MUSICA E MUSICOTERAPIA BASI SCIENTIFICHE E APPLICAZIONI IN CAMPO NEUROLOGICO

Musicoterapia in campo neurologico

Anna Rita Giovagnoli

Fondazione IRCCS Istituto Neurologico C. Besta
Milano

REVIEW ARTICLE

Patterns of Normal Human Brain Plasticity After Practice and Their Implications for Neurorehabilitation

Clare Kelly, PhD, John J. Foxe, PhD, Hugh Garavan, PhD

Arch Phys Med Rehab 2006;87:20-29

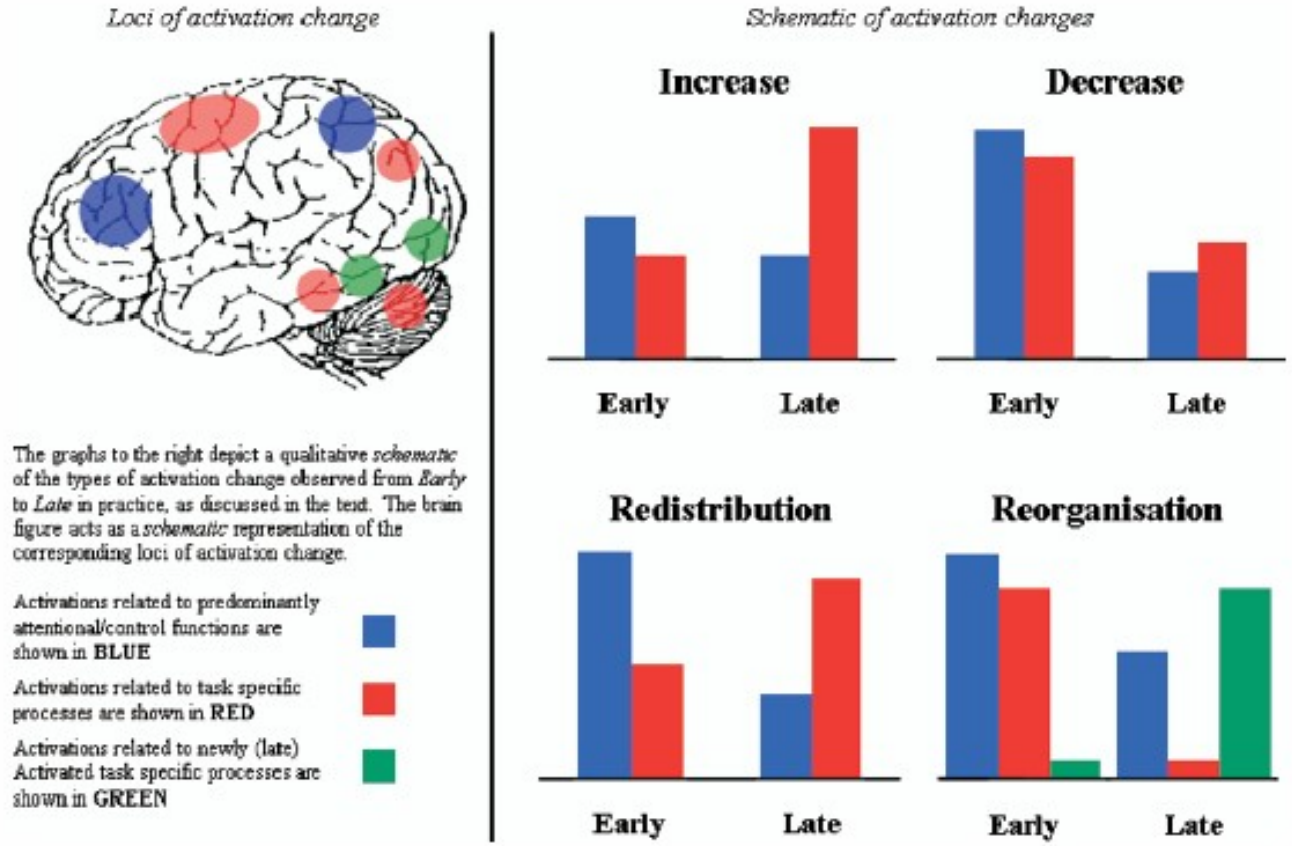
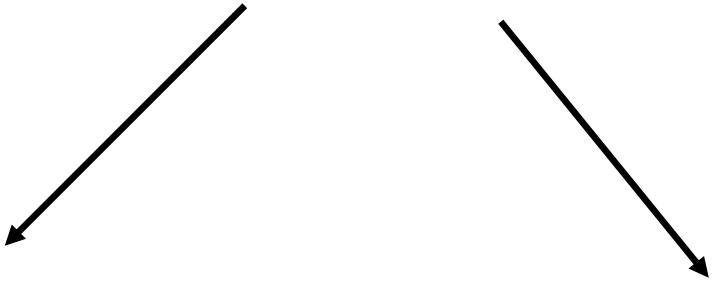


Fig 1. Schematic of practice-related changes in functional activations. The figure represents a highly schematized depiction of the changes in levels of activation and some of the potential functional loci of those changes associated with the different types of practice-related changes in functional activation described in the text. Adapted with permission from Kelly and Garavan.[8]

Gli obiettivi della riabilitazione cognitiva

(I.H. Robertson, Current Opinion in Neurology, 1999, 12: 703-708)



Ricostituzione delle funzioni cognitive compromesse (approccio restitutivo)

Strategie di compenso (approccio compensativo)

La *plasticità cerebrale,* dipendente dall'esperienza,
ci consente di avere tra gli obiettivi della riabilitazione
quello di ricostituire le funzioni cognitive compromesse,
così come quello di costruire delle strategie di compenso per le funzioni distrutte

Brain and Cognition 79 (2012) 159–179

Contents lists available at SciVerse ScienceDirect

Brain and Cognition

journal homepage: www.elsevier.com/locate/b&c

Special Invited Review

Training the brain: Fact and fad in cognitive and behavioral remediation

Sheida Rabipour [a], Amir Raz [a,b,*]

[a] Department of Neurology & Neurosurgery, McGill University, Canada
[b] Departments of Psychiatry & Psychology, McGill University, Canada

La riabilitazione cognitiva è rappresentata dall'uso sistematico di istruzioni ed esperienze strutturate per manipolare il funzionamento dei sistemi cognitivi al fine di migliorarne la qualità o la quantità.

Ha lo scopo di massimizzare l'indipendenza funzionale e le possibilità di adattamento dell'individuo con danno cerebrale.

Il "brain training" è qualsiasi programma o attività mirata ad incentivare abilità cognitive generali o specifiche per effetto della ripetizione in un determinato lasso di tempo. Molte forme di brain training aumentano l'attenzione ed il controllo emotivo: scuola, esercizio fisico e mentale, meditazione, interazione con la natura, training musicale.

Effetti cognitivi e cerebrali del training musicale professionale

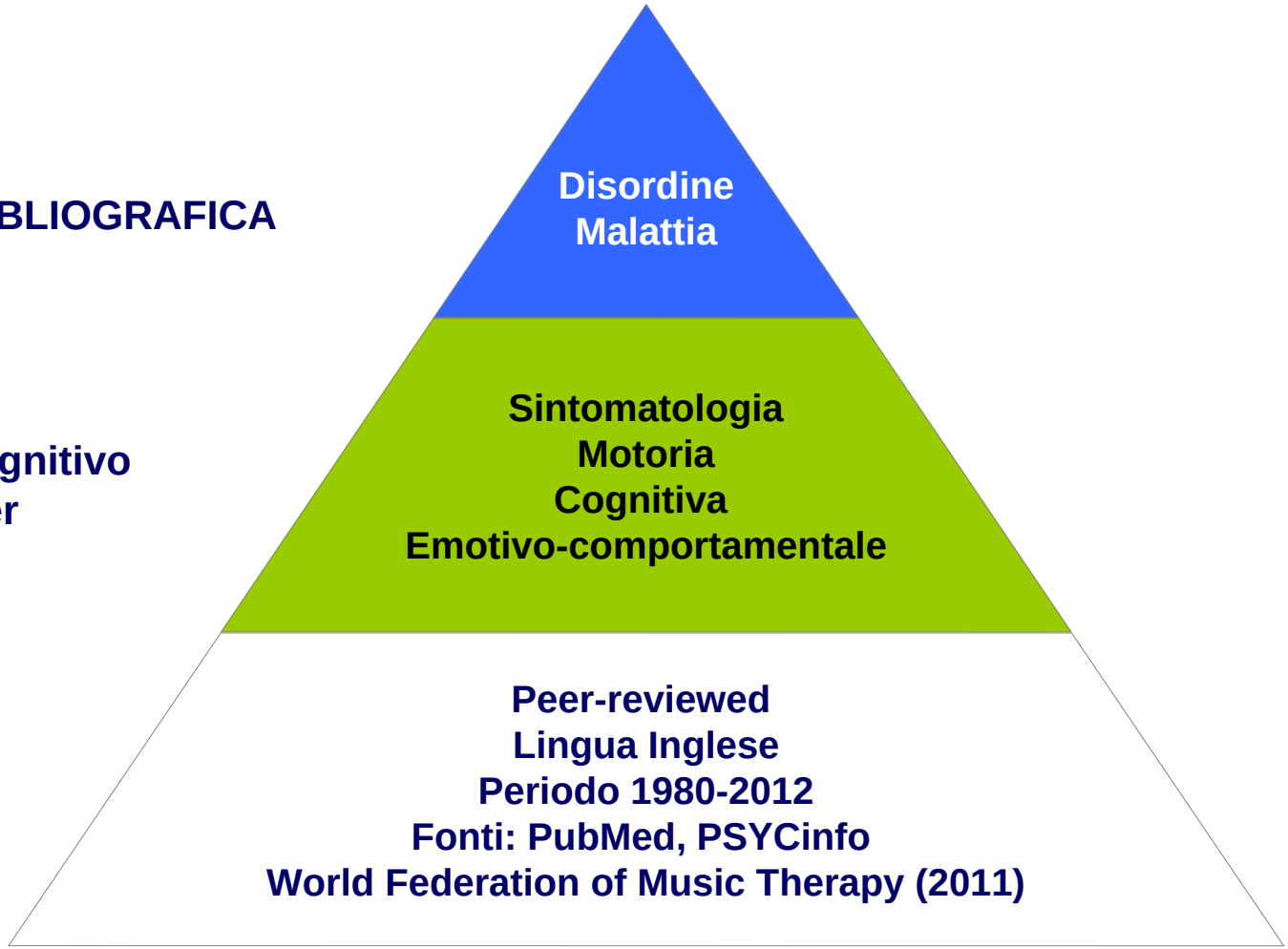
Ragionamento spaziotemporale dopo 6 mesi di pianoforte	Rauscher et al., 1997
Working memory visuospaziale, ragionamento non verbale (bambini)	Bergman Nutley, 2011
QI (bambini)	Schellenberg, 2004
Percezione uditiva, funzioni esecutive working memory (musicisti)	Byalistok & Depape, 2009
Discriminazione di informazioni da un rumore di fondo	Kraus, Chandrasekaran, 2010
Memoria verbale (bambini)	Ho et al., 2003
Generazione di emozioni positive	Altenmuller, 2009

Aumento del potenziale neurale da stimolo sonoro	Kraus, Chandrasekaran, 2010
Aumento del volume della corteccia	Gaser & Schlaug, 2003 Munte et al., 2002
Aumento della connettività cerebrale	Altenmuller et al., 2009
Attivazione di aree legate alla working memory durante la lettura di note	Bergman Nutley, 2011
Estensione delle aree corticali di rappresentazione udutiva	Pantev et al., 1998
Attivazione della corteccia frontale inferiore	Tillman et al., 2003

FONDAZIONE I.R.C.C.S. ISTITUTO NEUROLOGICO CARLO BESTA

FLOW-CHART
DELLA RICERCA BIBLIOGRAFICA

Parole chiave:
musicoterapia
+
demenze/declino cognitivo
malattia di Alzheimer
morbo di Parkinson
tumore cerebrale
sclerosi multipla
trauma cranico
stroke



ELSEVIER

Neuropsychologia 46 (2008) 1495–1504

NEUROPSYCHOLOGIA

www.elsevier.com/locate/neuropsychologia

Differential neuropsychological patterns of frontal variant frontotemporal dementia and Alzheimer's disease in a study of diagnostic concordance

Anna R. Giovagnoli [a,*], Alessandra Erbetta [b], Fabiola Reati [a], Orso Bugiani [c]

Mean neuropsychological test scores in patients and controls

	fvFTD patients	AD patients	Comparisons between AD and fvFTD (p values)	Healthy subjects
Raven's coloured progressive matrices	16.08 ± 9.31	14.71 ± 7.50	0.97	31.27 ± 4.71 (0–36)
Token test	23.71 ± 9.96	21.10 ± 5.78	0.083	33.61 ± 2.44 (0–36)
Rey figure copying	17.31 ± 10.73	10.72 ± 9.11	<0.001	32.87 ± 2.93 (0–36)
Imitating gestures	17.53 ± 4.58	17.47 ± 3.15	1	19.02 ± 0.50 (0–20)
Imitating facial expressions	16.46 ± 4.52	16.81 ± 4.00	1	19.55 ± 0.79 (0–20)
Weigl sorting test	4.21 ± 2.61	3.65 ± 3.20	1	11.68 ± 2.75 (0–15)
Word fluency on phonemic cues	10.69 ± 9.43	10.60 ± 9.68	1	33.23 ± 10.77
Word fluency on semantic cues	16.05 ± 11.01	12.56 ± 8.19	0.29	41.06 ± 11.95
Digit span	4.63 ± 1.27	3.95 ± 1.13	0.009	5.56 ± 1.11
Corsi blocks span	3.50 ± 1.60	2.82 ± 1.42	0.017	5.21 ± 0.86
Short story	4.72 ± 4.57	1.84 ± 2.34	0.001	14.47 ± 4.47 (0–28)
Rey figure delayed reproduction	4.81 ± 5.68	1.63 ± 2.78	0.69	18.27 ± 13.49 (0–36)
Attentive matrices	33.35 ± 17.11	23.35 ± 12.66	<0.001	53.15 ± 6.41 (0–60)
Trail making test A	91.62 ± 54.67	158.25 ± 105.16	0.001	45.16 ± 22.11
Trail making test B	373.06 ± 245.71	482.20 ± 175.72	0.21	123.25 ± 66.78
Street completion test	4.97 ± 2.58	3.36 ± 2.62	0.004	8.28 ± 1.69 (0–14)
Tower of London	11.14 ± 7.57	13.67 ± 6.94	0.96	24.22 ± 4.07 (0–36)

Journal of Alzheimer's Disease 18 (2009) 65–70
DOI 10.3233/JAD-2009-1123
IOS Press

The Role of Neuropsychology in Distinguishing the Posterior Cortical Atrophy Syndrome and Alzheimer's Disease

Anna Aresi and Anna Rita Giovagnoli*
Neuropsychology Laboratory, Department of Clinical Neurosciences, C. Besta National Neurological Institute, Milan, Italy

Mean neuropsychological test scores ± SD in the patients and healthy subjects

	PCA patients	AD patients	Healthy subjects	Between-group comparisons*	PCA vs healthy subjects**	AD vs healthy subjects**	PCA vs AD patients**
Raven's coloured progressive matrices (0–36)	7.15 ± 9.58 ($n = 13$)	14.65 ± 7.26 ($n = 17$)	28.71 ± 4.44 ($n = 17$)	$chi^2(2,44) = 31.02$ $p = 0.000$	U = 1.5 p = 0.000	U = 13.5 p = 0.000	U = 55.5 p = 0.020
Weigl's sorting test (0–15)	4.38 ± 4.29 (n = 13)	2.50 ± 2.11 (n = 12)	10.73 ± 2.76 (n = 15)	$chi^2(2,37) = 21.70$ p = 0.000	U = 20 p = 0.000	U = 3.5 p = 0.000	U = 66.5 p = 0.525
Attentive matrices (0–60)	12.20 ± 15.16 (n = 15)	23.63 ± 11.48 (n = 17)	51.33 ± 5.55 (n = 15)	$chi^2(2,44) = 31$ p = 0.000	U = 2.5 p = 0.000	U = 2 p = 0.000	U = 72.5 p = 0.037
Token test (0–36)	21.93 ± 7.82 (n = 14)	22.79 ± 6.04 (n = 17)	33.43 ± 1.60 (n = 14)	$chi^2(2,42) = 26.13$ p = 0.000	U = 3 p = 0.000	U = 6 p = 0.000	U = 115 p = 0.873
Word fluency on phonemic cues	15.35 ± 9.30 (n = 17)	9.24 ± 5.89 (n = 17)	26.76 ± 11.07 (n = 17)	$chi^2(2,48) = 20.28$ p = 0.000	U = 60.5 p = 0.004	U = 22.5 p = 0.000	U = 85 p = 0.040
Word fluency on semantic cues	18.94 ± 10.52 (n = 17)	14.35 ± 5.18 (n = 17)	33.41 ± 9.31 (n = 17)	$chi^2(2,48) = 24.95$ p = 0.000	U = 40 p = 0.000	U = 9 p = 0.000	U = 100 p = 0.125
Street's completion test (0–14)	0.85 ± 1.28 (n = 13)	3.53 ± 2.61 (n = 15)	7.33 ± 1.63 (n = 15)	$chi^2(2,40) = 27,36$ p = 0.000	U = 0 p = 0.000	U = 28.5 p = 0.000	U = 33.5 p = 0.002
Rey's figure copying (0–36)	6.17 ± 9.52 (n = 9)	14.08 ± 11.71 (n = 12)	32.09 ± 3.60 (n = 16)	$chi^2(2,34) = 24.99$ p = 0.000	U = 0 p = 0.000	U = 10 p = 0.000	U = 30 p = 0.082
Imitating gestures (0–20)	15.36 ± 4.06 (n = 11)	18.25 ± 2.22 (n = 12)	19.94 ± 0.24 (n = 17)	$chi^2(2,37) = 21.90$ p = 0.000	U = 10.5 p = 0.000	U = 38 p = 0.001	U = 35.5 p = 0.055
Imitating facial expressions (0–20)	17.00 ± 3.83 (n = 10)	17.20 ± 1.40 (n = 10)	20.00 ± 0 (n = 17)	$chi^2(2,34) = 26.17$ p = 0.000	U = 17 p = 0.000	U = 0 p = 0.000	U = 39 p = 0.391
Digit span	4.35 ± 0.86 (n = 17)	3.94 ± 0.83 (n = 17)	4.82 ± 0.81 (n = 17)	$chi^2(2,48) = 8.93$ p = 0.012	U = 101.5 p = 0.112	U = 64 p = 0.004	U = 103 p = 0.128
Corsi's blocks span	1.82 ± 1.42 (n = 17)	2.88 ± 1.11 (n = 17)	4.82 ± 0.73 (n = 17)	$chi^2(2,48) = 30.01$ p = 0.000	U = 9 p = 0.000	U = 22 p = 0.000	U = 83 p = 0.030
Short story (0-28)	5.41 ± 4.43 (n = 17)	1.71 ± 1.82 (n = 17)	13.26 ± 3.52 (n = 17)	$chi^2(2,48) = 31.83$ p = 0.000	U = 27 p = 0.000	U = 0 p = 0.000	U = 68 p = 0.008

FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

MALATTIA DI ALZHEIMER

N	Disegno	Tecnica	Indicatori	Risultato	Rif.
59	Randomizzato	MT attiva	MMSE Scala di Barthel NPI	Miglioramento NPI: agitazione, apatia, insonnia, deliri, irritabilità	Raglio et al., 2008
60	Randomizzato	MT attiva	MMSE Scala di Barthel NPI	Miglioramento NPI: agitazione, apatia, deliri	Raglio et al., 2010
12	Comparativo	Ascolto	Punteggi test cognitivi: linguaggio	Miglioramento fluenza semantica (Fluenza per categorie)	Thompson et al. (2005)
27	Comparativo	Gruppo, MT attiva + Attività di pittura	MMSE, scale per depressione e ansia	Miglioramento significativo MMSE, diminuzione livello depressione (Geriatric Depression Scale) e ansia (Beck Anxiety Scale)	Ozdemir & Akdemir, 2009
26	0sservazionale	MT attiva	Punteggi test cognitivi: batteria afasia Western Aphasia Battery (WAB)	Miglioramento contenuti linguistici e fluenza verbale (WAB)	Brotons & Koger, 2000
13	Comparativo	Individuale, Ascolto di musica	Punteggi test memoria	Migliore riconoscimento di brani cantati rispetto a test letti	Simmons-Stern et al., 2010

Journal of Music Therapy, XXXVII (3), 2000, 183–195

The Impact of Music Therapy on Language Functioning in Dementia

Melissa Brotons, PhD, MT-BC

Susan M. Koger, PhD

Willamette University

Participant Demographic Information

		n		*M* (*SE*)
Gender:	female	15	age:	81.0 (1.3)
	male	05		78.6 (3.4)
Time in facility (months):				13.00 (1.0)
MMSE:	pretest	20		10.00 (1.0)
	posttest	18		10.44 (1.3)
MMSE level at pretest[1]	mild	1		
	moderate	12		
	severe	1		
	profound	6		

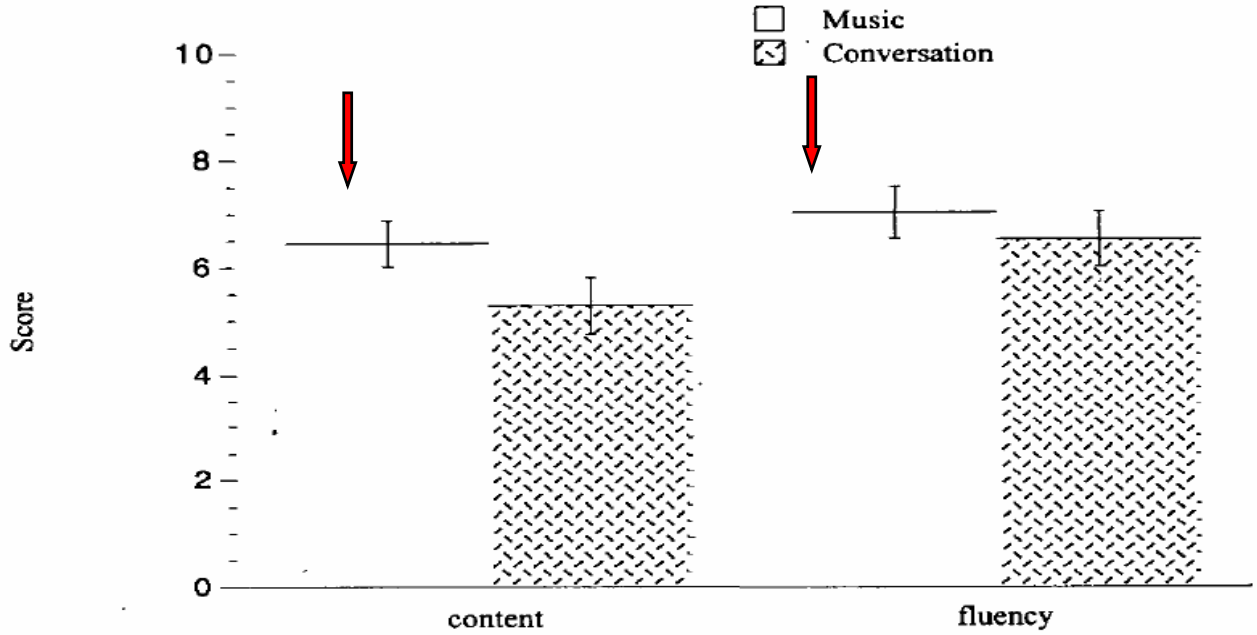


FIGURE 1.
Overall performance on content and fluency in music versus conversation conditions.

20 Pazienti con AD

Disegno randomizzato
MT attiva vs conversazione

Miglioramento significativo del contenuto e della fluenza del discorso nel gruppo MT

FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

Neuropsychologia 48 (2010) 3164–3167

Contents lists available at ScienceDirect

Neuropsychologia

journal homepage: www.elsevier.com/locate/neuropsychologia

Brief communication

Music as a memory enhancer in patients with Alzheimer's disease

Nicholas R. Simmons-Stern[a,b], Andrew E. Budson[a,b], Brandon A. Ally[a,b,*]

Table 1
Demographic and standard neuropsychological test data by group.

	OC	AD
Gender	4M/8F	9M/3F*
Age	73.7 (5.5)	77.3 (7.6)
Years of education	16 (2.3)	14 (3.3)
Musical experience	4Y/8N	3Y/9N
MMSE	30 (0.5)	24 (4.6)**
CERAD		
Immediate	22.0 (3.7)	11.1 (3.6)**
Delayed	7.4 (2.0)	.75 (1.0)**
Recognition	9.8 (.45)	5.2 (3.3)**
Trails-B	84.6 (28.3)	237.8 (68.2)**
FAS	48.8 (10.5)	32.5 (14.7)*
CAT	46 (11.0)	26.4 (12.7)**
BNT-15		
No cue	14 (2)	11 (3.6)*
Semantic cue	0.1 (0.3)	0 (0)
Phonemic cue	0.7 (1.5)	1.9 (1.6)

Ascolto di musica e canti

Confronto della rievocazione di brani cantati e letti

Miglioramento della memoria: maggiore riconoscimento dei brani cantati

Journal of the Neurological Sciences 283 (2009) 211–213

Contents lists available at ScienceDirect

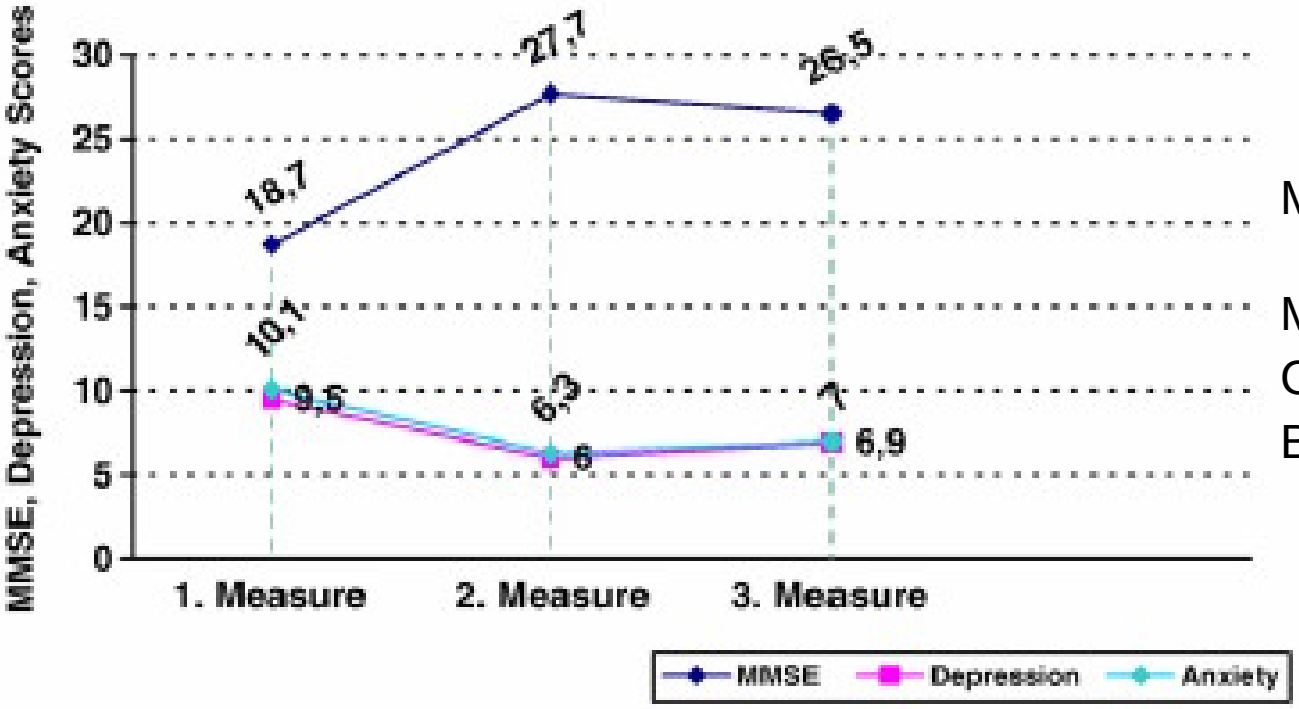
Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Effects of multisensory stimulation on cognition, depression and anxiety levels of mildly-affected alzheimer's patients

Leyla Ozdemir *, Nuran Akdemir

Hacettepe University, School of Nursing, Medical Nursing, Turkey



MT attiva + pittura

MMSE

Geriatric Depression Scale

Beck Anxiety Scale

Effect of Music Therapy on Anxiety and Depression in Patients with Alzheimer’s Type Dementia: Randomised, Controlled Study

S. Guétina, c, d, F. Porteta, M.C. Picotb, C. Pommiéa, c, M. Messaoudia, L. Djabelkira, A.L. Olsenc, M.M. Canoc, E. Lecourtd, J. Touchona, c

Dement Geriatr Cogn Disord 2009;28:36-46

BACKGROUND/AIMS: Numerous studies have indicated the value of music therapy in the management of patients with Alzheimer's disease. A recent pilot study demonstrated the feasibility and usefulness of a new music therapy technique. The aim of this controlled, randomised study was to assess the effects of this new music therapy technique on anxiety and depression in patients with mild to moderate Alzheimer-type dementia.
METHODS: This was a single-centre, comparative, controlled, randomised study, with blinded assessment of its results. The duration of follow-up was 24 weeks. The **treated group (n = 15)** participated in weekly sessions of individual, **receptive music therapy**. The musical style of the session was chosen by the patient. The validated 'U' technique was employed. The **control group (n = 15)** participated under the same conditions in **reading sessions**. The principal endpoint, measured at weeks 1, 4, 8, 16 and 24, was the level of anxiety (Hamilton Scale). Changes in the depression score (Geriatric Depression Scale) were also analyzed as a secondary endpoint.
RESULTS: Significant improvements in anxiety ($p < 0.01$) and depression ($p < 0.01$) were observed in the music therapy group as from week 4 and until week 16. The effect of music therapy was sustained for up to 8 weeks after the discontinuation of sessions between weeks 16 and 24 ($p < 0.01$).
CONCLUSION: These results confirm the valuable effect of music therapy on anxiety and depression in patients with mild to moderate Alzheimer's disease. This new music therapy technique is simple to implement and can easily be integrated in a multidisciplinary programme for the management of Alzheimer's disease.

Effects of music on Alzheimer patients

Lord TR, Garner JE
Department of Biology, Indiana University of Pennsylvania 15705.

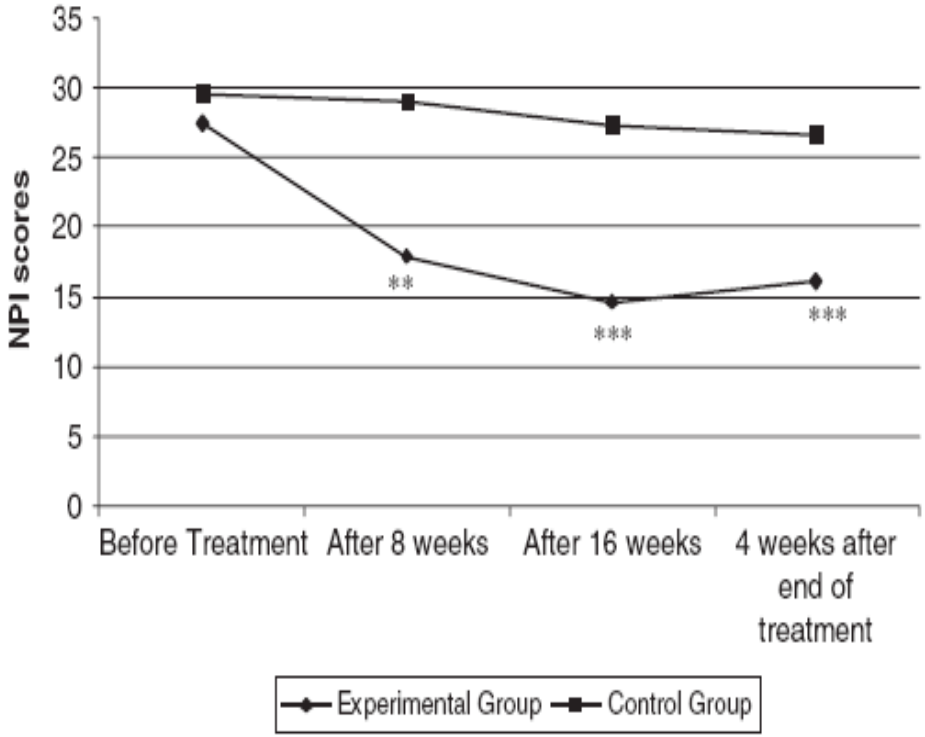
Percept Mot Skills 1993 Apr;76(2): 451-5.

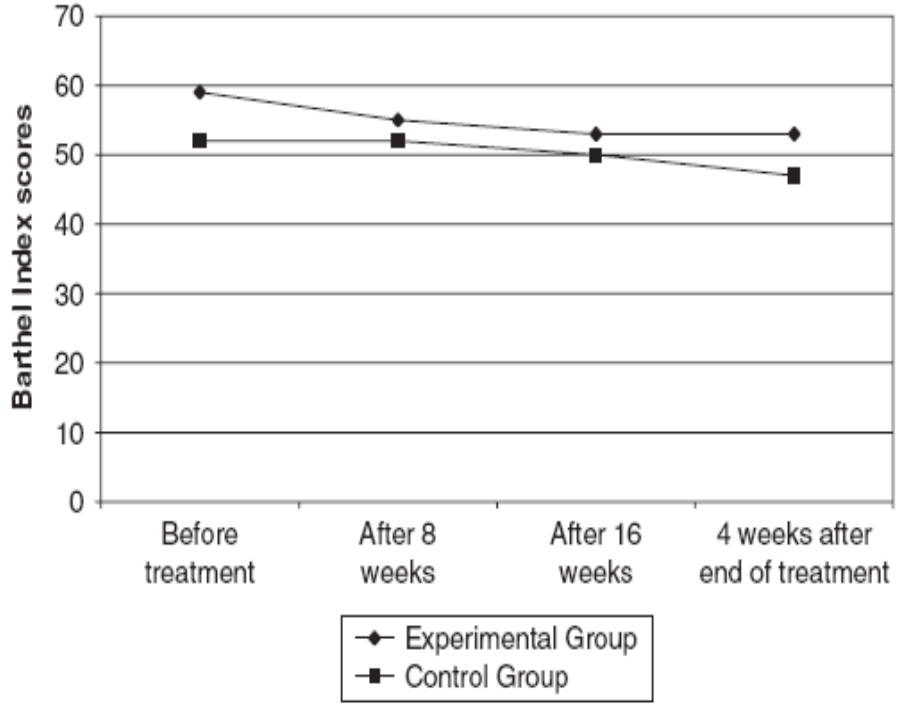
From a large nursing care facility, **60 elderly patients** diagnosed as having Alzheimer disease were **randomly separated into three groups** of equal size and given tests to measure their mood and mental state. For music Group 1, **"Big Band" music** from the 1920s and 1930s was played during their daily recreation period while Group 2 were given **puzzle exercises** during their activity sessions. Members of Group 3 participated in the **standard recreational activities of drawing and painting**. After six months, the questionnaire was again given to all participants. Analysis of variance showed the individuals in Group 1 were more alert, happier, and had higher recall of past personal history than patients in the other two groups. This suggests that music can be of therapeutic value to Alzheimer patients.

Efficacy of Music Therapy in the Treatment of Behavioral and Psychiatric Symptoms of Dementia

Alfredo Raglio, MT,† Giuseppe Bellelli, MD,‡ Daniela Traficante, PsyD, PhD,§ Marta Gianotti, MT,* Maria Chiara Ubezio, MD,* Daniele Villani, MD,* and Marco Trabucchi, MD‖¶*

Alzheimer Dis Assoc Disord 2008;22:158–162





FONDAZIONE I.R.C.C.S. ISTITUTO NEUROLOGICO CARLO BESTA

Efficacy of music therapy treatment based on cycles of sessions: A randomised controlled trial

A. Raglio[a,b*], G. Bellelli[c,d], D. Traficante[e], M. Gianotti[a], M.C. Ubezio[a], S. Gentile[a], D. Villani[a] and M. Trabucchi[d,f]

[a]*Sospiro Foundation, Cremona, Italy;* [b]*Interdem Group (Psycho-Social Interventions in Dementia), EU;* [c]*Alzheimer's Evaluation Unit, Ancelle della Carità Hospital, Cremona, Italy;* [d]*Geriatric Research Group, Brescia, Italy;* [e]*Department of Psychology and Education Technologies Research Centre, Catholic University, Milan, Italy;* [f]*Department of Neurosciences, Tor Vergata University, Rome, Italy*

Aging & Mental Health
Vol. 14, No. 8, November 2010, 900–904

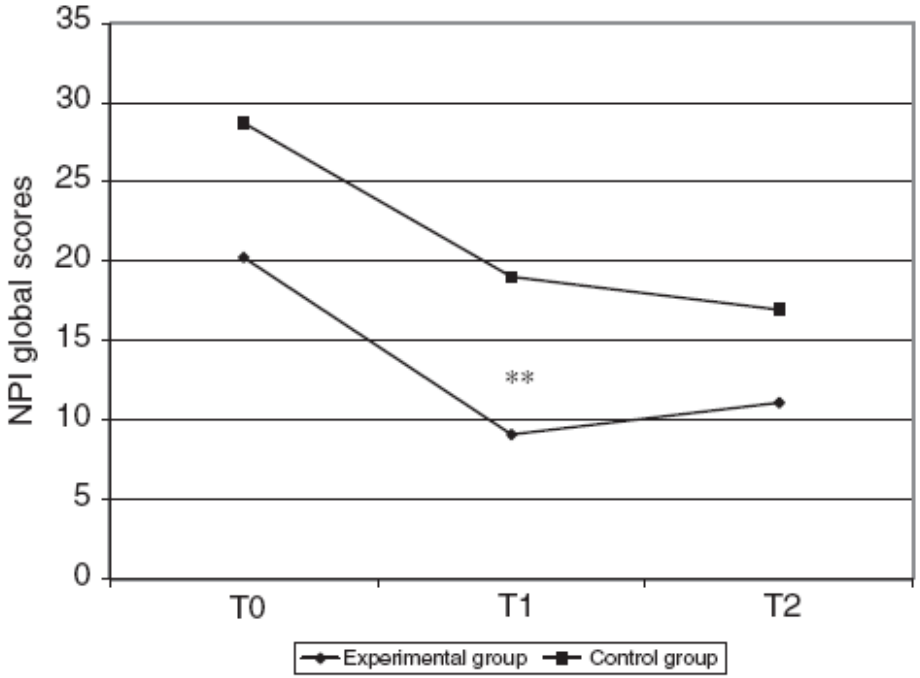


Figure 1. Comparison of the average NPI global scores in the experimental and control group over time.
Note: $^{**}p < 0.001$.

Significativo miglioramento del punteggio totale NPI

FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

DECLINO COGNITIVO NON SPECIFICATO

N	Disegno	Tecnica	Indicatori	Risultato	Riferimento
15	Disegno semi-sperimentale	Ascolto	Indice di dolore nei pazienti anziani con demenza (M-PADE)	Livello medio di dolore percepito minore dopo l'ascolto della musica	Park, 2009
10	Osservazionale	MT attiva	MMSE, scale comportamentali QoL, GDS, NPI-Q	Diminuzione agitazione, miglioramento indice generale *NPI-Q*	Choi et al., 2009
43	Comparativo	Ascolto + MT attiva	PA Cortisolo salivare Test di intelligenza	Stabilità di PA, cortisolo, intelligenza per 2 anni	Choi et al., 2009
17	Comparativo	Gruppo MT attiva	MMSE	Miglioramento significativo al MMSE il giorno successivo al trattamento (no dopo 1 settimana)	Bruer et al., 2007

Journal of Music Therapy, XLIII (4), 2006, 317–333

Long-Term Effects of Music Therapy on Elderly with Moderate/Severe Dementia

Takiko Takahashi, PhD

Juntendo University School of Medicine

Hiroko Matsushita, M.D., M.S.

24 pazienti MT attiva + ascolto - Sedute settimanali per 2 anni
19 pazienti standard care

Stabilizzazione della PA
No modificazioni del cortisolo salivare
No modificazioni del punteggio a test di intelligenza

Music therapy for people with dementia (Review)

Vink AC, Bruinsma MS, Scholten RJPM

2011

Implications for research

The statistical reporting in the reviewed studies assessing the effects of music therapy is generally poor, which hampers proper assessment of their methodological quality. More rigorous studies are needed to establish whether music therapy may play a role in the treatment of older people with dementia. Future studies should follow the CONSORT guidelines for reporting of randomised trials, use adequate methods of randomisation with adequate concealment of allocation of the participants to (parallel) treatment groups, blind the outcome assessors to treatment allocation, include reliable and validated outcome measures, and be of sufficient duration to assess medium and long-term effects.

Also more research is needed to differentiate between various music therapy approaches to see if there is a difference between receptive and active music therapy approaches. Further research is also required to compare music therapy provided by a to mere music listening. In this way it would be possible to single out the more specific effects of music therapy interventions and methods.

For future studies it is advised to use properly validated outcome measures to assess and evaluate the effects of music therapy for people with dementia.

Main results

Ten studies were included. The methodological quality of the studies was generally poor and the study results could not be validated or pooled for further analyses.

Tecnica: ascolto (3), MT attiva (7)
Indicatori: psico-comportamentali (7), cognitivi (1), affettivi/sociali (2)

STROKE: aspetti cognitivi

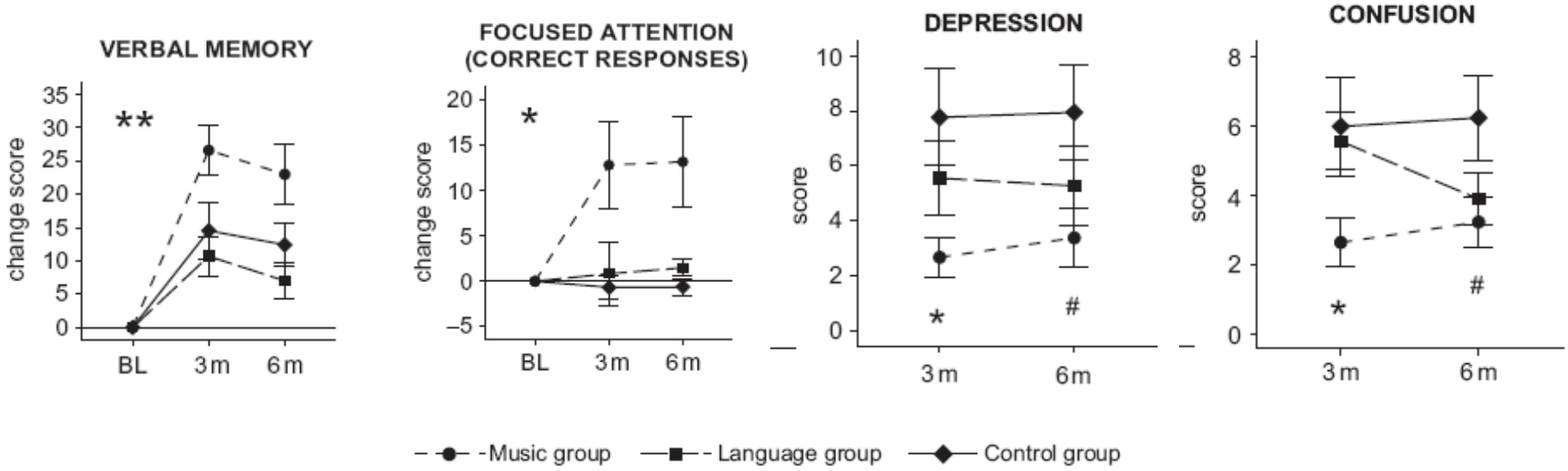
N	Tipo/sede	Disegno	Tecnica	Indicatori	Risultato	Rif.
54	Ischemia cerebrale media dx o sin	Randomizzato singolo cieco (sperimentale, linguaggio, controllo)	Ascolto di musica preferita un'ora al giorno	Punteggi test cognitivi	Miglioramento significativo di memoria verbale *(rievocazione racconto)* attenzione *(Stroop),* tono dell'umore *(POMS)*	Sarkamo et al., 2008
13	Afasia di Broca e Afasia globale	Comparativo	Training vocale ritmico-melodico	Punteggi test cognitivi: batteria afasia (AAT) Qualitativi: parametri del parlato	Miglioramento articolazione, prosodia, ripetizione e comprensione verbale e indice "produzione" *AAT*	Jungblut, 2004

doi:10.1093/brain/awn013 *Brain* (2008), **131**, 866–876

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

Teppo Särkämö,[1] Mari Tervaniemi,[1] Sari Laitinen,[2] Anita Forsblom,[2] Seppo Soinila,[3] Mikko Mikkonen,[1] Taina Autti,[4] Heli M. Silvennoinen,[4] Jaakko Erkkilä,[2] Matti Laine,[5] Isabelle Peretz[6] and Marja Hietanen[3]

55 pazienti (ictus ischemico o emorragico)
Disegno randomizzato, fase post-acuta
Durata trattamento 3 mesi
Ascolto di musica (preferita) o brani letterari per 1-2 ore al giorno



STROKE: aspetti psico-comportamentali

N	Tipo/sede	Disegno	Tecnica	Indicatori	Risultato	Riferimento
9	Emorragia o ischemia dx o sin	Comparativo	MT attiva Respirazione Canto, Uso di strumenti musicali	Punteggi a scale standardizzate	Diminuzione della depressione (BDI) e ansia (BAI)	Kim et al., 2011
7	Ischemia sin con afasia non fluente	Multiple case report	Individuale, Canto, respirazione, frasi cantate, movimenti orali intonazione	Disartria Respirazione Punteggi a test di fluenza verbale	Miglioramento dei diversi indici variabile tra i pazienti	Kim &Tomaino, 2008

Original Article | http://dx.doi.org/10.3349/ymj.2011.52.6.977
pISSN: 0513-5796, eISSN: 1976-2437 | Yonsei Med J 52(6):977-981, 2011 | YMJ

Effects of Music Therapy on Mood in Stroke Patients

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18 pazienti, fase post-stroke

MT attiva x 4 settimane vs standard care

MT: esercizi respiratori
canto
uso di strumenti musicali

Miglioramento significativo della depressione (BDI)

STROKE: aspetti motori

N	Tipo/sede	Disegno	Tecnica	Indicatori	Risultato	Rif.
21	Ischemia sin	Comparativo	Rhythmic auditory stimulation (RAS)	Controllo spaziotemporale in movimenti di “reaching” del braccio paretico	Miglioramento angolo estensione gomito	Thaut, 2002
43	Ischemia dx o sin territorio art. cer. media, caps. int. o talamo	Randomizzato	Rhythmic auditory stimulation (RAS)	Parametri del cammino: velocità, cadenza, simmetria, lunghezza	Miglioramento parametri del cammino	Thaut, 2007
32	Ischemia o emorragia Sedi varie	Compartivo	Ascolto musicale (piano, batteria) durante chinesiterapia	Misure cliniche e computerizzate di movimento del’arto superiore	Miglioramento di movimenti distali e prossimali	Altenmuller et al. 2009

Neural Reorganization Underlies Improvement in Stroke-induced Motor Dysfunction by Music-supported Therapy

E. Altenmüller,[a] J. Marco-Pallares,[b] T. F. Münte,[b] and S. Schneider[a]

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The Neurosciences and Music III—Disorders and Plasticity: Ann. N.Y. Acad. Sci. 1169: 395–405 (2009).
doi: 10.1111/j.1749-6632.2009.04580.x

- 62 pazienti con paresi degli arti superiori

- Disegno randomizzato
- Gruppo riabilitazione motoria standard vs Gruppo riabilitazione motoria + MT
- 3 settimane di riabilitazione motoria + MT

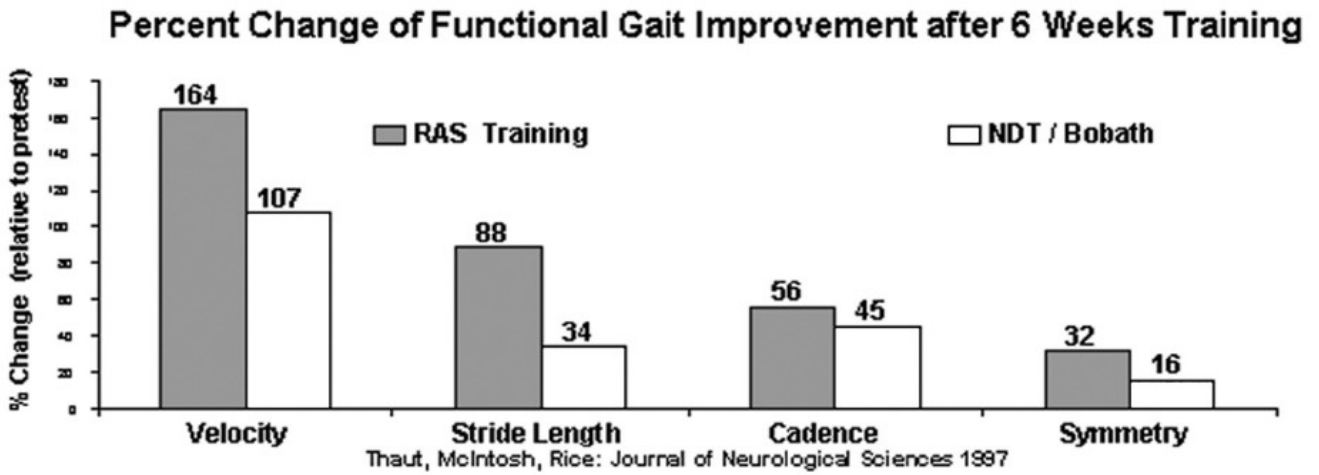
- MT: ascolto musicale, tastiera o batteria elettronica; 5 sedute / settimana

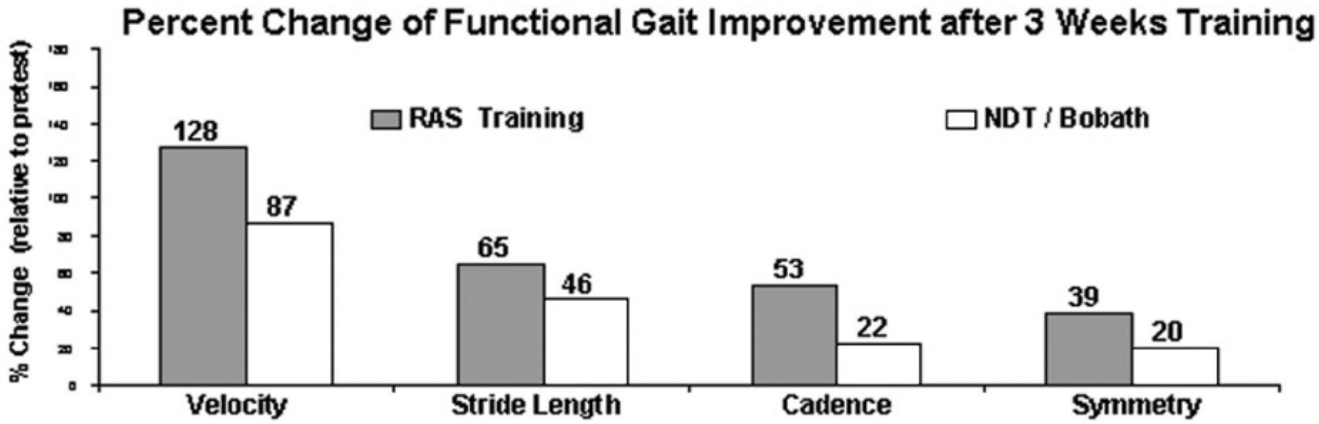
- Nel gruppo MT: Significativo miglioramento della velocità, precisione e armonia dei movimenti distali (tastiera) e prossimali (batteria) $p<0.001$
  Aumento della attivazione corticale (desincronizzazione) pre-motoria e della coerenza (banda β) nelle aree controlaterali all'arto paretico

Rhythmic Auditor y Stimulation Improves Gait More Than NDT/Bobath Training in Near-Ambulatory Patients Early Poststroke: A Single-Blind, Randomized Trial

M.H. Thaut, A.K. Leins, R.R. Rice, H. Argstatter, G.P. Kenyon, G.C. McIntosh, H.V. Bolay and M. Fetter

Neurorehabil Neural Repair 2007 21: 455 originally published online 10 April 2007





FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

Music therapy in the treatment of multiple sclerosis: a comprehensive literature review

Thomas Ostermann[†] *and Wolfgang Schmid*

Coping with multiple sclerosis symptoms still remains a challenge for each patient suffering from this chronic inflammatory disease. Therefore, patients often turn to using complementary and alternative medicine (CAM). In this review, the authors aimed to investigate the current state of literature of music therapy in the treatment of multiple sclerosis (MS). Medline, PubMed, Embase, AMED, CAMbase and the Music Therapy World Journal Index were searched for the terms MS and 'music therapy'. In addition, an internet search using Google Scholar was performed. The authors found seven case-reports/series and seven studies on music therapy for MS-patients. Both the case reports and studies presented here are pioneer work. Most of the studies are naturally predominated by the use of qualitative and uncontrolled research designs. Nevertheless, the results of the studies as well as the case reports demonstrate patients' improvement in the domains of self-acceptance, anxiety and depression. The results of the studies as well as the case reports define a sufficient basis for further music therapeutical work as they show a variety of psychosocial and emotional benefits for MS patients.

Expert Rev. Neurotherapeutics 6(4), 469–477 (2006)

CONTENTS

SCLEROSI MULTIPLA: singoli casi

N	EDSS	Disegno	Tecnica	Indicatori	Risultato	Riferimento
1	>7	Case report	Composizione di canzoni	Qualitativi: tono dell'umore	Miglioramento clinico	Davis, 1998
1	>7.5	Case report	MT attiva	Qualitativi: autostima	Maggiore percezione di efficienza	Magee 1999, 2000
5	>5	Multiple case report	MT attiva Cantare	Scale per tono dell'umore	Miglioramento tono dell'umore	Magee & Davidson, 2002
3	8-9	Multiple case report	Ascolto Uso di pochi strumenti	Qualitativi: coping	Maggiore consapevolezza e adattamento	Steele, 2005

SCLEROSI MULTIPLA: gruppi

N	EDSS	Disegno	Tecnica	Indicatori	Risultato	Riferimento
225	2-7	Osservazionale	Gruppo MT attiva	Qualitativi: tono dell'umore autostima coping	Miglioramento clinico	Lengdobler & Kiessling, 1989
6	>7	Comparativo	Individuale Cantare	Qualitativi: coping	Maggiore capacità di adattamento	Magee, 1998, 1999
22	>7	Osservazionale	Gruppo Composizione di canzoni	Qualitativi: coping, creatività	Miglioramento clinico	O'Callaghan 1999, 2000
20	1-5.5	Comparativo a coppie	Individuale MT attiva	Autoaccetazione Tono dell'umore	Miglioramento tono dell'umore *(BDI, SESA)*	Schmid et al., 2004, 2005
10	<7	Randomizzato	Rhythmic auditory stimulation (RAS)	Parametri quantitativi del cammino (GAITRite system)	Miglioramento parametri del cammino	Conklyn, et al, 2010
20	7-9	Randomizzato	Gruppo Respirazione diaframmatica Cantare	Spirometria	Miglioramento espirazione	Wiens, 1999

A Home-Based Walking Program Using Rhythmic Auditory Stimulation Improves Gait Performance in Patients With Multiple Sclerosis: A Pilot Study

Neurorehabilitation and
Neural Repair
24(9) 835–842

DOI: 10.1177/1545968310372139
http://nnr.sagepub.com
SAGE

Dwyer Conklyn[2], Darlene Stough[1], Eric Novak, MS[1], Sarah Paczak[2], Kamal Chemali, MD[1], and Francois Bethoux, MD[1]

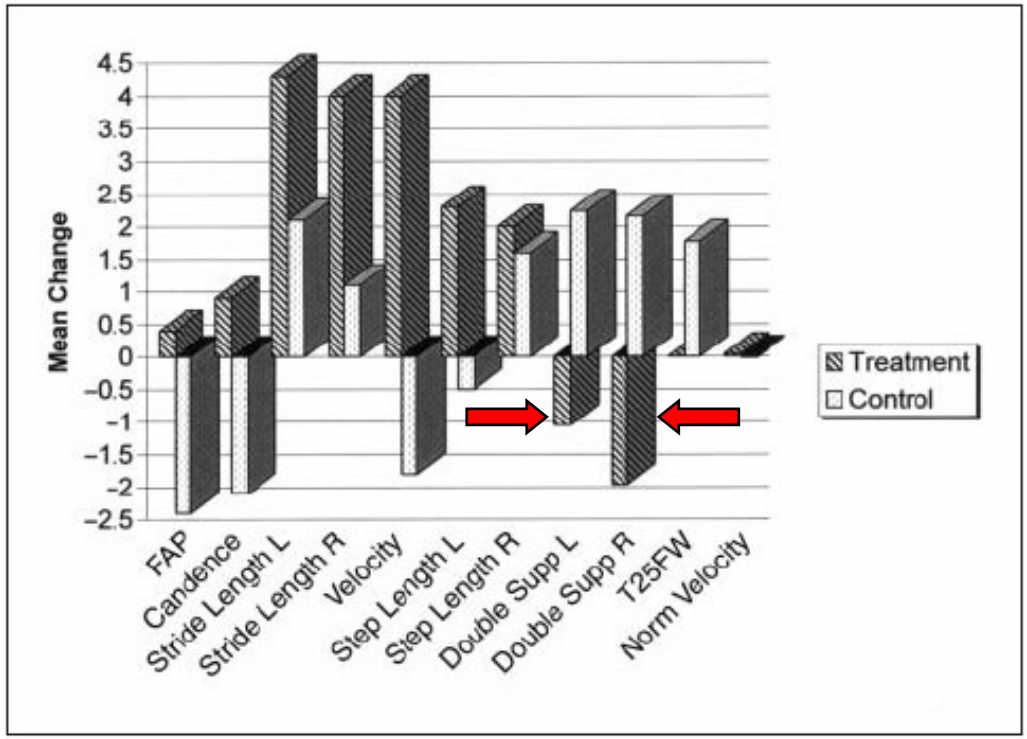


Figure 1. Mean change in walking parameters during the randomized controlled phase of the study (first 2 weeks)

10 pazienti
Disegno randomizzato
2 settimane
Riduzione significativa del doppio supporto
nei pazienti trattati con RAS

FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

Journal of Music Therapy, XLI (3), 2004, 225–240

Active Music Therapy in the Treatment of Multiple Sclerosis Patients: A Matched Control Study

Wolfgang Schmid, Dipl. MT

David Aldridge, PhD

Tecnica di Nordoff Robbins: improvvisazione e interazione paziente-terapista (uso di strumenti musicali, canto, danza)
3 blocchi di 8-10 sedute in un anno
Miglioramento del tono dell'umore (BDI) e dell'autostima e accettazione di sé (SESA) dopo MT

TRAUMA CRANICO

N	Deficit	Disegno	Tecnica	Indicatori	Risultato	Rif.
22	Amnesia post traumatica	Randomizzato (musica live, musica da CD, controllo)	Individuale Ascolto musica live e CD	Scale comportamentali: livello di orientamento (PTA) e agitazione (ABS)	Migliora livello di orientamento e diminuisce il livello di agitazione *(Agitation Behavior Scale, Westmead PTA Scale)*	Baker, 2001
18	Trauma cranico e stroke	Comparativo	Gruppo, MT attiva	Qualitativi: tono dell'umore, interazione sociale, partecipazione in terapia	Miglioramento tono dell'umore (*Faces Scale)* e interazione sociale *(Sickness Impact Profile)*	Nayak et al., 2000

MORBO DI PARKINSON

N	Disegno	Tecnica	Indicatori	Risultato	Riferimento
16	Randomizzato	MT attiva	Scale motorie (Unified Parkinson's Disease Rating Scale) e scale comportamentali ed emotive:ADL, Happiness Measure (HM), BDI, Parkinson's Disease Quality of Life Questionnaire (PDQL)	Miglioramento bradicinesia, tono umore, qualità di vita, autonomia	Pacchetti et al., 2000
10	Randomizzato	Ascolto di musica durante il cammino	Indicatori del cammino:velocità, lunghezza	Peggioramento dei parametri del cammino	Lesley, et al., 2009

Active Music Therapy in Parkinson's Disease: An Integrative Method for Motor and Emotional Rehabilitation

Claudio Pacchetti, MD, Francesca Mancini, MD, Roberto Aglieri, Cira Fundarò, MD, Emilia Martignoni, MD, and Giuseppe Nappi, MD

Psychosomatic Medicine 62:386–393 (2000)

TABLE 1. Characteristics of Study Population

	Group	
	MT	PT
No. of patients	16	16
Gender		
Male	12	11
Female	4	5
Mean age, (SD), years	62.5 (5)	63.2 (5)
Mean duration of illness (SD), years	4.8 (3)	5.2 (2)
Mean dosage (SD), mg/day, and no. of patients		
Levodopa alone	583 (189), 3	540 (148), 5
Levodopa in association with other drugs	596 (116), 13	591 (113), 11
Pergolide	2 (1), 9	2 (1), 6
Bromocryptine	14 (5), 4	12 (5), 5
Mean score (SD)		
UPDRS-MS	40.2 (7.7)	40.7 (7)
UPDRS-ADL	21.7 (4)	21.7 (5.5)
HM combination	42.6 (15.6)	41.7 (13.7)
HM part 1	5 (1.7)	5.3 (1.3)
PDQL	114 (3.5)	115.2 (2.6)

TABLE 5. UPDRS-ADL (Total Score) Results

Time of Evaluation (week)	Mean Score (SD)		
	MT Group	PT Group	p^a
1	21.7 (4)	21.7 (5.5)	NS
7	16.7 (3.5)	21 (5)	<.0001
11	14.7 (3.6)	21.3 (6)	<.0001
Follow-up visit (2 months)	20.5 (4)	21.5 (5.8)	NS
Overall evaluation[b]			
At end of study	<.0001	NS	
At follow-up visit	NS	NS	

CASISTICA MISTA

N	Patologia	Disegno	Tecnica	Indicatori	Risultato	Rif.
53	Ictus, SM, tumore cerebrale, encefalite	Randomizzato	Ascolto	Pressione arteriosa, frequenza cardiaca frequenza respiratoria, percezione dolore, ansia e depressione	Riduzione di frequenza cardiaca e respiratoria, depressione e ansia *(POMS)*	Phipps, et al., 2010.

Clinical diagnosis based on group assignment.

	Usual care ($n = 29$)	Intervention ($n = 24$)
Neuromedical diagnosis		
Stroke/transient ischemia attack	5	6
Cerebral tumor	1	
Optic neuritis	2	
Multiple sclerosis	1	1
Encephalitis	1	
Progressive gait instability		1
Seizures		1
Aneurysm		1
Neurosurgical diagnosis		
Tumor resection	8	3
Laminectomy	5	4
Cranioplasty following traumatic brain injury	1	2
Aneurysm repair	3	2
Ventricular shunt revision	2	2
Burr hole procedure		1

FONDAZIONE I.R.C.C.S. ISTITUTO NEUROLOGICO CARLO BESTA

doi:10.1093/brain/awl250 *Brain* (2006), **129**, 2571–2584

Making non-fluent aphasics speak: sing along!

Amélie Racette,[1] Céline Bard[2] and Isabelle Peretz[1]

A classic observation in neurology is that aphasics can sing words they cannot pronounce otherwise. To further assess this claim, we investigated the production of sung and spoken utterances in eight brain-damaged patients suffering from a variety of speech disorders as a consequence of a left-hemisphere lesion. In Experiment 1, the patients were tested in the repetition and recall of words and notes of familiar material. Lyrics of familiar songs, as well as words of proverbs and prayers, were not better pronounced in singing than in speaking. Notes were better produced than words. In Experiment 2, the aphasic patients repeated and recalled lyrics from novel songs. Again, they did not produce more words in singing than in speaking. In Experiment 3, when allowed to sing or speak along with an auditory model while learning novel songs, aphasics repeated and recalled more words when singing than when speaking. Reduced speed or shadowing cannot account for this advantage of singing along over speaking in unison. The results suggest that singing in synchrony with an auditory model—choral singing—is more effective than choral speech, at least in French, in improving word intelligibility because choral singing may entrain more than one auditory–vocal interface. Thus, choral singing appears to be an effective means of speech therapy.

Complementary Therapies in Clinical Practice 16 (2010) 138–142

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journal homepage: www.elsevier.com/locate/ctnm

Music as a Therapeutic Intervention on an Inpatient Neuroscience Unit

Marion A. Phipps [a], Diane L. Carroll [b,*], Anastasia Tsiantoulas [c]

Table 6
Mean change score differences between usual care and treatment groups on psychological outcome variables after music intervention.

POMS	Usual care ($n = 29$): mean change score (SD)	Treatment ($n = 24$): mean change score (SD)	df	t	p
Anxiety	0.5 (2.5)	↓ 4 (3.0)	45	−4.1	**0.000***
Depression	0.52 (1.5)	↓ 2.8 (2.1)	46	−4.3	**0.000***
Anger	0.36 (2.0)	1.1 (2.3)	46	−1.2	0.23
Fatigue	0.81 (2.7)	↓ 2.8 (3.6)	46	−2.2	0.03
Confusion	0.13 (2.2)	0.55 (1.7)	45	−.70	0.49
Vigor	0.52 (2.7)	0.64 (2.8)	46	1.4	0.16
Total score	1.26 (7.9)	↓ 12.4 (10)	44	−4.1	**0.000***

Ansia, depressione

Frequenza respiratoria e cardiaca

Table 5
Differences between usual care and treatment groups on physiological outcome variables after music intervention.

	Usual care ($n = 29$): mean (SD)	Treatment ($n = 24$): mean (SD)	df	t	p
Systolic BP	117 (17)	116 (15)	46	0.33	0.746
Diastolic BP	65 (15)	63 (7)	45	0.81	0.424
Heart rate	79 (13)	68 (10)	46	3.1	**0.003**
Respiration	18.6 (2)	16.6 (2)	45	3.3	**0.002**
Skin temp	84.8 (7.0)	85.0 (6.5)	46	−0.11	0.910
Pain	2 (3)	2 (2)	46	0.51	0.610

BP – Blood Pressure; Skin temp - peripheral skin temperature.

FONDAZIONE IRCCS ISTITUTO NEUROLOGICO CARLO BESTA

Conclusioni

- Studi diversi evidenziano le potenzialità della musicoterapia nel contribuire al trattamento di alcuni sintomi nei pazienti con disordini neurologici
- Le capacità cognitive e motorie, il tono dell'umore, l'autostima, l'adattamento alla malattia e la qualità di vita possono essere migliorate da tecniche diverse di musicoterapia
- C'è indicazione ad attuare studi controllati randomizzati utilizzando tecniche ben definite e standardizzate di musicoterapia e adeguate misure di outcome

Ringraziamenti

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