lists, and contacted experts and music therapy associations. There was no language restriction.
- **SELECTION CRITERIA:** Randomized and quasi-randomized controlled trials that compared music therapy interventions and standard care with standard care alone or combined with other therapies for people older than 16 years of age who had acquired brain damage of a non-degenerative nature and were participating in treatment programs offered in hospital, outpatient or community settings.
- **DATA COLLECTION AND ANALYSIS:** Two review authors independently assessed methodological quality and extracted data. We present results using mean differences (using post-test scores) as all outcomes were measured with the same scale.
- **MAIN RESULTS:** We included seven studies (184 participants). The results suggest that rhythmic auditory stimulation (RAS) may be beneficial for improving gait parameters in stroke patients, including gait velocity, cadence, stride length and gait symmetry. These results were based on two studies that received a low risk of bias score. There were insufficient data to examine the effect of music therapy on other outcomes.
- **AUTHORS' CONCLUSIONS:** RAS may be beneficial for gait improvement in people with stroke. These results are encouraging, but more RCTs are needed before recommendations can be made for clinical practice. More research is needed to examine the effects of music therapy on other outcomes in people with ABI.

Music interventions for acquired brain injury.

- [Cochrane Database Syst Rev.](#) 2017 Jan 20;1:CD006787. doi: 10.1002/14651858.CD006787.pub3.
- **Music interventions for acquired brain injury.**
- [Magee WL](#)¹, [Clark I](#)², [Tamplin J](#)², [Bradt J](#)³.
- **MAIN RESULTS:**
- We identified 22 new studies for this **update**. The evidence for this update is based on 29 trials involving 775 participants. A music intervention known as rhythmic auditory stimulation may be beneficial for improving the following gait parameters after stroke. We found a reported increase in gait velocity of 11.34 metres per minute (95% confidence interval (CI) 8.40 to 14.28; 9 trials; 268 participants; $P < 0.00001$; moderate-quality evidence). Stride length of the affected side may also benefit, with a reported average of 0.12 metres more (95% CI 0.04 to 0.20; 5 trials; 129 participants; $P = 0.003$; moderate-quality evidence). We found a reported average improvement for general gait of 7.67 units on the Dynamic Gait Index (95% CI 5.67 to 9.67; 2 trials; 48 participants; $P < 0.00001$). There may also be an improvement in gait cadence, with a reported average increase of 10.77 steps per minute (95% CI 4.36 to 17.18; 7 trials; 223 participants; $P = 0.001$; low-quality evidence). Music interventions may be beneficial for improving the timing of upper extremity function after stroke as scored by a reduction of 1.08 seconds on the Wolf Motor Function Test (95% CI -1.69 to -0.47; 2 trials; 122 participants; very low-quality evidence). Music interventions may be beneficial for communication outcomes in people with aphasia following stroke. Overall, communication improved by 0.75 standard deviations in the intervention group, a moderate effect (95% CI 0.11 to 1.39; 3 trials; 67 participants; $P = 0.02$; very low-quality evidence). Naming was reported as improving by 9.79 units on the Aachen Aphasia Test (95% CI 1.37 to 18.21; 2 trials; 35 participants; $P = 0.02$). Music interventions may have a beneficial effect on speech repetition, reported as an average increase of 8.90 score on the Aachen Aphasia Test (95% CI 3.25 to 14.55; 2 trials; 35 participants; $P = 0.002$). There may be an improvement in quality of life following stroke using rhythmic auditory stimulation, reported at 0.89 standard deviations improvement on the Stroke Specific Quality of Life Scale, which is considered to be a large effect (95% CI 0.32 to 1.46; 2 trials; 53 participants; $P = 0.002$; low-quality evidence). We found no strong evidence for effects on memory and attention. Data were insufficient to examine the effect of music interventions on other outcomes. The majority of studies included in this review update presented a high risk of bias, therefore the quality of the evidence is low.
- **AUTHORS' CONCLUSIONS:**
- Music interventions may be beneficial for gait, the timing of upper extremity function, communication outcomes, and quality of life after stroke. These results are encouraging, but more high-quality randomised controlled trials are needed on all outcomes before recommendations can be made for clinical practice.

Changes in gait patterns induced by rhythmic auditory stimulation for adolescents with acquired brain injury.

- [Ann N Y Acad Sci.](#) 2016 Dec;1385(1):53-62. doi: 10.1111/nyas.13294.
- **Changes in gait patterns induced by rhythmic auditory stimulation for adolescents with acquired brain injury.**
- [Kim SJ](#)¹, [Shin YK](#)^{2,3}, [Yoo GE](#)⁴, [Chong HJ](#)⁴, [Cho SR](#)^{2,3,5}.
- **Abstract**
- The effects of rhythmic auditory stimulation (RAS) on gait in adolescents with acquired brain injury (ABI) were investigated. A total of 14 adolescents with ABI were initially recruited, and 12 were included in the final analysis (n = 6 each). They were randomly assigned to the experimental (RAS) or the control (conventional gait training) groups. The experimental group received gait training with RAS three times a week for 4 weeks. For both groups, spatiotemporal parameters and kinematic data, such as dynamic motions of joints on three-dimensional planes during a gait cycle and the range of motion in each joint, were collected. Significant group differences in pre-post changes were observed in cadence, walking velocity, and step time, indicating that there were greater improvements in those parameters in the RAS group compared with the control group. Significant increases in hip and knee motions in the sagittal plane were also observed in the RAS group. The changes in kinematic data significantly differed between groups, particularly from terminal stance to mid-swing phase. An increase of both spatiotemporal parameters and corresponding kinematic changes of hip and knee joints after RAS protocol indicates that the use of rhythmic cueing may change gait patterns in adolescents with ABI.

- Gli aspetti tuttavia più recentemente studiati riguardano non tanto l'applicazione della musicoterapia nella sfera dei deficit motori conseguenti a GCA, quanto piuttosto all'efficacia dello strumento musicoterapico sia **nel diagnosticare quadri di alterazione dello stato di coscienza (disorders of consciousness - DOC)** e nel favorire l'incremento della vigilanza, sia **nell'influire positivamente sulle alterazioni cognitive (6,7).**

Thaut MH, Gardiner JC, Holmberg D, Horowitz J, Kent L, Andrews G, et al.

Neurologic music therapy improves executive function and emotional adjustment in traumatic brain injury rehabilitation.

Ann N Y Acad Sci (2009) **1169**:406–16.

Särkämö T, Tervaniemi M, Laitinen S, Forsblom A, Soinila S, Mikkonen M, et al.

Music listening enhances cognitive recovery and mood after middle cerebral artery stroke.

Brain (2008) **131**:866–76.

- Una **diagnosi accurata tra stato vegetativo (SV) e stato di minima coscienza (SMC)**, in particolare in casi di prolungata alterazione dello stato di coscienza (intesa come una durata superiore alle quattro settimane (8), è assolutamente rilevante da un punto di vista terapeutico, prognostico, etico e di allocazione delle risorse.
- Purtroppo dalla letteratura emerge che anche in unità specializzate il tasso di **diagnosi errata raggiunge ancora livelli del 37-43%** e non si è modificato in modo significativo negli ultimi 20 anni (9,10).

Wendy L. Magee and Julian O'Kelly

Music therapy with disorders of consciousness: current evidence and emergent evidence-based practice.

Ann. N.Y. Acad. Sci. 1337 (2015) 256–262

- Un aiuto sicuramente è stato apportato in tempi più recenti da metodiche di **neuroimaging**, che consentono di dimostrare una **diversa attività metabolica** a livello fronto-parietale bilaterale, la quale potrebbe correlare con il recupero di connettività di queste regioni ed essere predittiva nel porre diagnosi di SV o SMC (11,12).
- Tuttavia studi effettuati con elettroencefalografia (EEG), tomografia a emissione di positroni (PET) e risonanza magnetica funzionale (fMRI) hanno evidenziato casi di SV in cui i network di funzioni cognitive superiori risultavano intatti (13-19).

Laureys, S., *et al.*

Auditory processing in the vegetative state.

Brain 2000. **123**(Pt 8): 1589–1601.

- Un certo numero di studi basati su neuroimmagini ha inoltre dimostrato come **la risposta uditiva** nella popolazione di pazienti con DOC, mediante il richiamo verbale (20-22), l'utilizzo del nome del soggetto (23,24) o di toni musicali (25), **sia più spesso conservata rispetto ad altre funzioni** (26).
- A livello corticale sembra inoltre che in **pazienti con SMC abbiano una diversa risposta alla stimolazione uditiva rispetto a pazienti in SV** con una maggiore connettività tra aree corticali coinvolte (23).
- Anche la rilevanza dello stimolo ha dimostrato essere importante, producendo un maggiore livello di attivazione sia nello SV che nello SMC con utilizzo di stimoli con una valenza personale (23,27,28).
- Lo stimolo uditivo con un significato per la persona è quindi in grado di produrre delle modificazioni significative a livello comportamentale e nell'attivazione corticale (23,24,27,29).
-

- O'Kelly e coll. hanno condotto uno **studio confrontando le risposte al silenzio, a procedure musicoterapiche (quali l'ascolto di musiche significative per il paziente o adattate al ritmo del respiro), a musiche non gradite e al rumore** in 20 pazienti sani, 12 SV e 9 SMC (30).
- L'analisi EEG e della frequenza respiratoria ha mostrato come vigilanza e attenzione siano maggiori nel caso di musica significativa per il soggetto, sia nei controlli, che nella maggior parte degli SV e SMC

O'Kelly, J., *et al.*

Neurophysiological and behavioral responses to music therapy in vegetative and minimally conscious states.
Front. Hum. Neurosci. 2013.7: 884.

- Gli autori concludono che la musicoterapia possa sostenere la vigilanza e ottimizzare le valutazioni dello stato di coscienza in pazienti con DOC e che inoltre concorra ad incrementare il livello di attività corticale, in accordo con altri studi già precedentemente effettuati su popolazione affetta da diversi disturbi neurologici (31,32).

Sarkamo, T., *et al.*

Music listening enhances cognitive recovery and mood after middle cerebral artery stroke.
Brain 2008.131: 866–876.

Sarkamo, T., *et al.*

Structural changes induced by daily music listening in the recovering brain after middle cerebral artery stroke: a voxel-based morphometry study.
Front. Hum. Neurosci. 2014. 8: 245.

- Il MATADOC (Music Therapy Assessment Tool for Awareness in Disorders of Consciousness) è un protocollo clinico, proposto da Magee e coll, che utilizza prevalentemente esperienze musicali dirette per valutare stato di coscienza e responsività in pazienti con prolungata (superiore alle quattro settimane) alterazione dello stato di coscienza (33).

Magee, W.L., *et al.*

Music Therapy Assessment Tool for Awareness in Disorders of Consciousness (MATADOC): standardisation of the principal subscale to assess awareness in patients with disorders of consciousness.

Neuropsychol. Rehabil. 2014. **24**: 101–124.

- L'osservazione pre- e post-stimolo viene utilizzata come baseline per valutare il comportamento del paziente, per escludere risposte inconsistenti, spontanee o comunque non significative.
- Questo protocollo include anche la valutazione di stimoli provenienti da altri ambiti (visivo, comunicativo, motorio), ma è particolarmente **incentrato sulla valutazione di responsività alla stimolazione uditiva**.
- La procedura iniziale prevede la graduale introduzione di **stimoli musicali** che seguono il respiro del paziente, le sue emissioni vocali o risposte motorie. Intanto **il nome del paziente** viene cantato ripetutamente per incrementare vigilanza e attenzione, come raccomandato da una serie di studi (23,24,27,28).
- Per discriminare le diverse risposte allo stimolo uditivo, **suoni musicali diversi** vengono proposti in modo isolato (es. singoli suoni con diverse altezze) in una seconda procedura per verificare la presenza di risposte differenti con utilizzo di registri diversi o a suoni proposti a dx o a sn del paziente. Vengono proposti timbri diversi per valutare la presenza di capacità discriminativa o di una preferenza manifestata da risposte comportamentali diverse. Questo anche sulla base di studi effettuati con utilizzo di potenziali evocati uditivi che indicano come la modificazione di questi parametri possa produrre delle modificazioni elettrofisiologiche utili nella valutazione dello stato di coscienza in questi pazienti (25).
- Una terza procedura prevede poi l'utilizzo di **una musica nota e familiare al paziente**, quindi con una rilevanza emotiva e un significato per quell'individuo. Questo nell'ottica di fornire il maggiore stimolo possibile che possa indurre una risposta comportamentale (30,34,35) e incrementare l'attività corticale (23,24,27,28).
- Generalmente ogni stimolo musicale è fornito dal vivo, consentendone così una pronta manipolazione in base alle risposte del paziente.

- La pratica clinica in pazienti con DOC suggerisce l'utilizzo combinato di diverse valutazioni standardizzate al fine di raggiungere la più accurata diagnosi possibile rispetto allo stato di coscienza, utilizzando valutazioni complementari provenienti da qualunque elemento del team (36).
- Una revisione sistematica delle scale di valutazione esistenti per valutare lo stato di coscienza identifica come “gold standard” la Coma Recovery Scale Revised (CRS-R) (37).
- Tuttavia gli autori del MATADOC ritengono **che tutte le scale di valutazione validate esistenti con protocolli standardizzati non siano sufficientemente sensibili nel valutare la risposta alla stimolazione uditiva.** Gli stimoli utilizzati prevedono il chiamare il paziente per nome, battere le mani o dei legnetti vicino all'orecchio del paziente, suonare un fischietto, dei sonagli o delle campanelle, utilizzare musiche o voci familiari registrate (37-40). **Questo non consentirebbe di variare altezza, timbro o volume del suono, facendo rischiare di non identificare stimoli uditivi che potenzialmente potrebbero essere utili nell'incrementare lo stato di vigilanza e utilizzati nel trattamento del paziente.**
- Il MATADOC in questo senso offrirebbe un range di stimoli uditivi vario e facilmente manipolabile tale da incrementare la sensibilità nel rilevare una risposta alla stimolazione uditiva in modo superiore rispetto ad altri protocolli esistenti (41).

- Oltre al ruolo della musicoterapia nella valutazione dello stato di coscienza in pazienti a bassa responsività, l'altro aspetto di crescente interesse e su cui la ricerca si sta sviluppando è il **ruolo della musicoterapia nel recupero delle menomazioni cognitive conseguenti a GCA.**
- L'efficacia della **Riabilitazione Cognitiva**, intesa come insieme multidisciplinare di tecniche atte a fornire al paziente strumenti comportamentali che permettano la risoluzione di problemi o la capacità di svolgere compiti allo scopo di migliorare il funzionamento globale del paziente nel contesto e nella relazione, è comprovata e dimostrata da numerosi studi (42,43,44,45,46,47).

- All'interno di questo ambito la musicoterapia, intesa come riabilitazione cognitiva (CR) basata sulla **musica**, si propone come **strumento di riabilitazione in relazione a una serie di evidenze che dimostrano come essa sia in grado di attivare numerosi processi cognitivi** come l'analisi acustica, la processazione di informazioni, l'integrazione sensori-motoria, l'apprendimento e la memoria, la capacità di scelta, emozione e creatività e quindi di attivare processi di plasticità neuronale capaci di indurre delle modificazioni che possono ripercuotersi anche in situazioni non legate alla musicoterapia (48-53).

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- Molti studi ormai dimostrano la forte evidenza di un collegamento tra musica ed effetti misurabili su sistema cognitivo ed emotivo.
- L'ascolto di una musica piacevole ed emotivamente coinvolgente o l'evocazione di esperienze emotive durante l'ascolto di musica coinvolge le medesime aree cerebrali che si attivano durante le emozioni vissute nella vita reale, cioè le aree mesolimbiche, le aree della ricompensa, il nucleo accumbens e si ha un incremento dei livelli di dopamina (54-57).
- L'ascolto o l'esecuzione di musica produce una significativa riduzione dei due principali markers di stress regolati dal sistema ipotalamo-ipofisi-surrene, beta endorfina e cortisolo (58-60)
- .
- Un recente studio descrive quali modificazioni neurochimiche a livello cerebrale possano sostenere l'effetto terapeutico della musica in diversi ambiti: ricompensa, motivazione e piacere sarebbero stimolati dalla produzione di oppioidi endogeni e dopamina, stress e vigilanza da cortisolo, CRH e ACTH, il sistema immunitario da serotonina e peptide derivato dalla proopiomelaniocortina (POMC), l'attaccamento, la socialità dall'ossitocina (61).
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- Numerosi sono poi gli studi a sostegno della capacità della musica di **stimolare la neuro plasticità**.
- Si ipotizza che ascoltare musica faciliti la neurogenesi o la riparazione del tessuto nervoso cerebrale mediante la regolazione della secrezione di ormoni steroidei(62).
- Oggetto di recente indagine è l'utilizzo di un marker di plasticità neuronale come il BDNF (Brain Derived Neurotrophic Factor) come indice di miglioramento cognitivo indotto da attività musicali.
- Altri studi utilizzano tecniche come EEG, fMRI, TMS per indagare le modificazioni indotte da interventi che utilizzano l'approccio musicale.
- Tutta questa ricerca in ambito musicologico e neurochimico tende a trasformare la musicoterapia da semplice scienza sociale a un modello terapeutico con delle basi neuro-scientifiche a sostegno (63).
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- Tuttavia ancora non vi sono sufficienti evidenze scientifiche di efficacia terapeutica nel migliorare le funzioni cognitive per la presenza di un esiguo numero di studi e in particolare di RCT, che esaminino l'effetto terapeutico della MT in condizioni neurologiche o ancor meno in pz con GCA (32, 64-66) .

- La review sistematica del 2010 sulla musicoterapia in pazienti con GCA come già evidenziato precedentemente non fornisce sufficienti prove di efficacia della MT in ambito cognitivo(67).
- Un solo studio esamina il recupero delle funzioni esecutive in pazienti con GCA attraverso l'uso della MT. Questo studio indaga l'effetto immediato della NMT in un gruppo di pazienti con GCA trattato con quattro brevi sessioni musicoterapiche ognuna volta ad indagare una delle seguenti sfere: attenzione, memoria, funzioni esecutive e emotività. Rispetto al gruppo di controllo sono stati osservati cambiamenti significativi a livello di funzioni esecutive e flessibilità mentale, mentre non significative erano le modificazioni immediate a livello di attenzione e memoria. Tuttavia non viene valutato da questo studio l'effetto nel tempo (32).

- Permane quindi al momento un gap tra le basi neurofisiologiche che fanno intuire il potenziale della MT in ambito di riabilitazione cognitiva e le prove di efficacia terapeutica disponibili.
- La musica rappresenta in ogni caso un mezzo di comunicazione non verbale capace di coinvolgere a livello cerebrale una serie di funzioni molto estesa, per cui sembra rappresentare uno dei migliori esercizi per stimolare la plasticità neuronale.
- Grazie alla plasticità del cervello e al fatto che con la musica è dimostrato il coinvolgimento di una serie di funzioni cognitive si ritiene che essa possa condurre a significative modificazioni delle funzioni cerebrali.