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Music therapy for depression

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Editorial group: Cochrane Depression, Anxiety and Neurosis Group.
Publication status and date: Edited (no change to conclusions), published in Issue 1, 2009.
Review content assessed as up-to-date: 6 November 2007.


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ABSTRACT

Background

Depression is a highly prevalent disorder associated with reduced social functioning, impaired quality of life, and increased mortality. Music therapy has been used in the treatment of a variety of mental disorders, but its impact on those with depression is unclear.

Objectives

To examine the efficacy of music therapy with standard care compared to standard care alone among people with depression and to compare the effects of music therapy for people with depression against other psychological or pharmacological therapies.

Search methods

CCDANCTR-Studies and CCDANCTR-References were searched on 7/11/2007, MEDLINE, PsycINFO, EMBASE, PsycLit, PSYindex, and other relevant sites were searched in November 2006. Reference lists of retrieved articles were hand searched, as well as specialist music and arts therapies journals.

Selection criteria

All randomised controlled trials comparing music therapy with standard care or other interventions for depression.

Data collection and analysis

Data on participants, interventions and outcomes were extracted and entered onto a database independently by two review authors. The methodological quality of each study was also assessed independently by two review authors. The primary outcome was reduction in symptoms of depression, based on a continuous scale.

Main results

Five studies met the inclusion criteria of the review. Marked variations in the interventions offered and the populations studied meant that meta-analysis was not appropriate. Four of the five studies individually reported greater reduction in symptoms of depression among those randomised to music therapy than to those in standard care conditions. The fifth study, in which music therapy was used as an active control treatment, reported no significant change in mental state for music therapy compared with standard care. Dropout rates from music therapy conditions appeared to be low in all studies.
Authors’ conclusions

Findings from individual randomised trials suggest that music therapy is accepted by people with depression and is associated with improvements in mood. However, the small number and low methodological quality of studies mean that it is not possible to be confident about its effectiveness. High quality trials evaluating the effects of music therapy on depression are required.

Plain Language Summary

Music therapy for depression

Music therapy has been used in a range of ways to treat depression. Approaches can be active or receptive: active techniques might be used when participants cannot articulate difficult feelings. Here the therapist uses clinical techniques to connect with the patient in an improvised dialogue, which can then act as a springboard to emotional awareness. Receptive techniques involve the use of pre-composed music for relaxation, reflection, guided reminiscence and change of mood state. We conducted a systematic review to find out whether music therapy is effective in reducing the symptoms of depression. Five studies met the inclusion criteria for the review. Marked variations in the interventions offered, the populations studied and the outcome measures used meant that quantitative data synthesis and meta-analysis were not appropriate. Four studies reported greater reductions in symptoms of depression among those randomised to music therapy. The fifth study reported no change in mental state among those receiving music therapy compared to those randomised to standard care alone. Findings from individual studies suggest that music therapy for people with depression is feasible and indicate a need for further research.

Background

Description of condition

Depression is a common problem affecting about 121 million people world-wide and is characterised by persistent low mood, which leads to changes in appetite, sleep pattern and overall functioning (WHO 2000; Moussavi 2007). The disorder is characterised by a marked lowering of self-esteem and feelings of worthlessness and guilt. Symptoms further include anhedonia, fatigue and impaired concentration (WHO 1992). At its worst, depression can lead to suicide, which is associated with the loss of 1 million lives per year (WHO 2000; Moussavi 2007). Depression is projected to become the leading cause of disability and the second leading contributor to the global burden of disease by the year 2020 (WHO 2000, Moussavi 2007). It occurs in persons of all genders, ages, and backgrounds (WHO 2001). The huge personal and economic impact of depression implies a need for systematic reviews of the evidence for efficacy for all current treatment modalities.

Description of treatments for depression

Depression is commonly treated with either antidepressants or psychotherapy, or a combination of both (Hale 1997). Both tricyclic antidepressants and the more recent selective serotonin re-uptake inhibitors (SSRIs) have been found to be effective in treating depression (Paykel 1992; Edwards 1992). However, a recent Cochrane review by Moncrieff 2003 found small differences only between antidepressant medications and active placebos, with the lowest effects found in inpatient trials. A variety of talking therapies have also been found to be helpful in treating depression, and two systematic reviews are currently in progress comparing psychological and pharmacological treatments (Churchill 2003a; Churchill 2003b). The evidence for treating depression in adolescent populations is equivocal: Hazell 2007 challenges recommendations by several health bodies that SSRIs should only be prescribed to moderate and severely depressed adolescents only, in combination with psychological therapy.

Depression is also one of the most common reasons for the use of complementary and alternative therapies. The reasons for this are complex and vary according to patient group. They may entail a lack of satisfaction with conventional treatments and/or a wish to avoid side-effects from medication or the stigma attached to seeking talking therapy (Hazell 2007). However, this is refuted by a US study of 1035 participants (Astin 1998) which concludes that the majority of alternative medicine users do so because it is felt to be more in line with their own values, beliefs and philosophical orientations, rather than because of dissatisfaction with conventional treatments. This view is consistent with recent findings in the UK and Australia that mental health literacy in the general population is reasonably poor which reduces the likelihood of the evidence based treatments being sought (Jorm 2000; Jorm 2006).
User preferences are nevertheless important when treating mental illness. Recent evidence suggests that depressed young people prefer counselling to medication and active treatments over ‘watchful waiting’ (Jaycox 2006), both of which may be relevant to the use of active techniques in music therapy for this population.

How the intervention might work

Music therapy has been defined as ‘an interpersonal process in which the therapist uses music and all of its facets to help patients to improve, restore or maintain health’ (Bruscia 1991). Music therapy approaches across the world have emerged from diverse traditions such as behavioural, psychoanalytic, educational or humanistic models of therapy. While techniques used in music therapy are also diverse they can be broadly categorised as ‘Active’, in which people re-create, improvise or compose music, and ‘Receptive’, in which they listen to music (Bruscia 1998). Receptive or combined approaches are more prevalent in the US with active approaches being used more widely in Europe.

The putative mechanism of action of receptive music therapy is that different types of musical stimulus directly induce physical and emotional changes. Receptive forms are more likely to be influenced by cognitive-behavioural or humanistic traditions and may involve an additive activity performed whilst listening to live or recorded music, such as relaxation, meditation, movement, drawing or reminiscing. It has been suggested that this form of music therapy can help reduce stress, soothe pain, and energise the body (Bruscia 1991; Standley 1991). Most music therapy trainings of this sort in the US are at Bachelors level, and graduates can practice professionally by attaining Board Certification after a number of hours clinical practice.

In active approaches the therapist uses clinical improvisation techniques to stimulate or guide or respond to the patient who may use his/her voice or any musical instrument of choice within his/her capability (such as percussion). Patients may also bring songs written by themselves or others, or sheet music to play with the therapist. These models are often primarily improvisational and many are psycho-analytically informed. The putative mechanism of action here is that the co-created musical relationship between the therapist and the patient enables the latter to experience him or herself differently and/or to gain insight into his or her relational and emotional problems through talking about the musical dialogue (Nordoff 1977; Odell-Miller 1995). Trainings in these approaches are either at Masters level (e.g. all UK trainings) or they are extended undergraduate degrees.

More recently specialisms have evolved in particular areas, for example Neurologic Music Therapy is the specific application of music to cognitive, sensory and motor dysfunctions in neurological rehabilitation (Thaut 1999). Often, a combination of different techniques is used in the same therapy. The choice of approach tends to be based upon the person’s needs, the therapist’s training and the context (Drieschner 2001; Wigram 2002).

Music therapy is delivered over a range of time periods from a few weeks to several years. Intensity of treatment also varies from daily to weekly to monthly sessions. People may be seen in groups or individually, they may drop in to an open group (for example in a psychiatric ward setting) or have been referred and assessed by the music therapist before being placed in individual treatment or a closed group.

Why it is important to do this review

Although the music therapy profession in some countries originated in psychiatric rehabilitation, and music therapy is offered to people with mental disorders across the world, the evidence base of music therapy for depression has not yet been examined. Proponents of music therapy have suggested that it may be particularly beneficial for people who experience mental distress (e.g., Hadsell 1974; Benenzon 1981). For example, one observational study concluded that music therapy may have beneficial effects for people experiencing depression (Reinhardt 1982), a finding which was subsequently supported by a small randomised control trial of music therapy vs waiting list control among older adults with depressive disorders (Hanser 1994). However, a preliminary scan of the few systematic attempts at experimental research in this field highlights a number of difficulties. In particular, all RCTs have suffered from small sample sizes, making outcomes difficult to gauge accurately. In addition, patient groups are often heterogeneous (Radulovic 1997) and as mentioned above, types of music therapy may vary. However, as music therapy is being sought and accessed for the treatment of depression as a complement or alternative to pharmacological or other psychological therapies, there is a need for a systematic review of the available evidence to understand its effectiveness with this patient group. There is also a case for comparing different music therapy approaches in order to develop a better understanding of the relationship between process and outcomes in different contexts.

OBJECTIVES

1. To identify randomised controlled trials and controlled clinical trials examining the efficacy of music therapy in reducing the symptoms of clinical depression
2. To compare efficacy of music therapy plus standard care with standard care alone or with other psychological or pharmacological therapies
3. To compare efficacy of different forms of music therapy.

METHODS

Criteria for considering studies for this review
Types of studies
All randomised controlled and all controlled clinical trials, published and unpublished, undertaken in any country, were eligible for entry.

Types of participants
The review set out to include studies of men and women of all ages, whether in or out patients, with clinical depression using any diagnostic criteria such as ICD 10 (WHO 1992) or DSM (APA 1994) Research Diagnostic Criteria. They could also or alternatively be defined as scoring above a cut-off score on a self-rating depression questionnaire or as scoring above a cut-off score on a clinician rated instrument (according to the cut-off scores as used by the authors of the studies).
In the event that no formal diagnosis was received, subjects were analysed separately.

Types of interventions
Music therapy
In order to be included, music therapy would usually be provided by a certificated professional. To be classified as well-defined music therapy, there needed to be a coherent theoretical framework underpinning the intervention. Trials involving trainees on formal music therapy training programmes were considered, as were those by music therapists without formal training. There are still a number of untrained practitioners who call their practice music therapy, and due to the relative newness of music therapy as a regulated profession and the lack of evidence available, these were included in this review.
In summary, the intervention comprised the following features to be classified as music therapy:
1. Sessions were carried out within a structured therapeutic framework.
2. There was some kind of musical interaction between therapist and patient or between therapist and members of a group (e.g. improvisation, other forms of musical expression, listening to music).
3. The aim was to improve health status.
4. The main therapeutic change agent could be described as i) the music, ii) the relationship or iii) the talking which stems from the music.

Control conditions
The review included all studies in which any form of music therapy plus standard care was compared with any form of standard care, as defined by the authors, or with other psychological or pharmacological therapies, or where one form of music therapy was compared with another (for example active versus receptive approaches).

Main comparisons
Where data were available, the following treatment comparisons were conducted to test the review hypotheses:
2. Music therapy versus other therapies (psychological or pharmacological)
3. One form of music therapy versus another form of music therapy

Types of outcome measures
Primary outcome measures
The primary outcome was a decrease in the symptoms of depression, which was measured using a range of scales both self-rating, such as the Beck Depression Inventory (Beck 1961) and clinician-rated scales, such as the Hamilton Rating Scales for Depression (HRSD)(Hamilton 1960).

Beck Depression Inventory
Dr. Aaron T Beck created The Beck Depression Inventory (BDI, BDI-II) to measure the severity of depression using a twenty-one question multiple choice self-report inventory. Designed for adults aged 17-80, the questionnaire is composed of items relating to depression symptoms such as hopelessness, depressive feelings such as guilt, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex. The scale is one of the most widely-used to measure the symptoms of depression.

Geriatric Depression Scale
The Geriatric Depression Scale (GDS) was designed specifically to identify depression in older adult populations. It consists of a 30-item self-report assessment with yes/no answers and is commonly used as a routine part of a comprehensive geriatric assessment. A score of 11 or less is the usual threshold to separate depressed from non-depressed people. The test has well-established reliability and validity.

Hamilton Rating Scale for Depression
The Hamilton Rating Scale for Depression was designed to measure the severity of depression among people diagnosed with a depressive illness. It is a widely used observer-rated scale and comprises a checklist of 17 or 21 items which are rated on a scale of zero to four. Psychometric properties of the scale have been widely tested and found to be acceptable in a range of different settings.

Secondary outcome measures
Secondary outcome measures in this review were:
1. Social and occupational functioning (such as the Social Functioning Questionnaire (Tyrer 2005))
2. Self-esteem (Rosenburg 1979)
3. Quality of life, such as EuroQol (Brooks 1995)
4. Economic outcomes - cost efficiency of treatment
5. Adverse effects (including survival)
6. Overall treatment discontinuation/dropout
7. Treatment discontinuation/dropout due to non-acceptability or tolerability of treatment

Where a study used more than one measure per outcome, preference was given to measures made using validated instruments.
Rating scales were completed by the participants, their significant other, or by an independent observer who may or may not have been masked. Ratings by the therapist who conducted the therapy were included.

Outcomes were measured at the end of the treatment period, classified into short-term (up to 20 sessions) or long-term (more than 20 sessions), and then at any point at follow up.

**Search methods for identification of studies**

**Electronic searches**
CCDANCTR-Studies - searched on 7/11/2007
Diagnosis = Depress* or Dysthymi* or “Adjustment Disorder*” or “Mood Disorder*” or “Affective Disorder” or “Affective Symptoms” and
Intervention = “Music Therapy”
CCDANCTR-References - searched on 7/11/2007
Keyword = Depress* or Dysthymi* or “Adjustment Disorder*” or “Mood Disorder*” or “Affective Disorder” or “Affective Symptoms” and
Free-text = Music*

For the remaining databases, the following terms were used:
#1 = RANDOM*
#2 = (SINGL* or DOUBL* or TRIPL* or TREBL*) near (BLIND* or MASK*)
#3 = CROSSOVER
#4 = CROSS-OVER
#5 = VERSUS
#6 = VS
#7 = PLACEBO*
#8 = #1 or #2 or #3 or #4 or #5 or #6 or #7
#9 = Music
#10 = #8 and #9

The remaining databases were searched in November 2006
1. Cochrane Central register of Controlled Trials (CENTRAL)
2. The Science Citation Index
3. The specialist music therapy research database on www.musictherapyworld.de
4. Institute of music therapy, University of Witten-Herdecke info CD Roms one, two and three containing collected papers, doctoral theses etc
5. MEDLINE
6. EMBASE
7. PsyclINFO
8. PSYndex
9. The internet was also searched using general search engines e.g. Google.com

**Hand searches**
The following specialist journals were hand searched
British Journal of Music Therapy 1987 -2003

Musiktherapeutische Umschau 1980 onwards
Music Therapy 1981 - 1996
Australian Journal of Music Therapy Vol 12 2001
The Arts in Psychotherapy 1994 - 2003

**Reference lists**
Reference lists of all included studies were searched to identify studies not already included.
International Music Therapy Research Register was searched.

**Personal Communication**
Professional bodies, email discussion lists and the authors of included studies were contacted for information on unpublished material.

**Data collection and analysis**

**Study selection**
Two review authors (AM and MJC) independently inspected the full text of articles identified by the search. Any disagreements about whether or not they met inclusion criteria were resolved by discussion.

**Quality assessment**
Quality was assessed based on the allocation concealment described in the Cochrane Handbook of Systematic Reviews of Interventions (Higgins 2005). Using this scale, studies were classified according to the level of allocation concealment. A: Low risk of bias (adequate allocation concealment); B: Moderate risk of bias (unclear allocation concealment) or C: High risk of bias (inadequate allocation concealment). A narrative review of study quality was conducted according to the Cochrane Collaboration Handbook (Higgins 2005). An additional quality assessment was performed using the Cochrane Collaboration Depression and Anxiety Group Quality Rating Scale (QRS) (Moncrieff 2001). The Quality Rating Scale consists of 23 items, including items on sample size, allocation, use of diagnostic criteria, compliance, attrition and statistical analysis. Total scores range from 0-46.

**Data extraction**
Data were independently rated by two review authors (AM and MJC) using a standardised extraction sheet, and double entered into Review Manager (RevMan 2006) software. In the case of any disagreements between the reviewers, clarification was sought from the trial investigators when necessary.

Data extracted included:
Author
Year of publication
Setting (country, in vs outpatient etc)
Ethics (sponsor was ethics approval obtained?)
Type of Study (i.e. single centre / multicentre, crossover, parallel group, placebo-controlled)
Intention-to-treat analysis (including power calculation, withdrawals/dropouts/ losses top follow up described)
Definition of inclusion/exclusion criteria
Pre/Post-hoc defined subgroups
Compliance measured (including method)
Participants (including diagnosis, baseline characteristics, demographics)
Treatment (all adjunctive, concomitant and permitted treatments)
Outcome parameters (deaths, scales, adverse effects)
No of participants
Type of music therapy
Intensity of sessions
Duration
Individual or group sessions
Therapist’s training
Therapist’s post-qualifying experience
Monitoring of adherence of music therapy paradigm/protocol
Missing information was obtained from investigators where possible.

Data analysis
We had hoped to undertake a meta-analysis of quantitative data from constituent studies however marked variations in the interventions offered, the populations studied and the outcome measures used meant that this was inappropriate and we were therefore restricted to developing a narrative description of the findings of the individual trials. The following treatment comparisons were made:
2. Music therapy versus other therapies (psychological or pharmacological).

In subsequent versions of this review when quantitative review of the studies is possible, data will be analysed as follows:

Measures of treatment effect
Differences between treatment and control groups will be calculated and pooled estimates calculated using both fixed-effect and random-effects models. Initially a fixed-effect model will be used for the analysis. A formal test of heterogeneity will be undertaken for each analysis and the value of Chi square estimated. Where significant heterogeneity is identified, and this cannot be explained by a moderator variable, a random-effects model will be used. The main outcome is likely to be symptom levels (depression levels) measured by rating scales, at treatment-end and/or follow-up, presented either as continuous or dichotomous outcomes (significant clinical improvement versus no significant clinical improvement). Depression will be measured using any rating scale. Dichotomous outcomes will be summarised using odds ratios (OR); continuous outcomes will be summarised as weighted mean differences (WMD) where all results are from the same scale, and as standardised mean differences (SMD) where results from different scales are combined. 95% confidence intervals will be calculated for each effect estimate.
Baseline means of the groups in a study might differ, especially in non-randomised studies and small-sample studies; therefore, change scores (differences between baseline and treatment-end or follow-up) will also be examined (if data are available).

Missing data
Dropouts from treatment will be assumed to be treatment failures unless expressly stated otherwise by the trialists. Treatment discontinuation will be treated as a proxy measure for tolerability and examined in relation to stated outcomes.

Subgroup analysis
Where heterogeneity is identified, the results of subgroups will be presented separately. Clinical heterogeneity will be examined according to:
1. Patient characteristics - age, length of depression history, comorbidity
2. Duration of treatment - 20 sessions versus greater than 20 sessions
3. Modality of treatment - individual versus group therapy
4. Type of music therapy

Sensitivity analysis
Methodological quality will be examined using a sensitivity analysis where the results including and excluding lower-quality studies are compared.

Publication bias
The presence of publication bias will be examined using a funnel plot.

RESULTS

Description of studies
See: Characteristics of included studies; Characteristics of excluded studies.
The search identified 16 potentially relevant studies, of which nine were excluded (see Characteristics of excluded studies table). Two studies (Neboschick 1975; Bradford 1991), both unpublished dissertations, could not be obtained and are still awaiting assessment. No ongoing studies were identified.

Included studies
Five studies were eligible for inclusion (see Characteristics of included studies table). Four studies were randomised trials (Hanser 1994; Chen 1992; Zerhusen 1995; Hendricks 1999) and one was a controlled clinical trial (Radulovic 1997). Three trials compared music therapy plus standard care to standard care alone (Hanser 1994; Chen 1992; Radulovic 1997). Hendricks 1999 compared music therapy plus standard care with CBT plus standard care.
Zerhusen 1995 compared three groups: music therapy plus standard care, cognitive-behaviour therapy plus standard care, and standard care alone.

Study duration
The duration of treatment varied between six weeks (Radulovic 1997) and 10 weeks (Zerhusen 1995). All five studies followed participants until the end of the treatment period. Hanser 1994 included a further assessment of those given active treatments nine months later.

Study participants
Participants across all studies suffered from clinical depression, however, methods for diagnosing depression varied between studies. Participants in the Hanser 1994 study were diagnosed with mild to moderate depression using the Schedule of Affective Disorders and Schizophrenia. Participants in the Chen 1992; Zerhusen 1995 and Radulovic 1997 studies had moderate to severe depression (including psychotic depression) diagnosed using the DSM IIIR, the Beck Depression Inventory and the ICD-10 respectively. Hendricks 1999 did not provide information on the depression screening process. Whilst most trials screened only for depressive symptoms, one trial by Radulovic 1997 excluded participants for whom the approach was deemed inappropriate. Radulovic 1997 was more restrictive as its inclusion criteria and only included people who showed sufficient intellectual, association and introspective capacity, as well as a certain degree of musical inclination. It excluded professional musicians, people with paranoid ideas and those with a recent death in the family, unless they were already in treatment.

The age of participants varied across studies. Three studies focused on older adults: Chen 1992 included adults aged 60 to 77 years, Hanser 1994 treated adults aged from 61 to 85 years and Zerhusen 1995 included adults from 70 to 82 years. Radulovic 1997 treated adults aged 21 to 62 years and Hendricks 1999 treated adolescents aged either 14 or 15 years. No author provided details of length of illness prior to recruitment or previous psychiatric history, except Chen 1992, in which participants’ histories of depression varied from three months to three years.

Study setting
Participants in three studies were in contact with mental health services, either as inpatients (Radulovic 1997; Chen 1992), or attending a day service (Hanser 1994). The remaining two studies were in non-psychiatric settings, the first a residential nursing home (Zerhusen 1995), and the other, a junior high school (Hendricks 1999).

Study size
All studies were small, with sample sizes ranging from 19 (Hendricks 1999) to 68 participants (Chen 1992).

Interventions
Music therapy approach
Only Chen 1992 examined the effects of an active approach. This involved teaching simple pre-composed melodies and dialogue where the therapist might ask the participant whether they slept well or what they were thinking about. The aim of these songs was to help participants feel understood and "boost their interest in living." The control arm for this trial was standard care. The four remaining studies involved listening to pre-recorded music with a therapist, either in a group of six to eight participants (Hendricks 1999; Radulovic 1997; Zerhusen 1995) or individually (Hanser 1994). Hanser 1994 and Hendricks 1999 describe an approach to music therapy that combines reflection with the therapist on music chosen by both the participant and therapist and application of particular pieces of music to induce different mood states, sometimes accompanied by exercise. Hendricks 1999 cites the approach of Hanser 1994 as the paradigm upon which his methods are based. In the Hanser 1994 study, two methods for delivering music therapy were evaluated; music therapy delivered by a therapist and music therapy techniques taught by a therapist, which were subsequently self-administered by the participant in their own home. Those randomised to self-administered music therapy were given a 20 minute weekly phone call from the music therapist to review progress. In contrast, Zerhusen 1995 used music therapy as an active control group in their trial of CBT. Music therapy was delivered in groups of 20 participants twice weekly for one hour. It was briefly described as involving nursing home residents listening to: ‘many kinds of music, including old-time favourites, hymns and country melodies. One participant also played popular and semi-classical piano music’. There was no further discussion of the music therapy, although it is stated that it was carried out by a trained music therapist. Participants in Radulovic 1997 also listened to recordings with the therapist and reflected on these. However, the therapist’s approach was informed by psychoanalytic theory and involved guided imagery and discussion about traumatic past events that were connected to feelings aroused by listening to the excerpts. The approach also had a group analytic component and feedback was given by the group members to each other about their behaviour in the group.

Treatment length
Sessions ranged from one hour (Hanser 1994; Hendricks 1999; Zerhusen 1995) to 90 minutes (Chen 1992; Radulovic 1997). The number of sessions per week varied between the five studies: once per week (Hanser 1994; Hendricks 1999) twice per week (Radulovic 1997; Zerhusen 1995) and six times per week (Chen 1992). The maximum number of sessions ranged from 8 (Hanser 1994; Hendricks 1999), 12 (Radulovic 1997) and 20 (Zerhusen 1995) to 48 (Chen 1992).

Regarding cognitive behavioural therapy, Zerhusen 1995 used a manualised form of group cognitive behavioural therapy, which comprised twice weekly 90 minute meetings with six to seven participants in each group. These started with a psychoeducational component, which was followed by diversion techniques and cognitive rehearsal exercises aimed at reducing inactivity. The final
stages of the intervention involved helping participants recognise and challenge negative beliefs. In Hendricks 1999, the music-based intervention was compared to cognitive-behavioural group activities, which included group discussions about self-concept and how depression affects this.

**Standard care**

Standard treatment varied considerably between the different studies. In Hanser 1994, those randomised to standard care received ‘no treatment’ of any sort during the study period. All participants in Hendricks 1999, including those in the standard care arm of the trial, received ‘short term individual psychotherapy’. In Zerhusen 1995, all those in the standard care arm of the trial had access to nursing care, which was not defined in detail. The two in-patient studies (Chen 1992; Radulovic 1997) state that all those in the control arm of the trial were treated with antidepressant medication.

**Outcomes**

**Primary outcomes**

Three self-rated scales were used to measure symptoms of depression, the Beck Depression Inventory was used by Radulovic 1997; Hendricks 1999 and Zerhusen 1995, the Geriatric Depression Scale was used by Hanser 1994 and the Hamilton Rating Scale for Depression was used in Chen 1992. For all these scales, lower scores indicate lower levels of depression.

**Secondary outcomes**

Zerhusen 1995 compared the rate of attendance at music therapy and cognitive-behaviour therapy groups. Hanser 1994 measured a number of other outcomes, including mood state using the Profile of Mood States (POMS 1980), general mental health using the Brief Symptom Inventory (Derogatis 1982), and self-reported self-esteem using the Self-Esteem Inventory (Rosenburg 1979). Dropout rates in all five studies were very low, with two studies reporting no drop-outs (Chen 1992; Radulovic 1997).

**Risk of bias in included studies**

**Randomisation**

None of the studies that randomised participants to the treatment intervention provided details about randomisation.

**Blinding**

Information on masking researchers was partial in one study (Chen 1992) and absent in the remainder. Hanser 1994 interviewed participants over the telephone regarding their compliance and satisfaction using a research assistant independent from the rest of the research team. It is unclear whether those administering outcome measures were aware of the participants allocation status. All five studies used a self-completed primary outcome measure.

**Dropouts**

Dropouts were low in all five studies. Two participants from the Hanser 1994 trial withdrew prior to the end of the study, one each from the active and control arms of the trial. Their data was excluded and two more participants recruited. There was a single dropout in the CBT arm of Zerhusen 1995. Data from this participant and a participant matched for demographic characteristics from the two other arms of the trial were excluded. Two participants moved to another geographical area in Hendricks 1999, with data from both excluded. Chen 1992 reported no drop-outs in either arm of their trial, nor were there any drop-outs in Radulovic 1997.

**Overall impression of study quality**

The overall quality of constituent studies was low. None included a power calculation and none provided a full explanation of randomisation procedures. Of all studies, only Hanser 1994 reported means and standard deviations. Hendricks 1999; Radulovic 1997 reported means with graphical representation of standard deviations. Chen 1992 provided mean change in symptom scores after interventions were delivered. Poor methodological quality of the studies was supported by the QRS score: all studies were rated moderate to poor (Chen 1992: 19; Hanser 1994: 27; Hendricks 1999: 12; Radulovic 1997: 14; Zerhusen 1995: 16. This score was out of a possible total of 46.

**Effects of interventions**

Five studies met inclusion criteria. Marked variations in the interventions offered, the populations studied and the outcome measures used meant that quantitative data synthesis and meta-analysis was not appropriate. Four studies (Chen 1992; Hanser 1994; Hendricks 1999; Radulovic 1997) reported greater reductions in symptoms of depression among those randomised to music therapy. Zerhusen 1995 reported no change in mental state among those receiving music therapy compared to those randomised to standard care alone. Regarding the type of music therapy used, this varied greatly (see section above), with Chen 1992 using an active approach and others a mainly receptive approach. We were not able to provide confidence intervals (CIs) because four of the five included studies provided no details of variance in study outcome measures. We contacted authors of papers but they were not able to provide us with this information. For the one study that did this (Hanser 1994), we used data on standard deviations to calculate CIs.

**Comparison 1: Music therapy plus standard care versus standard care alone**

**Primary outcome - symptoms of depression**

**Beck Depression Inventory**

Two studies used the Beck Depression Inventory (BDI) as an outcome measure. In Zerhusen 1995, the mean score on the BDI at end of treatment was 45.58 among those randomised to music therapy and 47.84 among those randomised to standard care (standard deviations not provided). In Radulovic 1997, the mean score on the BDI at end of treatment was 16.5 among those randomised to music therapy and 25.1 among those randomised to standard care (numerical data on standard deviations not provided).
Geriatric Depression Scale
Hanser 1994 used the Geriatric Depression Scale (GDS). Mean scores at end of treatment were 10.00 (SD = 6.15) among those randomised to music therapy and 16.20 (SD = 6.13) among those randomised to standard care (difference in means -6.20, 95% CI -1.33 to -11.07). Reductions in post-treatment GDS scores were larger among those randomised to therapist administered music therapy compared to those randomised to self-administered therapy, but the difference between the groups was not statistically significant.

Hamilton Rating Scale for Depression
Chen 1992 used the Hamilton Rating Scale for Depression (HRSD) although actual scores were not provided. Data were difficult to interpret due to presentation of change scores (expressed as percentage difference between baseline and follow-up in each of the two arms of the trial). Percentage reduction in score on HRSD from baseline to end of treatment was 98% among those treated with music therapy and 67% among those randomised to standard care. Means and standard deviations were not provided.

Secondary outcomes
In the only study to examine outcomes other than depression, Hanser 1994 measured the impact of music therapy on general mental health. Those receiving one of the two music therapy treatments had a lower score on the Brief Symptom Inventory-General Severity Index at end of treatment compared to those in the waiting list control (difference in means -0.36, 95% CI -0.26 to -0.98).

Comparison 2: Music therapy plus standard care versus group cognitive behaviour therapy plus standard care

Primary outcome - symptoms of depression
Both studies comparing these two treatments used the BDI. In Zerhusen 1995, mean scores on the BDI at end of treatment were 45.58 among those randomised to music therapy and 28.63 among those randomised group cognitive behaviour therapy (standard deviations not provided). In Hendricks 1999, mean BDI scores at end of treatment were 1.34 among those randomised to music therapy and 17.0 among those randomised to group cognitive behaviour therapy (standard deviations not provided).

Secondary outcomes
In the only study to examine outcomes other than depression, Hanser 1994 measured the impact of music therapy on general mental health. Those receiving one of the two music therapy treatments had a lower score on the Brief Symptom Inventory-General Severity Index at end of treatment compared to those in the waiting list control (difference in means -0.36, 95% CI -0.26 to -0.98).

Discussion
Five studies met the inclusion criteria for this review. Of these, four (Chen 1992; Hanser 1994; Hendricks 1999; Radulovic 1997) reported clinically significant positive effects. One (Zerhusen 1995) in which music therapy was used as a control treatment, showed no effect. Few studies provided sufficient numerical data to be included in a meta-analysis and marked heterogeneity resulting from differences in the type of intervention used and in the populations studied meant that quantitative synthesis would be inappropriate (Fletcher 2007).

The range of interventions included guided imagery to music; ‘prescribed’ music to induce particular emotional states, for example relaxation or motivation; reflective discussions around pre-composed music chosen by the patient or therapist; and joint music-making between therapist and participant(s). Two of the five studies describe a similar approach (Hanser 1994; Hendricks 1999), but Hendricks 1999 modifies the approach taken by Hanser 1994 with individual older adults, for groups of adolescents. Only one of the studies examined the effects of an active approach (Chen 1992). Despite a large body of qualitative research and theoretical papers on this subject, active approaches barely feature among the studies identified for this review (see Characteristics of included and excluded studies tables). Most of the studies we identified involved pre-recorded music ‘prescribed’ for alteration of mood states. This use of music may lend itself more easily to experimental research. It may also be that these approaches are more common in Europe where outcome research of psychological therapies is less developed than in the US.

However, this is not consistent with existing research into other populations, for example in schizophrenia, where active forms of music therapy comprise the majority of the research, as identified by a Cochrane review conducted by Gold 2005. This may reflect an emphasis on the use of active music therapy techniques with more severely disturbed patients in contemporary mental health settings (in Western Europe), and a tendency for more receptive approaches for milder conditions (as in other countries, in particular the United States).

Most studies we identified focused on either adolescents or older adults, while only one included study examined the effects of music therapy with younger adults (Radulovic 1997). In addition to further research examining the impact of music therapy for younger and older people, experimental evaluation of the impact of music therapy for adults with depression is also required.

Two studies, Hendricks 1999 and Zerhusen 1995, compared group music therapy with group cognitive therapy, and achieved divergent outcomes. While the reason for this is unclear, it is noteworthy that Zerhusen 1995 used music therapy as the active control treatment in a trial that was primarily aimed at examining the effects of CBT. There were important differences in the intensity and duration of groups: while CBT groups lasted 90 minutes and involved no more than seven participants, the music ther-
therapy group ran for 60 minutes and involved 20 people. CBT was structured and had a coherent theoretical approach; in contrast the group music therapy appears to have not had a coherent therapeutic framework beyond the notion that listening to music is inherently therapeutic. We could draw the conclusion that, without a coherent therapeutic framework and understanding, listening to music alone within a large group, even with a trained therapist, is not effective.

Conversely, Hanser 1994 shows that music therapy can be effective, even when self-administered by participants in a similar vein to the use of homework exercises in CBT, if the therapist trains the patient beforehand and has regular telephone contact. This implies that for milder conditions, it may be more cost-effective to offer a form of cognitive behavioural music therapy at home than to offer large group listening sessions. The findings from Chen 1992 indicate that large group music therapy treatment can be effective when there is a coherent therapeutic strategy behind the use of music.

Overall the reporting of studies was poor - in particular, information about randomisation procedures was partial or absent. Interpretation of study findings was further hampered by lack of data on variance of study outcomes. Every effort was made to contact study authors, and while some were successfully contacted, none were able to provide the additional information required. Therefore, data from these studies needs to be interpreted with caution. Nonetheless, they demonstrate that it is possible to conduct randomised trials of music therapy among people with depression in a variety of different contexts. Levels of uptake and participation in music therapy appear to be high, and drop-outs are rare, with the vast majority of those randomised to music therapy completing treatment. Given difficulties amongst people with depression in sustaining active involvement in treatment, this finding might indicate that music therapy is an acceptable intervention for many people with this disorder. Furthermore, most of the studies included in the review showed positive effects in reducing depressive symptoms, indicating that further research in this area is warranted.

**Authors’ Conclusions**

**Implications for practice**

Music has been used in different ways as part of the psychological treatment of people with depression. The evidence in this review is drawn from five individual small scale studies. These small scale studies suggest that music therapy is associated, at least in the short term, with improvements in mood that go beyond those found with standard care alone, and based on low dropout rates, appears to be a well tolerated treatment. However, low methodological quality of studies conducted to date mean that it is unclear whether music therapy is an effective treatment for depression.

**Implications for research**

Randomised controlled trials of individual and group music therapy for people with depression are feasible. Further research is needed, in particular longer studies with larger samples where the researcher is masked to the allocation status of participants. Such studies should be sufficiently powered to be able to detect clinically significant changes in depression scores and include economic evaluation of the effects and cost effectiveness of music therapy. Future research could usefully explore whether differences in outcomes are associated with different forms of music therapy.

**Acknowledgements**

Many thanks to the Cochrane Depression, Anxiety and Neurosis Review Group for their support.

Also to Central and Northwest London Foundation NHS Trust and Imperial College, London for allowing study time for this review.

**References**

References to studies included in this review

- **Chen 1992** *(published data only)*

- **Hanser 1994** *(published data only)*

- **Hendricks 1999** *(published data only)*

- **Radulovic 1997** *(published data only)*

- **Zerhusen 1995** *(published data only)*
References to studies excluded from this review

Field 1998 (published data only)

Goh 2001 (published data only)
Goh M. The role of music therapy in the rehabilitation of people who have had strokes, specifically focusing on depression. National Research Register. 2001.

Goodwin 2004 (published data only)

Jones 1999 (published data only)

Lai 1999 (published data only)

Montello 1998 (published data only)

Odell-Miller 2006 (published data only)

Rose 2004 (published data only)

Wang 2006 (published data only)

References to studies awaiting assessment

Bradford 1991 (published data only)

Neboschick 1975 (published data only)

Additional references

APA 1994

Astin 1998

Beck 1961

Benenzon 1981

Brooks 1995

Bruscia 1991

Bruscia 1998

Churchill 2003a

Churchill 2003b

Derogatis 1982

Drieschner 2001
Drieschner K. Therapeutic methods of experienced music therapists as a function of the kind of clients and the goals of therapy. 5th European Music Therapy Congress, Naples, Italy. 2001.

Edwards 1992

Fletcher 2007
Fletcher J. What is heterogeneity and why is it important?. BMJ 2007;334:94–96.

Gold 2005
Music therapy for depression (Review)

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Hadsell 1974

Hale 1997

Hamilton 1960

Hazell 2007

Higgins 2005

Jaycox 2006

Jorm 2000

Jorm 2006
Jorm AF, Christensen H, Griffiths KM. The public's ability to recognize mental disorders and their beliefs about treatment: Changes in Australia over 8 years. *Australian and New Zealand Journal of Psychiatry* 2006;40:36–41.

Moncrieff 2001

Moncrieff 2003
Moncrieff J, Wessely S, Hardy R. Active placebo versus antidepressants for depression. *Cochrane Database of Systematic Reviews* 2003, Issue 2.[Art. No.: CD003012. DOI: 10.1002/14651858.CD003012.pub2]

Moussavi 2007

Nordoff 1977

Odell-Miller 1995

Paykel 1992

POMS 1980

Reinhardt 1982

RevMan 2006

Rosenburg 1979

Standley 1991

Thaut 1999

Tyrer 2005

WHO 1992

WHO 2000

WHO 2001
Wigram 2002

* Indicates the major publication for the study
## CHARACTERISTICS OF STUDIES

### Characteristics of included studies  [ordered by study ID]

#### Chen 1992

| Methods       | Allocation: randomised - no further info. Masking: single blind - researcher masked  
|               | Duration: eight weeks  
|               | Design: parallel groups.  
| Participants  | Number: 68  
|               | Age: between 60 and 77  
|               | Context: hospital  
|               | Diagnosis: moderate to severe depression = depression score of above 17 - no further details  
| Interventions | TREATMENT ARM  
|               | Music therapy: Playing of pre-composed and improvised music and singing.  
|               | 'Dosage': Six, 60-minute groups per week. Plus Standard Care = Tricyclic anti-depressants and hospitalisation. Duration: eight weeks  
|               | CONTROL  
|               | Standard care = tricyclic anti-depressants and hospitalisation  
| Outcomes      | Hamilton Rating Scale for Anxiety and Depression.  
| Notes         | Only percentage change in depressions scores were provided.  

#### Risk of bias

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<tr>
<th>Item</th>
<th>Authors' judgement</th>
<th>Description</th>
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<td>Allocation concealment?</td>
<td>Unclear</td>
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#### Hanser 1994

| Methods       | Allocation: randomised - no further info.  
|               | Duration: eight weeks plus nine month follow-up.  
|               | Masking: Not mentioned.  
|               | Design: Parallel groups.  
| Participants  | Number: 30  
|               | Age: over 60, Context: outpatients Diagnosis: 'major or minor depressive disorder' diagnosed through a structured interview using the Schedule of Affective Disorders and Schizophrenia.  
|               | Other: predominantly female (77%), rated their health as fair to good, highly educated  
| Interventions | TREATMENT 1: Music Therapy: gentle exercise to music, guided imagery and drawing/painting to music, facial massage and progressive relaxation, rhythmic music to enhance energy. Dosage: 1 hour per week. Participants advised to practise MT exercises between sessions - mean listening period per week: 3hrs15mins.  
|               | Duration: eight weeks  

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Music therapy for depression (Review)  
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Hanser 1994  (Continued)

| TREATMENT 2: | Self-administered music therapy. As above but without therapist present. 'Dosage': 20 minute telephone conversation with therapist - mean listening period per week: 2hrs 55 mins |
| CONTROL: | Waiting list |

| Outcomes | Geriatric Depression Scale. General Severity Index to measure overall distress. Self-Esteem Inventory to assess self-concept. Profile of Mood States - Bipolar Form. Beck Depression Inventory. |

| Notes |

### Risk of bias

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Hendricks 1999

| Methods | Allocation: randomised - no further info. Duration: eight weeks; six month follow-up mentioned in discussion but not included in results. Masking: not mentioned Design: Parallel groups. |
| Participants | Number: 19 Age: adolescents aged 14 and 15 Context: school Diagnosis: screened for 'depressive symptoms' - no further details |
| Interventions | TREATMENT 1: Music Therapy: music listening for exercise and relaxation, to encourage positive action, memory sharing, in conjunction with drawing and to increase energy. 'Dosage': once a week, duration of session not mentioned. TREATMENT 2: cognitive behavioural group activities focusing on 'self-concept'. 'Dosage': once a week, duration not mentioned. |
| Outcomes | Beck Depression Inventory. |
| Notes | No standard deviations. No standard care arm. |

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</table>
**Radulovic 1997**

**Methods**
- Allocation: not stated whether randomised.
- Duration: six weeks.
- Masking: not mentioned.
- Design: parallel groups.

**Participants**
- Number: 60
- Age: 21 to 62 years.
- Context: hospital
- Diagnosis: moderate to severe (including psychotic) depression

**Interventions**
- **TREATMENT:**
  - "Group analytic" guided imagery to music 'Dosage': 20mins twice a week
  - Duration: six weeks
  - Plus standard care = antidepressants and hospitalisation.
- **CONTROL:**
  - Standard care = anti-depressant medication plus hospitalisation

**Outcomes**
- Beck Depression Inventory.

**Notes**
- No standard deviations.

**Risk of bias**

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**Zerhusen 1995**

**Methods**
- Allocation: randomised - matched on depression score, race and sex.
- Duration: ten weeks.
- Masking: Not mentioned.
- Design: parallel groups.

**Participants**
- Number: 60
- Age: Between 70 and 82 yrs
- Context: nursing home.
- Diagnosis: moderate to severely depressed on the Beck Depression Inventory and free from organic brain syndrome

**Interventions**
- **TREATMENT 1:** Group Cognitive Behavioural Therapy in a small group (6 or 7 participants) in four phases - preparation for CBT, basic techniques for changing behaviour, basic techniques for changing cognition, preparation of residents for termination of treatment. 'Dosage': one hour and a half, twice weekly
- **CONTROL 1:** Music therapy in a large group (20 participants): listening to music - therapeutic component not described.
- 'Dosage': one hour twice weekly.
- **CONTROL 2:**
Zerhusen 1995  (Continued)

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<th>Outcomes</th>
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<tr>
<td>Outcomes</td>
<td>Beck Depression Inventory.</td>
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<td></td>
<td>Hamilton Rating Scale for Anxiety and Depression.</td>
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<tr>
<td>Notes</td>
<td>No standard deviations.</td>
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**Characteristics of excluded studies [ordered by study ID]**

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<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
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<tr>
<td>Field 1998</td>
<td>(Effect of listening to 20 minutes of rock music on frontal EEG in depressed adolescents: positive affect is associated with greater relative frontal EEG activation and music had an effect on this physiological measure but not on self-reported mood.) Music listening only. No therapist. Depression not measured (EEG and corisol levels = outcome measures)</td>
</tr>
<tr>
<td>Goh 2001</td>
<td>(Improvisational music therapy for people who are depressed or anxious after a stroke.) Only one participant with depression, and this secondary to a neuro-disability</td>
</tr>
<tr>
<td>Goodwin 2004</td>
<td>(Guided imagery to promote psychological wellbeing in women with breast cancer.) Music listening only with guided imagery from tape. No therapist. Not depression - coping with breast cancer only</td>
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<tr>
<td>Jones 1999</td>
<td>(Listening to 15 minutes of ‘uplifting rock music’ through headphones compared with massage for depressed adolescents. Concurs with Field, T (above) that music listening attenuates frontal EEG asymmetry.) Depression not measured (frontal EEG asymmetry only outcome measure)</td>
</tr>
<tr>
<td>Lai 1999</td>
<td>(Effects of music listening on depressed women. Significant post-test differences found in experimental group participants’ heart rates, respiratory rates, blood pressure and ‘tranquil mood states’.) Music listening not music therapy. Outcome measures = heart rate, respiratory rate, blood pressure, mood states questionnaire designed by the author and qualitative questions. No depression scores</td>
</tr>
<tr>
<td>Montello 1998</td>
<td>(Effects of active versus passive group music therapy on preadolescents with emotional, learning and behavioural disorders.) Does not measure depression as an outcome.</td>
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<tr>
<td>Study</td>
<td>Description</td>
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<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Odell-Miller 2006</td>
<td>High variability within intervention and study population: all four arts therapies for all types of mental illness. No patients with clinical depression identified as having had music therapy.</td>
</tr>
<tr>
<td>Rose 2004</td>
<td>Psychological effects of anxiolytic music on anxiety and depression following cardiac surgery. Music listening only with guided imagery from tape. No therapist. Depression not primary issue - cardiac surgery patients.</td>
</tr>
<tr>
<td>Wang 2006</td>
<td>Effect of music plus SSRIs on emotion and burn wound healing in burn patients. Not music therapy: listening to music through headphones; therapist not involved.</td>
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DATA AND ANALYSES
This review has no analyses.

WHAT'S NEW
Last assessed as up-to-date: 6 November 2007.

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<td>3 November 2008</td>
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HISTORY
Review first published: Issue 1, 2008

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<td>3 September 2007</td>
<td>New citation required and conclusions have changed</td>
<td>Substantive amendment</td>
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CONTRIBUTIONS OF AUTHORS
Anna Maratos conceived the idea for the review, designed the study protocol, hand searched relevant journals, extracted study data, analysed findings and wrote the final paper.
Xu Wang extracted study data and analysed findings.
Christian Gold designed the study protocol and hand searched relevant journals.
Mike Crawford extracted study data, analysed findings and wrote the final paper.

DECLARATIONS OF INTEREST
Anna Maratos is a state registered music therapist. She is the Head of Arts Therapies for a London Foundation NHS Trust.
SOURCES OF SUPPORT

Internal sources

• Paterson Centre for Mental Health, CNWL Mental Health NHS Trust, London W2 1PD, UK.
• Sogn og Fjordane University College, Norway.

External sources

• The Research Council of Norway, Norway.

INDEX TERMS

Medical Subject Headings (MeSH)
Depression [*therapy]; Music Therapy [*methods]; Randomized Controlled Trials as Topic

MeSH check words
Humans