



Cochrane
Library

Cochrane Database of Systematic Reviews

Music therapy for depression (Review)

Aalbers S, Fusar-Poli L, Freeman RE, Spreen M, Ket JCF, Vink AC, Maratos A, Crawford M, Chen XJ, Gold C

Aalbers S, Fusar-Poli L, Freeman RE, Spreen M, Ket JCF, Vink AC, Maratos A, Crawford M, Chen XJ, Gold C.

Music therapy for depression.

Cochrane Database of Systematic Reviews 2017, Issue 11. Art. No.: CD004517.

DOI: [10.1002/14651858.CD004517.pub3](https://doi.org/10.1002/14651858.CD004517.pub3).

www.cochranelibrary.com

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

WILEY

TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	2
SUMMARY OF FINDINGS	4
BACKGROUND	9
OBJECTIVES	10
METHODS	10
Figure 1.	13
RESULTS	15
Figure 2.	19
Figure 3.	20
DISCUSSION	24
AUTHORS' CONCLUSIONS	25
ACKNOWLEDGEMENTS	27
REFERENCES	28
CHARACTERISTICS OF STUDIES	34
DATA AND ANALYSES	70
Analysis 1.1. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 1 Severity of depression symptoms, clinician-rated (primary outcome; high=poor).	71
Analysis 1.2. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 2 Severity of depression symptoms, patient-reported (primary outcome; high=poor).	72
Analysis 1.3. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 3 Any adverse event. ...	72
Analysis 1.4. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 4 Functioning (high=good).	72
Analysis 1.5. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 5 Quality of life (high=good).	72
Analysis 1.6. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 6 Leaving the study early.	73
Analysis 1.7. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 7 Anxiety (high=poor). ..	73
Analysis 1.8. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 8 Self-esteem (high=good).	74
Analysis 2.1. Comparison 2 Music therapy versus psychological therapy, Outcome 1 Severity of depressive symptoms, clinician-rated (primary outcome; high=poor).	75
Analysis 2.2. Comparison 2 Music therapy versus psychological therapy, Outcome 2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor).	75
Analysis 2.3. Comparison 2 Music therapy versus psychological therapy, Outcome 3 Quality of life (high=good).	76
Analysis 2.4. Comparison 2 Music therapy versus psychological therapy, Outcome 4 Leaving the study early.	76
Analysis 3.1. Comparison 3 Active music therapy versus receptive music therapy, Outcome 1 Severity of depressive symptoms, clinician-reported (primary outcome; high=poor).	77
Analysis 3.2. Comparison 3 Active music therapy versus receptive music therapy, Outcome 2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor).	77
Analysis 3.3. Comparison 3 Active music therapy versus receptive music therapy, Outcome 3 Quality of life (high=good).	78
Analysis 3.4. Comparison 3 Active music therapy versus receptive music therapy, Outcome 4 Leaving the study early.	78
APPENDICES	78
WHAT'S NEW	85
HISTORY	85
CONTRIBUTIONS OF AUTHORS	86
DECLARATIONS OF INTEREST	86
SOURCES OF SUPPORT	86
DIFFERENCES BETWEEN PROTOCOL AND REVIEW	87
INDEX TERMS	87

[Intervention Review]

Music therapy for depression

Sonja Aalbers^{1,2}, Laura Fusar-Poli³, Ruth E Freeman⁴, Marinus Spreen⁵, Johannes CF Ket⁶, Annemiek C Vink⁷, Anna Maratos⁸, Mike Crawford⁹, Xi-Jing Chen¹⁰, Christian Gold¹¹

¹Social Work and Arts Therapies, University of Applied Sciences, Leeuwarden, Netherlands. ²Clinical, Neuro & Developmental Psychology, Vrije Universiteit Amsterdam, Amsterdam, Netherlands. ³Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy. ⁴Psychiatry, Central and North West London NHS Foundation Trust, London, UK. ⁵School of Social Work and Art Therapies, Stenden University of Applied Sciences, Leeuwarden, Netherlands. ⁶Medical Library, Vrije Universiteit Amsterdam, Amsterdam, Netherlands. ⁷Music Therapy Dept., ArtEZ School of Music, Enschede, Netherlands. ⁸Arts Therapies, Central and North West London NHS Foundation Trust, London, UK. ⁹Department of Psychological Medicine, Imperial College London, London, UK. ¹⁰CAS Key Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Science, Beijing, China. ¹¹GAMUT - The Grieg Academy Music Therapy Research Centre, Uni Research Health, Uni Research, Bergen, Norway

Contact address: Christian Gold, GAMUT - The Grieg Academy Music Therapy Research Centre, Uni Research Health, Uni Research, Lars Hilles gate 3, Bergen, 5015, Norway. christian.gold@uni.no.

Editorial group: Cochrane Common Mental Disorders Group.

Publication status and date: Edited (conclusions changed), published in Issue 11, 2017.

Citation: Aalbers S, Fusar-Poli L, Freeman RE, Spreen M, Ket JCF, Vink AC, Maratos A, Crawford M, Chen XJ, Gold C. Music therapy for depression. *Cochrane Database of Systematic Reviews* 2017, Issue 11. Art. No.: CD004517. DOI: [10.1002/14651858.CD004517.pub3](https://doi.org/10.1002/14651858.CD004517.pub3).

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Depression is a highly prevalent mood disorder that is characterised by persistent low mood, diminished interest, and loss of pleasure. Music therapy may be helpful in modulating moods and emotions. An update of the 2008 Cochrane review was needed to improve knowledge on effects of music therapy for depression.

Objectives

1. To assess effects of music therapy for depression in people of any age compared with treatment as usual (TAU) and psychological, pharmacological, and/or other therapies.
2. To compare effects of different forms of music therapy for people of any age with a diagnosis of depression.

Search methods

We searched the following databases: the Cochrane Common Mental Disorders Controlled Trials Register (CCMD-CTR; from inception to 6 May 2016); the Cochrane Central Register of Controlled Trials (CENTRAL; to 17 June 2016); Thomson Reuters/Web of Science (to 21 June 2016); Ebsco/PsycInfo, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, and PubMed (to 5 July 2016); the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP), ClinicalTrials.gov, the National Guideline Clearing House, and OpenGrey (to 6 September 2016); and the Digital Access to Research Theses (DART)-Europe E-theses Portal, Open Access Theses and Dissertations, and ProQuest Dissertations and Theses Database (to 7 September 2016). We checked reference lists of retrieved articles and relevant systematic reviews and contacted trialists and subject experts for additional information when needed. We updated this search in August 2017 and placed potentially relevant studies in the "Awaiting classification" section; we will incorporate these into the next version of this review as appropriate.

Selection criteria

All randomised controlled trials (RCTs) and controlled clinical trials (CCTs) comparing music therapy versus treatment as usual (TAU), psychological therapies, pharmacological therapies, other therapies, or different forms of music therapy for reducing depression.

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

Data collection and analysis

Two review authors independently selected studies, assessed risk of bias, and extracted data from all included studies. We calculated standardised mean difference (SMD) for continuous data and odds ratio (OR) for dichotomous data with 95% confidence intervals (CIs). We assessed heterogeneity using the I^2 statistic.

Main results

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

Authors' conclusions

Findings of the present meta-analysis indicate that music therapy provides short-term beneficial effects for people with depression. Music therapy added to treatment as usual (TAU) seems to improve depressive symptoms compared with TAU alone. Additionally, music therapy plus TAU is not associated with more or fewer adverse events than TAU alone. Music therapy also shows efficacy in decreasing anxiety levels and improving functioning of depressed individuals.

Future trials based on adequate design and larger samples of children and adolescents are needed to consolidate our findings. Researchers should consider investigating mechanisms of music therapy for depression. It is important to clearly describe music therapy, TAU, the comparator condition, and the profession of the person who delivers the intervention, for reproducibility and comparison purposes.

PLAIN LANGUAGE SUMMARY

Music therapy for depression

Why is this review important?

Depression is a common problem that causes changes in mood and loss of interest and pleasure. Music therapy, an intervention that involves regular meetings with a qualified music therapist, may help in improving mood through emotional expression. This review might add new information about effects of music therapy in depressed individuals.

Who will be interested in this review?

Our review will be of interest for the following people: people with depression and their families, friends, and carers; general practitioners, psychiatrists, psychologists, and other professionals working in mental health; music therapists working in mental health; and mental health policy makers.

What questions does this review aim to answer?

1. Is music therapy more effective than treatment as usual alone or psychological therapy?
2. Is any form of music therapy better than another form of music therapy?

Which studies were included in the review?

We included nine studies with a total of 421 people of any age group (from adolescents to older people). Studies compared effects of music therapy versus treatment as usual, and versus psychological therapy. Additionally, we examined the differences between two different forms of music therapy: active (where people sing or play music) and receptive (where people listen to music).

What does evidence from the review tell us?

We found that music therapy plus treatment as usual is more effective than treatment as usual alone. Music therapy seems to reduce depressive symptoms and anxiety and helps to improve functioning (e.g. maintaining involvement in job, activities, and relationships). We are not sure whether music therapy is better than psychological therapy. We do not know whether one form of music therapy is better than another. The small numbers of identified studies and participants make it hard to be confident about these comparisons.

What should happen next?

Music therapy for depression is likely to be effective for people in decreasing symptoms of depression and anxiety. Music therapy also helps people to function in their everyday life. However, our findings are not complete and need to be clarified through additional research. Future trials should study depression in children and adolescents, and future trial reports should thoroughly describe music therapy interventions, other interventions, and the person who delivers these interventions.

SUMMARY OF FINDINGS

Summary of findings for the main comparison. Music therapy plus treatment as usual (TAU) versus TAU for depression (primary comparison)

Music therapy plus treatment as usual (TAU) versus TAU

Patient or population: individuals with depression

Setting: any setting

Intervention: music therapy plus treatment as usual

Comparison: treatment as usual

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with treatment as usual	Risk with music therapy				
Depressive symptoms (clinician-rated) (various scales) Up to 3 months		Mean clinician-rated depressive symptoms in the intervention group were SMD 0.98 SD lower (1.69 lower to 0.27 lower).	-	219 (3 RCTs; 1 CCT)	⊕⊕⊕⊖ MODERATE ^a	Lower score equals a better outcome. SMD corresponds to a large effect size.
Depressive symptoms (patient-reported) (various scales) Up to 3 months		Mean patient-reported depressive symptoms in the intervention group were SMD 0.85 SD lower (1.37 lower to 0.34 lower).	-	142 (3 RCTs; 1 CCT)	⊕⊕⊕⊖ MODERATE ^a	Lower score equals a better outcome. SMD corresponds to a large effect size.
Any adverse events Up to 3 months	Study population 22 per 1000	10 per 1000 (0 to 203)	OR 0.45 (0.02 to 11.46)	79 (1 RCT)	⊕⊕⊖⊖ LOW ^b	
Functioning (GAF) Up to 3 months		Mean functioning in the intervention group was SMD 0.51 SD higher (0.02 higher to 1 higher).	-	67 (1 RCT)	⊕⊕⊖⊖ LOW ^b	Higher score equals a better outcome. SMD corresponds to a moderate effect size.
Quality of life (RAND-36)		Mean quality of life in the intervention group was	-	67 (1 RCT)	⊕⊕⊖⊖	Higher score equals a better outcome.

Up to 3 months	SMD 0.32 SD higher (0.17 lower to 0.80 higher).				LOW ^b	
Leaving the study early	Study population		OR 0.49 (0.14 to 1.70)	293 (5 RCTs; 1 CCT)	⊕⊕⊕⊖ MODERATE ^a	
Up to 3 months	65 per 1000	33 per 1000 (10 to 106)				
Anxiety (HADS-A)	Mean anxiety in the intervention group was		-	195 (2 RCTs; 1 CCT)	⊕⊕⊕⊖ LOW ^{a,c}	Lower score equals a better outcome.
Up to 3 months	SMD 0.74 SD lower (1.40 lower to 0.08 lower).					SMD corresponds to a moderate effect size.

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CCT: controlled clinical trial; CI: confidence interval; GAF: Global Assessment of Functioning scale; HADS-A: Hospital Anxiety and Depression Scale - Anxiety; OR: odds ratio; RAND-36: health-related quality of life survey distributed by RAND; RCT: randomised controlled trial; RR: risk ratio; SD: standard deviation; SMD: standardised mean difference.

GRADE Working Group grades of evidence.

High quality: We are very confident that the true effect lies close to that of the estimate of the effect.

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

^aDowngraded one level for unclear randomisation, allocation concealment, blinding, missing study protocol.

^bDowngraded two levels for wide confidence intervals, although adequately powered, well-performed trial.

^cDowngraded one level for variation effect sizes, non- or small overlap confidence intervals, high heterogeneity.

Summary of findings 2. Music therapy versus psychological treatment for depression

Music therapy versus psychological treatment for depression

Patient or population: adults with depression

Setting: any setting

Intervention: music therapy

Comparison: psychological therapy (counselling, cognitive-behavioural therapy)

Outcomes	Anticipated absolute effects* (95% CI)	Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
----------	--	--------------------------	-------------------------------	---------------------------------	----------

	Risk with psychological treatment	Risk with music therapy				
Depressive symptoms (clinician-rated) (MADRS) Up to 3 months		Mean clinician-rated depressive symptoms in the intervention group was SMD 0.78 SD lower (2.36 lower to 0.81 higher).	-	11 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	Lower score equals better outcome. SMD corresponds to a large effect size.
Depressive symptoms (patient-reported) (various scales) Up to 3 months		Mean patient-reported depressive symptoms in the intervention group were SMD 1.28 SD lower (3.57 lower to 1.02 higher).	-	131 (4 RCTs)	⊕⊕⊕⊕ LOW ^{a,c}	Lower score equals better outcome. SMD corresponds to a large effect size.
Any adverse events - not reported	-	-	-	-	-	
Functioning - not reported	-	-	-	-	-	
Quality of life (Thai RAND-36) Up to 3 months		Mean quality of life in the intervention group was SMD 1.31 SD higher (0.36 lower to 2.99 higher).	-	11 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	Higher score equals better outcome.
Leaving the study early Up to 3 months	Study population		OR 0.17 (0.02 to 1.49)	157 (4 RCTs)	⊕⊕⊕⊕ MODERATE ^a	
	35 per 1000	9 per 1000 (1 to 77)				
Anxiety - not reported	-	-	-	-	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; MADRS: Montgomery-Åsberg Depression Rating Scale; OR: odds ratio; RAND-36: health-related quality of life survey distributed by RAND; RCT: randomised controlled trial; RR: risk ratio; SD: standard deviation; SMD: standardised mean difference.

GRADE Working Group grades of evidence.

High quality: We are very confident that the true effect lies close to that of the estimate of the effect.

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

^aDowngraded one level for limitations in design such as unclear allocation concealment, blinding, incomplete outcome data, missing protocol.

^bDowngraded two levels for small sample size.

^cDowngraded one level for non-overlap of confidence intervals, high heterogeneity ($P < 0.00001$); $I^2 = 96\%$.

Summary of findings 3. Active music therapy versus receptive music therapy for depression

Active music therapy versus receptive music therapy for depression

Patient or population: adults with depression

Setting: any setting

Intervention: active music therapy

Comparison: receptive music therapy

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with receptive music therapy	Risk with active music therapy				
Depressive symptoms (clinician-rated) (MADRS) Up to 3 months		Mean clinician-rated depressive symptoms in the intervention group were SMD 0.52 SD lower (1.87 lower to 0.83 higher).	-	9 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	Lower score equals a better outcome.
Depressive symptoms (patient-reported) (TDI) Up to 3 months		Mean patient-reported depressive symptoms in the intervention group were SMD 0.01 SD lower (1.33 lower to 1.3 higher).	-	9 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	Lower score equals a better outcome.
Any adverse events - not reported	-	-	-	-	-	

Functioning - not reported	-	-	-	-	-	
Quality of life (SF-36 Thai) Up to 3 months	Mean quality of life in the intervention group was SMD 0.24 SD lower (1.57 lower to 1.08 higher).		-	9 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	Higher score equals a better outcome.
Leaving the study early Up to 3 months	Study population 200 per 1000	63 per 1000 (2 to 679)	OR 0.27 (0.01 to 8.46)	10 (1 RCT)	⊕⊕⊕⊕ VERY LOW ^{a,b}	
Anxiety - not reported	-	-	-	-	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; MADRS: Montgomery-Åsberg Depression Rating Scale; OR: odds ratio; RCT: randomised controlled trial; RR: risk ratio; SD: standard deviation; SF-36: Short Form-36; SMD: standardised mean difference; TDI: Thai Depression Inventory.

GRADE Working Group grades of evidence.

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

^aDowngraded one level for limitations in design such as unclear allocation concealment, blinding, missing protocol.

^bDowngraded two levels for small sample size.

BACKGROUND

Description of the condition

Depression is a mood disorder and a common mental illness that affects more than 300 million people worldwide. Depression is projected to become the leading cause of disability by the year 2020. At its worst, depression can lead to suicide, and it has been linked to approximately 800,000 cases of suicide per year (WHO 2017).

Depression is characterised by core symptoms of persistent low mood, diminished interest, loss of pleasure, and lack of energy, along with other symptoms such as sleep disturbance, appetite and weight disturbance, poor concentration, psychomotor changes, and feelings of guilt, worthlessness, and low self-esteem (WHO 1992). Affective disturbance is at the core of depression (Gotlib 2014).

As with most psychiatric disorders, the aetiology of depression appears to be multi-factorial, involving both genetic and environmental factors, and current evidence points towards a complex interaction between neurotransmitter availability and receptor regulation within the brain (Palazidou 2012).

A major depressive disorder (MDD) can be diagnosed on the basis of one of two widely used classification systems: the World Health Organization's *International Classification of Disease, Tenth Revision (ICD-10)* (WHO 1992), and the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5)* (APA 2013). In both systems, diagnosis requires the presence of at least one core symptom for most of the day, almost every day for at least two weeks. Severity of depression - mild, moderate, or severe - is determined by the number and severity of symptoms and the degree of functional impairment. Depressive disorders are comorbid with a vast array of other psychiatric disorders, health problems, and diseases, and with many types of severely dysfunctional relationships (Richards 2014).

Depressive symptoms can become chronic and recurrent and can lead to substantial impairment in an individual's ability to function in everyday life (WHO 2012). It is important to recognise that individuals experiencing persistent depressive symptoms below the threshold for a diagnosis of MDD, previously categorised as having a 'minor depressive disorder', may find their symptoms equally as distressing and disabling (Fils 2010).

Description of the intervention

Music therapy can be defined as "the professional use of music and its elements as an intervention in medical, educational, and everyday environment with individuals, groups, families, or communities, who seek to optimise their quality of life and improve their physical, social, communicative, emotional, intellectual and spiritual health and well-being. Research, practice, education, and clinical training in music therapy are based on professional standards according to cultural, social, and political contexts (WFMT 2011)".

Music therapy is delivered in a variety of contexts (e.g. mental health, medical, community, developmental, and educational contexts) (Edwards 2016). Music therapy can be delivered to groups or individually, and participants may drop into an open group (e.g. in a psychiatric ward setting) or may be referred and assessed by

the music therapist before placement in individual treatment or closed group therapy.

Music therapy approaches across the world have emerged from diverse traditions such as behavioural, psychoanalytical, educational, or humanistic models of therapy. Music therapy methods can be active and/or receptive and include verbal processing of feelings and experiences. In active methods (improvisational, re-creative, compositional), participants are 'making music'; and in receptive music therapy, participants are 'receiving' (e.g. listening to) music (Bruscia 2014; Wheeler 2015). Improvisation might be the active method most commonly used in adult mental health (Gold 2009). Often, different methods and techniques are combined in the same therapy. In recent years, specialisations have evolved (e.g. neurologic music therapy (NMT)), to improve cognitive, sensory, and motor functioning (Thaut 1999; Thaut 2014).

The aim of music therapy is to improve health via therapeutic change agents such as music, relationships, and reflections. In both active and receptive methods, the music therapist and participants are actively involved and musical interaction takes place between therapist and patient, or between therapist and group. Sessions are carried out within a structured therapeutic framework that serves as the basis for the music therapy intervention. Music therapy training is delivered at the Master's level, at the Bachelor's level, or at completion of extended undergraduate degree programmes.

Evidence-based practice (EBP) is receiving increased attention in music therapy (Edwards 2016; Silverman 2015; Wigram 2014). This work involves integration of the best available research evidence, the therapist's clinical expertise, and the patient's unique values and circumstances (Hoffmann 2013; Straus 2011). Cochrane reviews are an important source of information on EBP of music therapy and have been conducted to provide a guide for music therapy treatment, music therapy education, and development of meaningful guidelines (Edwards 2016).

How the intervention might work

Music is a powerful stimulus that evokes and modulates moods and emotions (Baumgartner 2006; Baumgartner 2006a; Koelsch 2015); music is often used intentionally to regulate moods and emotions in daily life (Juslin 2010). Juslin reports that music may influence motivation, self-image, and coping mechanisms around difficult feeling states; in some forms of music therapy, the therapist explicitly helps individuals process feelings that have been aroused by music (Juslin 2010). Other possible mechanisms of action have been described by Maratos and colleagues (Maratos 2011), who suggest that high levels of engagement are seen in music therapy trials because music-making is largely a social, pleasurable, and meaningful activity, and that therapists use these affordances in a variety of ways to help people.

In active music therapy, the music therapist uses improvisational, re-creative, or compositional methods. Improvisational methods in music therapy include any experience by which the patient actively participates in spontaneous music-making with the music therapist or with other individuals while playing instruments, vocalising, or sounding their bodies or other objects. Re-creative methods involve reproduction of pre-composed musical material vocally or instrumentally. With compositional methods, the process of composition helps patients generate and refine personal opinions,

ideas, and fantasies, and puts them into a workable musical structure (Bruscia 2014).

The putative mechanism of action in active music therapy for depression is that the co-created musical relationship between the therapist and the patient or the patient group enables the patient to experience and to gain insight into relational and emotional problems by talking about the musical dialogue (Nordoff 1977; Odell-Miller 1995); to organise, problem-solve, take responsibility, communicate, improve attention, and experience feelings of self-worth and achievement (Bruscia 2014); to meet a variety of emotional states and physical needs (Wheeler 2015a); and to express emotions by creating musical sounds and structures (Punkanen 2011). Synchronisation and attuned musical expression can modulate levels of stress and anxiety. Intersubjective moments form the basis for development of subjectivity, togetherness, creation of meaning, and possibilities of actions and language (Trondalen 2016).

Active music therapy is likely to be influenced by psychodynamic, cognitive-behavioural, or humanistic traditions, and sometimes is combined with other forms of art, such as writing, drawing, and movement.

In receptive music therapy, the music therapist uses methods and techniques by which the patient is a recipient of the music experience (Grocke 2007). The music in music therapy may consist of live or recorded improvisations, performances, or compositions presented in various styles, such as classical, rock, jazz, and country. The patient is encouraged to listen to music and to respond silently, verbally, or in another modality. Methods include music relaxation, song discussion, listening to the patient's preferred music, and imaginal listening, for which Guided Imagery and Music (GIM) is an internationally well-known method (Bruscia 2014).

The putative mechanism of action in receptive music therapy for depression is that different types of musical stimuli directly induce shifts in consciousness, stimulate imaging and senses, induce moods and evoke feelings, influence the body, stimulate or sedate physical or mental energy, motivate or discourage physical activity, motivate interaction, and evoke introspection, reflection, and insight (Bruscia 2015). It has been suggested that receptive music therapy can help reduce stress, soothe pain, and energise the body (Bruscia 1991; Standley 1991). Intentional listening via images enables the patient to focus, relax, experience, and share experiences, and leads to reduced anxiety (Grocke 2007; Grocke 2015).

Receptive music therapy is also likely to be influenced by cognitive-behavioural, humanistic, or psychodynamic traditions and may involve an adjunctive activity performed whilst listening, such as relaxation, meditation, movement, drawing, or reminiscence.

Why it is important to do this review

This is an update of a Cochrane review first published in 2008 (Maratos 2008). Authors of the original review stated that music therapy has been offered to people with mental disorders across the world, yet the evidence base of music therapy for depression had not been examined. Trials were not reviewed, and randomised controlled trials (RCTs) included small sample sizes, making outcomes difficult to gauge accurately. Participant groups were often heterogeneous, and approaches to and methods of music

therapy varied. Since the first review was published, several larger, more robust RCTs of music therapy for depression have been reported, and an update of the 2008 systematic review has become necessary to assess available evidence on music therapy with the goals of understanding its effectiveness for patients with depression and comparing effects of different forms of music therapy.

Maratos and colleagues included five studies in the first version of this review (Chen 1992; Hanser 1994; Hendricks 1999; Radulovic 1996; Zerhusen 1995); review authors concluded at that time that music therapy was accepted by people with depression and was associated with improvement in depressive symptoms. Because of the small number and low methodological quality of identified studies, review authors could not confidently provide conclusions about the effectiveness of music therapy. Those review authors suggested that high-quality trials evaluating effects of music therapy on depression were required (Maratos 2008). Additionally, Maratos and colleagues did not conduct a meta-analysis owing to heterogeneity of studies.

To date, several other trials related to music therapy and depression have been conducted, but they have not yet been systematically reviewed. Authors of a narrative review on music therapy and depression concluded that current research regarding music therapy and depression suggests a significant and persistent reduction in patients' symptoms, along with improvements in quality of life (Assche 2015). However, review authors did not include all relevant data from the most recent trials and did not conduct a meta-analysis. Also, the authors of another recent systematic review and meta-analysis concluded that music therapy reduces depressive symptoms, but that review was limited to studies of older adults (Zhao 2016).

We prepared the current update to provide up-to-date conclusions on the effectiveness of music therapy for individuals of all age groups with a diagnosis of depression, in any setting. We also aimed to compare different music therapy methods and approaches to enable better understanding of the relationship between process and outcomes. Finally, results of this systematic review might lead to new implications for research, guidelines, clinical practice, policy, and music therapy education.

OBJECTIVES

1. To assess effects of music therapy for depression in people of any age compared with treatment as usual (TAU) and psychological, pharmacological, and/or other therapies.
2. To compare effects of different forms of music therapy for people of any age with a diagnosis of depression.

METHODS

Criteria for considering studies for this review

Types of studies

All randomised controlled trials (RCTs) and clinical controlled trials (CCTs), published and unpublished, undertaken in any country, were eligible for inclusion.

Types of participants

Participant characteristics

People of any age, gender, and ethnicity, in any country.

Diagnosis

The primary diagnosis for trial participants was clinical depression, as classified by the *International Classification of Diseases, Tenth Revision (ICD-10)* (WHO 1992), or the *Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III)* (APA 1980), *DSM, 3rd revised edition (DSM-III-R)* (APA 1987), *DSM, 4th edition (DSM-IV)* (APA 1994), *DSM, 4th text revised edition (DSM-IV-TR)* (APA 2000), or *DSM, 5th edition (DSM-5)* (APA 2013). Review authors identified this diagnosis by (1) performing a psychological assessment, or making a psychiatric diagnosis; (2) scoring above a cutoff score on a validated self-rating depression questionnaire; or (3) scoring above a cutoff score on a validated clinician-rated instrument.

Comorbidities

Given that depression is often related to other health problems and may co-occur with other diagnoses, we accepted for inclusion any kind of comorbidity such as anxiety disorder, alcohol abuse, personality disorder, dementia, autism, schizophrenia, psychosis, or somatoform comorbidity.

Setting

We included all settings in this review.

Types of interventions

Music therapy

Any form of music therapy (e.g. improvisational, re-creative, compositional, or receptive methods) provided alone or in addition to any form of treatment as usual (TAU), as defined by trialists.

To be included, music therapy had to be provided by a trained therapist or health professional. To be classified as well-defined music therapy, a coherent theoretical framework underpinning the intervention must have been described. Trials involving trainees in formal music therapy training programmes were considered, as were programmes provided by music therapists without formal training. Some untrained practitioners call their practice music therapy; owing to the relative newness of music therapy as a regulated profession, we included these studies in this review as well. In summary, to be classified as well-defined music therapy, the intervention had to comprise the following features.

1. Sessions were carried out within a structured therapeutic framework.
2. Some kind of musical interaction took place between therapist and participant, or between therapist and members of a group (e.g. improvisation, other forms of musical expression, listening to music).
3. The aim of therapy was to improve health.
4. The main therapeutic change agent could be described as the music; the relationship; or reflections induced by the music.

Comparator interventions

1. TAU (as defined by trialists)
2. Psychological therapies

3. Pharmacological therapies
4. Another form of music therapy

TAU, which can be defined as the combination of different therapies or activities (e.g. psychotherapy, medication, collaborative care, occupational therapy, re-creative activities), represents standard treatment for individuals with mental health conditions, such as depression.

Main comparisons

1. Music therapy alone versus TAU
2. Music therapy plus TAU versus TAU alone
3. Music therapy alone versus psychological therapies
4. Music therapy alone versus pharmacological therapies
5. One form of music therapy versus another form of music therapy

Types of outcome measures

Primary outcomes

1. Depressive symptoms: We assessed depressive symptoms according to continuous validated depression measures. We analysed clinician-rated scales, such as the Hamilton Rating Scale for Depression (HAM-D; Hamilton 1960), separately from patient-reported scales, such as the Beck Depression Inventory (BDI; Beck 1961).
2. Adverse effects: We assessed the number of adverse events.

Secondary outcomes

1. Social and occupational functioning, as measured by a validated tool, such as the Social Functioning Questionnaire (SFQ; Tyrer 2005)
2. Self-esteem, as measured by a validated tool, such as the Rosenberg Self-Esteem Inventory (RSE; Rosenberg 1979)
3. Quality of life, as assessed on a validated measure scale, such as EuroQol (Brooks 1995)
4. Costs or cost-effectiveness (or a combination) of treatment, as assessed by any type of qualitative or quantitative analysis, such as TiC-P (commonly applied questionnaire on healthcare utilisation and productivity losses in patients with a psychiatric disorder) (Bouwman 2013)
5. Leaving the study early owing to non-acceptability or tolerability of treatment for any reason, based on any type of qualitative or quantitative analysis
6. Anxiety, as measured by a validated assessor-rating scale, such as the Hamilton Anxiety Scale (HAM-A; Hamilton 1959), or a self-rating scale, such as the Beck Anxiety Inventory (BAI; Beck 1988)
7. Satisfaction with treatment, as measured by validated tools, such as the howRwe questionnaire (Benson 2014)

Timing of outcome assessment

We included in the review any duration of treatment period and all time frames of outcome assessment. We grouped time points of outcome assessments and classified them into short-term (up to three months from randomisation), medium-term (up to six months), and long-term (longer than six months) outcomes. We decided that short-term outcomes were most important to include in the 'Summary of findings' tables. If a study reported more than one time point within the considered time frame, we chose the latest time point for analyses.

Hierarchy of outcome measures

If a study used multiple measures per outcome, we planned to give preference to measures of validated instruments, such as the Montgomery-Åsberg Depression Rating Scale (MADRS; [Montgomery 1979](#)), the HAM-D ([Hamilton 1960](#)), the Beck Depression Inventory (BDI; [Beck 1961](#); [Beck 1988](#)), the Inventory of Depressive Symptomatology (IDS; [Rush 1986](#)), and the Symptom Checklist-90-Revision (SCL-90-R; [Derogatis 1977](#)). If several measures assessed the same outcomes in one particular study, we prioritised the measures with highest validity and reliability. Rating scales were completed by participants, their significant others, an independent observer who may or may not have been masked, or music therapists conducting the music therapy. We decided to report both clinician-rated and patient-reported outcomes in the 'Summary of findings', when available.

Search methods for identification of studies

Specialised Register of the Cochrane Common Mental Disorders Group (CCMD-CTR)

The Cochrane Common Mental Disorders Group maintains a specialised register of RCTs - the CCMD-CTR. This register contains over 40,000 reference records (reports of RCTs) for anxiety disorders, depression, bipolar disorder, eating disorders, self-harm, and other mental disorders within the scope of this Group. The CCMD-CTR is a partially studies-based register with more than 50% of reference records tagged to 12,500 individually PICO-coded study records. We collated reports of trials for inclusion in the register from (weekly) generic searches of MEDLINE (1950-), Embase (1974-), and PsycINFO (1967-); through quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL); and by review-specific searches of additional databases. We also sourced reports of trials from international trial registries and drug companies, and handsearched key journals, conference proceedings, and other (non-Cochrane) systematic reviews and meta-analyses. Details of [CCMD's core search strategies](#) (used to identify RCTs) can be found on the Group's website; an example of the core MEDLINE search is displayed in [Appendix 1](#).

Electronic searches

We developed a review protocol that was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (www.prisma-statement.org). Sarah Dawson (SD), Trials Search Co-ordinator, Cochrane Common Mental Disorders (CCMD) Group, searched CCMD-CTR and the Wiley/Cochrane Library from inception. We searched Thomson Reuters/Web of Science, Ebsco/PsycInfo, Ebsco/Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase.com, PubMed, the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP), ClinicalTrials.gov, the National Guideline Clearing House, OpenGrey, Digital Access to Research Theses (DART)-Europe E-theses Portal, Open Access Theses and Dissertations, and the ProQuest Dissertations and Theses Database from inception (JCFK, SA). We also searched CCMD-CTR to 6 May 2016; the Wiley/Cochrane Library to 17 June 2016 (SD); Thomson Reuters/Web of Science to 21 June 2016; Ebsco/PsycInfo,

Ebsco/CINAHL, Embase.com, and PubMed to 5 July 2016; WHO ICTRP, ClinicalTrials.gov, the National Guideline Clearing House, and OpenGrey to 6 September 2016; and DART-Europe E-theses Portal, Open Access Theses and Dissertations, and the ProQuest Dissertations and Theses Database to 7 September 2016 (JCFK, SA). We used the following terms (including synonyms and closely related words) as index terms or free-text words: 'depression' or 'mood disorders' or 'affective disorders' and 'music' and 'RCT's'. We have provided full search strategies for all databases in the [Appendices](#). We performed a further search in August 2017 ([Appendix 3](#)). We have added those results to 'Studies awaiting classification' and will incorporate them into this systematic review at the next update.

Searching other resources

Reference lists

We checked the reference lists of all included studies and relevant systematic reviews to identify additional studies missing from the original electronic searches (e.g. unpublished or in-press citations).

Personal communication

We contacted trialists and subject experts for information on unpublished or ongoing studies, or to request additional trial data.

Other resources

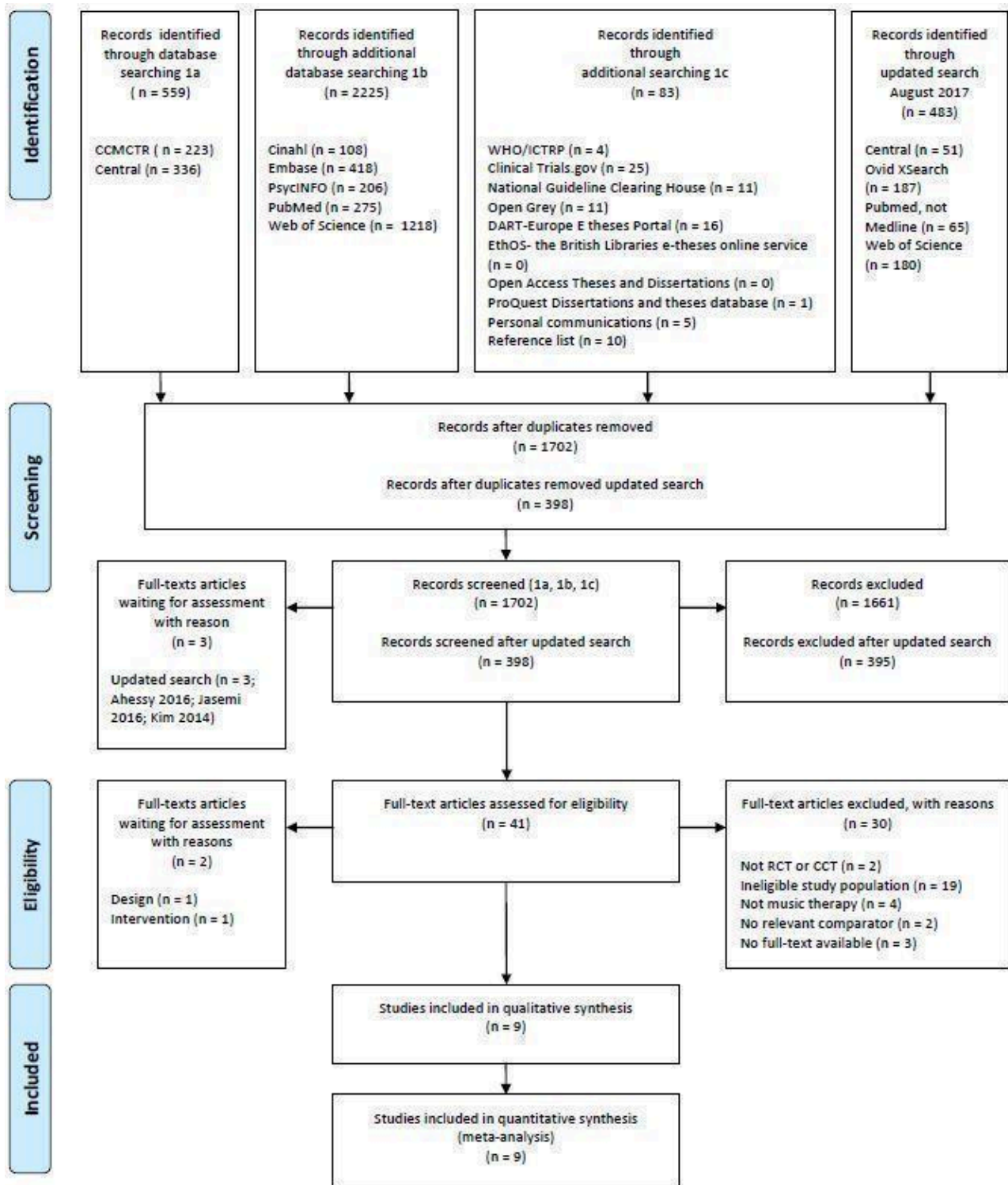
We planned to search the International Music Therapy Research Register, which is specialised in music therapy studies, but this register was no longer available. We did not handsearch specialist journals in music therapy for this review update because all journals are now available online, and articles could be obtained in the databases mentioned above.

Data collection and analysis

Selection of studies

We considered studies for inclusion if they had an RCT or CCT design. We downloaded all search results into EndNote and Review Manager ([RevMan 2014](#)). One review author (SA) removed exact duplicates. Two review authors (SA, RF) independently screened remaining titles and abstracts for inclusion to select all potentially relevant studies. To prevent bias in assessment, the first review author was knowledgeable about music therapy, and the second review author was knowledgeable about mental health care. We identified multiple reports related to the same study to determine which studies were eligible for inclusion. If uncertainties about duplication remained, review authors contacted authors of study reports. We coded all articles as potentially eligible or not eligible. After reading full-text articles, the same review authors independently decided whether studies met the inclusion criteria. We resolved disagreements through discussion or by consultation with a third review author (AV). We have shown the selection process in a PRISMA flow diagram ([Figure 1](#)). We listed included studies under [Characteristics of included studies](#); we identified potentially relevant studies that we ultimately excluded under [Characteristics of excluded studies](#), and provided the primary reason for exclusion.

Figure 1. PRISMA flow diagram.



Data extraction and management

Two review authors (SA, RF) independently extracted study characteristics and outcome data from included studies, using a standardised data extraction form in Word, which was piloted at seven studies before use, and double-entered the data into Review Manager (RevMan 2014) software. In cases of disagreement

between review authors, we sought clarification from trial investigators. We obtained missing information from investigators when possible (SA). We resolved disagreements by discussion or through consultation with a third review author (AV). If outcome data were not reported in a usable way, we mentioned this in the notes in the [Characteristics of included studies](#) table. SA transferred

data into the Review Manager file (RevMan 2014). SA and RF double-checked whether data were correctly entered. Other review authors (LF, CG) checked study characteristics for accuracy against the trial report and extracted the following study characteristics.

1. *Source*: study ID, report ID, review author ID, date of study, citation and contact details.
2. *Methods*: study design, power calculation, date of study, duration of study, sequence generation, allocation sequence concealment, blinding, other concerns of bias, ethics.
3. *Participants*: total number, setting, diagnostic criteria, severity of depression, number of prior depressive episodes, age, sex, country, comorbidity, sociodemographics, ethnicity.
4. *Intervention*: total number of groups, music therapy method, intensity of sessions, duration of session, duration of treatment, individual or group, therapist's training, therapist's post-qualifying experience, monitoring of adherence to music therapy paradigm/protocol, comparison, concomitant treatment, medication, excluded interventions, integrity of interventions.
5. *Outcomes*: primary outcomes, secondary outcomes, collected and reported (for scales) upper and lower limits and whether high or low score is good, time points reported.
6. *Results*: number of participants allocated to each intervention group, total sample size, summary data for each intervention group (2 × 2 table for dichotomous data; means and standard deviations (SDs) for continuous data).
7. *Miscellaneous*: funding for trial, notable conflicts of interest of trial authors, other and key conclusions (Higgins 2015).

Assessment of risk of bias in included studies

We assessed risk of bias according to the new Cochrane method (Higgins 2015). Two review authors (SA, RF) independently assessed risk of bias for each included study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions*, to prevent overestimation or underestimation of the true intervention effect (Higgins 2015). We assessed risk of bias according to the following domains.

1. Random sequence generation.
2. Allocation concealment.
3. Blinding of participants.
4. Blinding of personnel.
5. Outcome assessment.
6. Incomplete outcome data.
7. Selective outcome reporting.
8. Other potential threats to validity.

We judged each potential source of bias as having high, low, or unclear risk. We resolved disagreements by discussion and consensus or, in cases of no consensus, by involving a third review author (AV). We provided a supporting quotation from the study report, together with a justification for judgements, in the [Risk of bias in included studies](#) table. We summarised risk of bias judgements across different studies for each of the domains listed. In the case that information on risk of bias was related to unpublished data or to correspondence with a trialist, we planned to quote this in the 'Risk of bias' table. When considering conclusions on treatment effects, we took into account risk of bias of trials that contributed to that outcome (Higgins 2015).

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

For cluster-randomised trials, we considered particular biases (e.g. recruitment bias), along with baseline imbalance, loss of clusters, incorrect analysis, and comparability with individually randomised trials. To assess risk of bias in cross-over trials, we took the following topics into account: whether the cross-over design was suitable, whether a carry-over effect was evident, whether only first period data were available, whether findings on analysis were incorrect, and whether results were comparable with those reported by parallel-group trials (Higgins 2015).

Measures of treatment effect

Dichotomous data

We analysed dichotomous outcome data using odds ratios (ORs) and calculated 95% confidence intervals (CIs) for each effect estimate.

Continuous data

We planned to analyse continuous outcomes as mean differences (MDs) if outcomes were measured on the same scale, and as standardised mean differences (SMDs) if outcomes were measured on different scales. We had to combine different scales for all outcomes and therefore used only SMDs. We calculated 95% confidence intervals for each effect estimate. Because baseline group means varied across studies, we examined change scores (differences between baseline and treatment end or follow-up). We decided that treatment, participants, and the underlying clinical question were sufficiently similar for pooling, and therefore undertook meta-analysis. In case multiple trial arms were reported in a single trial, we included only relevant arms (Higgins 2015).

We planned to narratively describe skewed data reported as medians and interquartile ranges.

Unit of analysis issues

Cluster-randomised trials

To incorporate cluster-randomised trials, we intended to reduce the size of each trial to its 'effective sample size'. If intracluster correlation coefficients were not reported, we planned to find external estimates from similar studies.

Cross-over trials

To avoid carry-over effects, we planned to include data from only the first period of cross-over studies. We detected no cross-over trials.

Studies with multiple treatment groups

We treated with care included studies that compared more than two intervention groups. To overcome a unit of analysis error, we combined all relevant experimental intervention groups into a single group, and all relevant control intervention groups into a single control group, to create a single pair-wise comparison (Higgins 2015).

Dealing with missing data

We contacted trial authors to verify key study characteristics and to obtain missing numerical outcome data when possible (e.g. when a study was identified as abstract only, when a study was identified as full text and data regarding an outcome of interest were not reported). We assumed that dropouts from treatment

were treatment failures unless trialists expressly stated otherwise. We used intention-to-treat (ITT) analysis when data were missing for participants who dropped out of trials before completion. We documented all correspondence with trialists (Higgins 2015).

Assessment of heterogeneity

We assessed clinical and methodological heterogeneity by examining the characteristics of studies. We reported similarities between interventions, participants, design, and outcomes in the [Included studies](#) subsection. We visually inspected forest plots to investigate the possibility of statistical heterogeneity. To assess whether observed differences in results were compatible with chance alone, we applied the Cochrane χ^2 . We regarded a P value less than 0.10 as statistically significant, which means that evidence suggested heterogeneity of intervention effects. We took care in interpreting the χ^2 test because it has low power in cases of a small sample size. As heterogeneity will always exist, we decided to quantify inconsistency by applying the I^2 statistic to estimate the observed degree of heterogeneity (Higgins 2015).

Assessment of reporting biases

To avoid publication bias, we obtained and included data from unpublished trials and took into account that unpublished studies could introduce new bias through, for example, poor methodological quality or missing data. If we had identified more than ten studies, we planned to create a funnel plot to detect possible publication bias (in the absence of bias, the plot should approximately resemble a symmetrical funnel). If we thought that asymmetry of the funnel (bias) was explained by other reasons, such as lack of unpublished smaller studies (Higgins 2015), selection bias, poor methodological quality, or chance (Egger 1997; Sterne 2000), we planned to report this information in the [Discussion](#) section.

Data synthesis

We analysed data using Review Manager software and pooled data for meta-analysis when studies assessed similar treatments and had similar outcomes (RevMan 2014). We conducted a meta-analysis using available or calculated standardised mean differences (SMDs) for continuous outcomes, and odds ratios (ORs) for dichotomous outcomes. We chose SMD because we expected many different scales to be used across studies, and because existing guidelines facilitate clinical interpretation, particularly when lesser-known scales are used (Cohen 1988). We expected that true effects for all included studies would not be the same; therefore, we planned to analyse data by applying a random-effects model to combine results and produce a summary of findings of all included studies. We included in the results measures of uncertainty, such as 95% confidence intervals and estimates of T^2 and I^2 . When suitable numerical data were not available for meta-analysis, or when meta-analyses were considered inappropriate to yield clinically meaningful results, we planned to produce only narrative summaries of all included studies to provide a systematic assessment of available evidence. We produced a descriptive paragraph for each study, presenting all studies consistently (e.g. using the same elements of information for each study and in the same order) (Higgins 2015).

Subgroup analysis and investigation of heterogeneity

When we identified heterogeneity, we planned to present the results of subgroups separately. We planned to examine clinical heterogeneity according to the following.

1. Participant characteristics - age, length of depression history, comorbidity.
2. Duration of treatment - 20 sessions versus more than 20 sessions.
3. Modality of treatment - individual versus group therapy.
4. Type of music therapy.

Sensitivity analysis

When applicable, we planned to conduct the following sensitivity analyses for primary outcomes to examine the robustness of observed findings.

1. Excluding studies with high risk of bias. We defined a study as having an overall "high risk of bias" if we judged that it had high risk of bias in at least one domain.

'Summary of findings' tables

We assessed the quality of the evidence by using the GRADE approach for our main comparisons and outcomes (as listed in [Types of outcome measures](#)). We planned to create 'Summary of findings' tables to provide key information regarding the quality of evidence and the magnitude of effect of interventions examined, and to summarise available data on all outcomes for a given comparison. To ensure consistency of use across reviews, we prepared standard Cochrane 'Summary of findings' tables by using [GRADEproGDT 2015](#) and including the following elements: comparison, population, setting, intervention, comparator intervention, primary and secondary outcomes, burden of outcomes (illustrative risk, or illustrative mean, or control intervention; source of any external information used in this column), absolute and relative magnitude of effect, numbers of participants and studies, rating of evidence quality, and space for comments. For every comparison, we produced another table.

We decided that music therapy versus treatment as usual was our main comparison. In the 'Summary of findings' table, we reported the seven main outcomes. Primary outcomes were short-term clinician-rated and patient-reported depression and adverse events. Secondary outcomes included functioning, quality of life, leaving the study early, and anxiety. We created our 'Summary of findings' tables before writing the abstract, discussion, and conclusions to consider how risk of bias in studies contributing to each outcome affected mean treatment effects and our confidence in mean treatment effects (Higgins 2015).

RESULTS

Description of studies

Results of the search

In total, we identified 2867 records. Of these, we retrieved 2784 records through database searching. We found 83 additional references by searching the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) (n = 4), ClinicalTrials.gov (n = 25), the National Guideline Clearing House (n = 11), OpenGrey (n = 11), the Digital Access to Research Theses

(DART)-Europe E-theses Portal (n = 16), the ProQuest Dissertations and Theses database (n = 1), personal communications (n = 5), and published systematic reviews on music therapy for depression (n = 10). We found no additional references in the Electronic Theses Online Service (EthOS), the British Libraries e-thesis online service, Open Access Theses and Dissertations, or the reference lists of included studies.

After removing 1165 duplicates, we screened 1702 titles and abstracts and excluded 1661 irrelevant records. We retrieved full-text reports for the remaining 41 studies. After reading the full texts, we excluded 30 studies, as they did not meet review eligibility criteria. We have provided primary reasons for exclusion in the [Characteristics of excluded studies](#) table and in [Figure 1](#). Two studies are awaiting assessment owing to insufficient information on design, intervention, and analysis (see [Characteristics of studies awaiting classification](#)). We added to the [Studies awaiting classification](#) section three study reports obtained from an updated search conducted in August 2017 ([Ahessy 2016](#); [Jasemi 2016](#); [Kim 2014](#)). In preparing this review, we identified no records of ongoing studies. Finally, we included nine trials in both qualitative and quantitative syntheses.

Included studies

We included in the present review a total of nine studies with 421 participants (of whom we included 411 in the meta-analyses) (see [Characteristics of included studies](#)). Of these, we had included five studies in the first version of this review ([Chen 1992](#); [Hanser 1994](#); [Hendricks 1999](#); [Radulovic 1996](#); [Zerhusen 1995](#)) ([Maratos 2008](#)); we added the other four studies to the current update ([Albornoz 2011](#); [Atiwannapat 2016](#); [Erkkilä 2011](#); [Hendricks 2001](#)).

Design

Eight of the included studies were randomised trials ([Albornoz 2011](#); [Atiwannapat 2016](#); [Chen 1992](#); [Erkkilä 2011](#); [Hanser 1994](#); [Hendricks 1999](#); [Hendricks 2001](#); [Zerhusen 1995](#)), and one was a controlled clinical trial ([Radulovic 1996](#)). All were single-centre trials.

Participants

Participants across all studies had received a diagnosis of a depressive disorder. Methods of diagnosing depression varied across studies. Three studies performed diagnosis according to *ICD-10* criteria ([Atiwannapat 2016](#); [Erkkilä 2011](#); [Radulovic 1996](#)); one study performed diagnosis according to *DSM-III-R* criteria ([Chen 1992](#)). [Atiwannapat 2016](#) also required a score of 7 or above on the MADRS. Other studies confirmed the presence of a depressive disorder exclusively by using a validated scale, such as the BDI ([Albornoz 2011](#); [Hendricks 1999](#); [Hendricks 2001](#); [Zerhusen 1995](#)), or the Schedule of Affective Disorders (SADS; [Hanser 1994](#)). [Chen 1992](#) reported that some participants had a history of bipolar disorder.

In [Albornoz 2011](#), depression was not the primary diagnosis but was diagnosed in comorbidity with a substance disorder. Another psychiatric comorbidity across included studies was represented by anxiety ([Erkkilä 2011](#)). In [Chen 1992](#) and [Radulovic 1996](#), anxiety was an outcome, but whether it was diagnosed was not reported.

Information regarding the history of depression was available only for [Atiwannapat 2016](#), with a mean clinical history of 9.07 years.

Ages of participants were heterogeneous among the included studies. In particular, two studies recruited only adolescents aged 14 to 18 years ([Hendricks 1999](#); [Hendricks 2001](#)). Three studies exclusively included adults aged 18 to 65 years ([Atiwannapat 2016](#); [Erkkilä 2011](#); [Radulovic 1996](#)). Three studies focused on a geriatric population of participants aged 60 to 86 years ([Chen 1992](#); [Hanser 1994](#); [Zerhusen 1995](#)). Finally, [Albornoz 2011](#) investigated depression in both adolescents and adults, with an age range of 16 to 60 years.

In seven studies, samples included participants of both sexes; prevalence of males ranged from 10.53% in [Hendricks 1999](#) to 49.21% in [Hendricks 2001](#). [Albornoz 2011](#) recruited only male participants. [Zerhusen 1995](#) did not provide information regarding the sex of participants.

Sample size

The total number of participants enrolled in the nine studies was 421; however, one study randomised 10 participants to an arm that was outside the scope of this review ([Hanser 1994](#)). Study sizes varied from 14 participants in [Atiwannapat 2016](#) to 79 participants in [Erkkilä 2011](#).

Setting

Five of the included trials recruited participants from mental health services ([Albornoz 2011](#); [Atiwannapat 2016](#); [Erkkilä 2011](#); [Hanser 1994](#); [Radulovic 1996](#)). [Zerhusen 1995](#) enrolled participants who were hospitalised in a nursing home, and participants in [Chen 1992](#) resided in a geriatric facility. Two studies recruited participants from high schools ([Hendricks 1999](#); [Hendricks 2001](#)).

Four studies took place in North America, more precisely, in the United States ([Hendricks 1999](#); [Hendricks 2001](#); [Hanser 1994](#); [Zerhusen 1995](#)). Two trials took place in Asia: [Chen 1992](#) was conducted in China, and [Atiwannapat 2016](#) in Thailand. Two studies were realised in European countries: [Erkkilä 2011](#) was conducted in Finland, and [Radulovic 1996](#) took place in Serbia. Finally, one study was conducted in South-America - Venezuela ([Albornoz 2011](#)).

Interventions

We included studies for the following comparisons: music therapy plus TAU versus TAU alone, music therapy alone versus psychological therapies, and one form of music therapy versus another form of music therapy. We found no studies comparing music therapy alone versus TAU or pharmacological therapies.

Music therapy

Music therapy methods were heterogeneous across the included studies. In three studies, researchers adopted an active music therapy method ([Albornoz 2011](#); [Chen 1992](#); [Erkkilä 2011](#)). Two studies took into consideration a combination of active and receptive music therapy ([Hanser 1994](#); [Hendricks 1999](#)). Of note, [Albornoz 2011](#) provided a specific music therapy intervention by combining music, movement, poetry, psychodrama, and public performance (Artistic Music Therapy; MAR). The intervention was more thoroughly described in a separate publication ([Albornoz 2016](#)). [Hendricks 2001](#), [Radulovic 1996](#), and [Zerhusen 1995](#) evaluated receptive music therapy. In [Atiwannapat 2016](#), two of the three arms of treatment involved music therapy: one arm, active music therapy, and the other arm, receptive music therapy.

In seven studies, music therapy sessions were conducted in a group setting (Albornoz 2011, Atiwannapat 2016, Chen 1992, Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995). Two studies provided individual sessions (Erkkilä 2011; Hanser 1994).

In four studies, trained music therapists provided music therapy (Albornoz 2011; Atiwannapat 2016; Hanser 1994; Erkkilä 2011). In the remaining studies it was not clear whether a trained music therapist provided therapy, although trained therapists, counsellors, or other healthcare professionals were mentioned (Chen 1992; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995).

Lengths of intervention varied from six weeks in Radulovic 1996 to 12 weeks in Atiwannapat 2016 and Hendricks 2001, with the total number of sessions ranging from eight in Hanser 1994 to 48 in Chen 1992. The duration of each session varied from 20 minutes in Radulovic 1996 to 120 minutes in Albornoz 2011.

Comparator interventions

Six studies had one comparator (Albornoz 2011; Chen 1992; Erkkilä 2011; Hendricks 1999; Hendricks 2001; Radulovic 1996). Three studies each included three treatment arms (Atiwannapat 2016; Hanser 1994; Zerhusen 1995).

Five studies compared music therapy versus treatment as usual (Albornoz 2011; Chen 1992; Erkkilä 2011; Radulovic 1996; Zerhusen 1995). Extent of treatment as usual varied both between and within studies, but treatment commonly included antidepressant medication and group or individual psychotherapy. Four studies mentioned antidepressant medication (Albornoz 2011; Chen 1992; Erkkilä 2011; Radulovic 1996). Two studies mentioned group or individual psychotherapy (Albornoz 2011; Erkkilä 2011). Two studies mentioned rehabilitation services and related activities (Albornoz 2011; Zerhusen 1995). Hanser 1994 mentioned no specific therapy as researchers used a waiting list, but all participants were patients from a family research and resource centre.

Four studies used active comparators, which included cognitive-behavioural therapy in Hendricks 1999, Hendricks 2001, and Zerhusen 1995, and counselling in Atiwannapat 2016. Atiwannapat 2016 compared two types of music therapy (active and receptive) versus each other. We excluded self-directed music listening from Hanser 1994 as a comparator because this was outside the scope of the review.

Outcomes

Primary outcomes

Depression symptoms

All studies assessed depression symptoms using different scales. Two studies used only a clinician-rated depression scale (Chen 1992; Erkkilä 2011); four used only a self-reported depression scale (Hanser 1994; Hendricks 1999; Hendricks 2001; Zerhusen 1995); and three used both types (Albornoz 2011; Atiwannapat 2016; Radulovic 1996).

Researchers used two clinician-rated depression scales.

1. The Hamilton Rating Scale for Depression (various abbreviations are encountered: HRSD, HDRS, HAM-D; in this review, abbreviated as HAM-D) is a measure of depressive symptoms

in adults with a diagnosis of depressive disorder. The original version (Hamilton 1960) contained 17 items, but four questions were added to later revisions (Hamilton 1966; Hamilton 1967; Hamilton 1969; Hamilton 1980). Each item on the questionnaire is scored on a 3- or 5-point scale. Total score can range from 0 to 54 points, with scores from 7 to 17 indicating mild depression, from 18 to 24 indicating moderate depression, and above 24 indicating severe depression. Three studies used the HAM-D. Albornoz 2011 used the original 17-item version, and Chen 1992 and Radulovic 1996 did not specify which version investigators used. Although this is one of the most widely used scales, information on its typical standard deviation (SD) in people with depression is not available from the original validation studies. The included studies for which SDs could be derived showed SDs around 10 (Albornoz 2011; Chen 1992), and we imputed this value when the SD was missing (see notes in Characteristics of included studies).

2. The Montgomery-Åsberg Depression Rating Scale (MADRS) is a ten-item questionnaire used to measure the severity of depressive episodes in people with mood disorders. Each item yields a score of 0 to 6, and the overall score can range from 0 to 60 (Davidson 1986). Two studies used MADRS (Atiwannapat 2016; Erkkilä 2011). Its typical SD in people with depression is around 7 (Davidson 1986; Erkkilä 2011), so we imputed this value when it was missing.

Investigators used three self-rated depression scales.

1. Beck Depression Inventory (BDI) is a self-report measure of the severity of depression, composed of 21 multiple choice questions related to depression symptoms. The overall score has a possible range from 0 to 63. Five studies used the BDI (Albornoz 2011; Hendricks 1999; Hendricks 2001; Radulovic 1997; Zerhusen 1995). Two of these failed to report SDs (Radulovic 1997; Zerhusen 1995), so we had to impute a typical SD derived from other studies. In particular, as the original report describing the BDI presented SD ≈ 10 based on a sample of 409 participants (Beck 1961), we used this value as the best available estimate when the SD was missing (see notes in Characteristics of included studies section).
2. Thai Depression Inventory (TDI) is a self-rating instrument composed of 20 items and used to evaluate the severity of depression (Lotrakul 1999). The score for each item in the TDI ranges from 0 to 3. The overall score has a possible range from 0 to 60. One study used the TDI (Atiwannapat 2016).
3. Geriatric Depression Scale (GDS) is a self-report assessment specifically designed to identify depression in older adults. This scale is composed of 30 items with yes/no answers. A score of 11 or above is usually considered as indicative of depression (Yesavage 1983). One study used the GDS (Hanser 1994).

For all depression scales, higher scores represent greater severity of depression symptoms.

Adverse events

Adverse events reported in these studies included worsening of depression and lower back pain (Erkkilä 2011). None of the other studies reported whether any adverse events occurred.

Secondary outcomes

Functioning

Only one study assessed functioning using the Global Assessment of Functioning scale (GAF; [APA 2000](#)) ([Erkkilä 2011](#)). The GAF is a clinician-reported scale that is used to rate the social, occupational, and psychological functioning of an individual. Values can range from a minimum score of 0 (severely impaired functioning) to a maximum score of 100 (extremely high functioning).

Quality of life

Two studies measured quality of life. Specifically, [Atiwannapat 2016](#) used the Thai version of the Short-Form Health Survey (SF-36; [Ware 1992](#)), and [Erkkilä 2011](#) used the Finnish translation of the health-related quality of life survey distributed by RAND (RAND-36; [Hays 1993](#)). SF-36 and RAND-36 are closely related patient-reported measures that are based on the same set of 36 items but with slightly different scoring ([Hays 1993](#)). Lower scores indicate increased disability.

Leaving the study early

Data on leaving the study early were available for all nine studies, although events occurred in only four trials ([Atiwannapat 2016](#); [Erkkilä 2011](#); [Hanser 1994](#); [Zerhusen 1995](#)). Of the remaining five studies, four reported no dropouts ([Albornoz 2011](#); [Chen 1992](#); [Hendricks 2001](#); [Radulovic 1996](#)), and one did not report to which arm dropouts belonged ([Hendricks 1999](#)), thus contributing no usable data for this outcome.

Anxiety

Three studies assessed anxiety ([Chen 1992](#); [Erkkilä 2011](#); [Radulovic 1996](#)). Two studies used the clinician-rated Hamilton Anxiety Scale (HAM-A) as described in [Maier 1988](#) ([Chen 1992](#); [Radulovic 1996](#)), and one study used the clinician-rated Hospital Anxiety and Depression Scale - Anxiety (HADS-A), as described in [Zigmond 1983](#) ([Erkkilä 2011](#)).

The HAM-A is a clinician-rated scale that intends to provide an analysis of the severity of anxiety in adults, adolescents, and children. It is composed of 14 items. Each item can receive a score between 0 and 4, and the composite score can range from 0 to 56. Its validity and reliability in people with depression are well established ([Maier 1988](#)), with a typical SD of around 7 ([Maier 1988](#) reported standard error (SE) = 0.8 with $n = 73$, leading to $SD \approx 7$).

The HADS is a clinician-rated scale that comprises 14 items ([Zigmond 1983](#)), seven of which are related to anxiety (HADS-A); the other seven are related to depression (HADS-D). [Erkkilä 2011](#) used the HADS-A. Each item on the HADS-A is scored from 0 to 3, yielding a total score between 0 and 21.

Self-esteem

One study assessed self-esteem ([Hanser 1994](#)), using the Rosenberg Self-esteem Inventory (RSE; [Rosenberg 1979](#)). The RSE is a 10-item scale that evaluates global self-worth. All items are answered via a 4-point Likert scale format ranging from strongly agree to strongly disagree. Total score ranges from 0 to 30. Scores below 15 suggest low self-esteem.

Costs and cost-effectiveness

No studies addressed costs or cost-effectiveness.

Satisfaction

No studies addressed satisfaction.

Excluded studies

We excluded 30 studies. Two studies were not RCTs or CCTs ([Carolan 2016](#); [No author 2008](#)). Nineteen studies included an ineligible population ([Ashida 2000](#); [Bae 2011](#); [Bittman 2001](#); [Boothby 2011](#); [Broersen 2013](#); [Carr 2012](#); [Cassileth 2003](#); [Chen 2016](#); [Choi 2008](#); [Chu 2014](#); [Clark 2006](#); [Cross 2012](#); [Iliya 2015](#); [Lu 2013](#); [Mohammadi 2011](#); [Raglio 2015](#); [Romito 2013](#); [Schwantes 2014](#); [Werner 2015](#)). In four studies, the intervention was not music therapy ([Brandes 2010](#); [Castillo-Pérez 2010](#); [Lu 2012](#); [Huang 2010](#)), and two studies did not include a relevant comparator intervention ([Chen 2015](#); [Wu 2002](#)). Full-text reports were not available for three studies ([Bradford 1991](#); [Li 2002](#); [Liu 2014](#)). See also [Characteristics of excluded studies](#).

Ongoing studies

We identified no ongoing studies.

Studies awaiting classification

Two studies are awaiting classification ([Kumar 2013](#); [Tang 2011](#)). [Kumar 2013](#) provided insufficient information about study design, and [Tang 2011](#) provided insufficient details related to the music therapy intervention and statistical results. We were unable to obtain more information. See also [Characteristics of studies awaiting classification](#). We added to the [Studies awaiting classification](#) section three study reports obtained from an updated search conducted in August 2017 ([Ahessy 2016](#); [Jasemi 2016](#); [Kim 2014](#)).

New studies found at this update

We added four new studies to the current update of the review ([Albornoz 2011](#); [Atiwannapat 2016](#); [Erkkilä 2011](#); [Hendricks 2001](#)). Of note, [Albornoz 2011](#) evaluated the effect of improvisational music therapy on depressed individuals with substance abuse. We did not include this particular population in the previous version of the review. [Atiwannapat 2016](#) compared active and receptive music therapy for adult outpatients with major depression. [Hendricks 2001](#) was a replication of a study that was included in the previous version of this review ([Hendricks 1999](#)). Investigators evaluated the effects of school-based music therapy among adolescents with depressive symptoms. Finally, [Erkkilä 2011](#) investigated individual music therapy provided to a working-age group of depressed individuals.

Risk of bias in included studies

We present in [Figure 2](#) a summary of risk of bias across domains. [Figure 3](#) provides a summary of risk of bias results for each included study. We provide reasons for judgements in the [Risk of bias in included studies](#) tables. For clarification, we provide quotes in these tables.

Figure 2. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

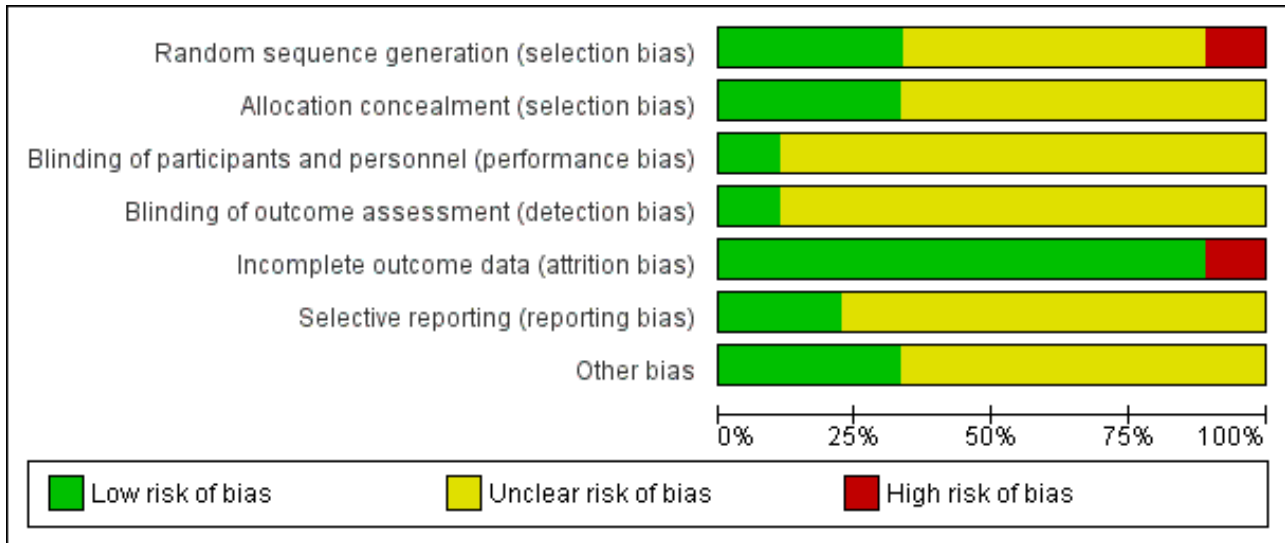


Figure 3. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Albornoz 2011	+	+	?	?	+	+	+
Atiwannapat 2016	+	?	?	?	-	?	+
Chen 1992	?	?	?	?	+	?	?
Erkkilä 2011	+	+	+	+	+	+	+
Hanser 1994	?	?	?	?	+	?	?
Hendricks 1999	?	?	?	?	+	?	?
Hendricks 2001	?	+	?	?	+	?	?
Radulovic 1996	-	?	?	?	+	?	?
Zerhusen 1995	?	?	?	?	+	?	?

Allocation

Random sequence generation

Two studies specified that researchers used spreadsheet software to generate random number lists in blocks (Albornoz 2011, Erkkilä 2011); Atiwannapat 2016 reported drawing lots in a 1:1:1 ratio. We judged these studies to be at low risk of bias. Most studies were at unclear risk of bias because study authors stated only that participants were randomised, but did not describe how (Chen 1992; Hanser 1994; Hendricks 1999; Hendricks 2001; Zerhusen 1995). One study did not describe how participants were allocated, and we judged it to be at high risk of bias (Radulovic 1996).

Allocation concealment

In three studies, participants and investigators enrolling participants could not foresee assignment (Albornoz 2011; Erkkilä 2011; Hendricks 2001). Albornoz 2011 used sequentially numbered envelopes; Erkkilä 2011 used remote email randomisation; and Hendricks 2001 used coded packets. We judged the remaining six studies to be at unclear risk (Atiwannapat 2016; Chen 1992; Hanser 1994; Hendricks 1999; Radulovic 1996; Zerhusen 1995).

Blinding

We judged one of nine studies to be at low risk of bias (Erkkilä 2011). In this study, investigators did not blind participants, but one masked clinical expert conducted all psychiatric assessments. Review authors judged that outcomes in this study were not likely to be influenced by lack of blinding. The remaining eight studies were at unclear risk (Albornoz 2011; Atiwannapat 2016; Chen 1992; Hanser 1994; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995). In two of these studies (Albornoz 2011; Atiwannapat 2016), both important personnel and clinician-reported outcomes (HRSD; MADRS) were blinded. However, blinding for participants and for self-reported outcomes in depression (BDI) was not possible in two studies (Albornoz 2011; Atiwannapat 2016); and blinding for quality of life (SF-36) was not possible in Atiwannapat 2016. Six studies did not address blinding of personnel and participants and provided insufficient information to permit a clear judgement (Chen 1992; Hanser 1994; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995).

Incomplete outcome data

We judged eight out of nine studies to be at low risk of bias (Albornoz 2011; Chen 1992; Erkkilä 2011; Hanser 1994; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995). For five of these studies, reports indicated no missing outcome data (Albornoz 2011; Chen 1992; Hanser 1994; Hendricks 2001; Radulovic 1996). In one study, missing outcome data were balanced in numbers across intervention groups, with similar reasons noted for missing data across groups (e.g. one resident left the study early, and corresponding participants in the other two groups were therefore also discarded from the data analysis, leaving 19 participants in each group available for the purpose of data analysis) (Zerhusen 1995). One other study imputed data using appropriate methods (Erkkilä 2011). In another study, it remains unclear to which group participants leaving the study early were originally allocated, although study authors stated that participants dropped out of the music therapy group and the treatment as usual group (Hendricks 1999). We judged one study to be at high risk (Atiwannapat 2016). In this study, the proportion of and reasons for missing data in one of

the control arms were sufficient to have a clinically relevant effect because of the small study group.

Selective reporting

We judged two of nine studies to be at low risk (Albornoz 2011; Erkkilä 2011). For Albornoz 2011, an earlier published dissertation was available, and all outcomes were reported as planned (Albornoz 2009). For the other study (Erkkilä 2011), a study protocol was available, and all expected outcomes were identified and reported as planned (Erkkilä 2008). We judged the remaining seven studies to be at unclear risk (Atiwannapat 2016; Chen 1992; Hanser 1994; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995). For these studies, a protocol was not available, and all outcomes were reported as planned in the Methods section. Therefore, information was insufficient to permit judgement of low or high risk.

Other potential sources of bias

We judged three of eight studies to be at low risk of bias (Albornoz 2011; Atiwannapat 2016; Erkkilä 2011), as these studies appeared to be free of other sources of bias. We judged the six remaining studies to be at unclear risk because risk of bias could be present (Chen 1992; Hanser 1994; Hendricks 1999; Hendricks 2001; Radulovic 1996; Zerhusen 1995), but information was insufficient to show whether an important risk of bias existed.

Effects of interventions

See: [Summary of findings for the main comparison Music therapy plus treatment as usual \(TAU\) versus TAU for depression \(primary comparison\)](#); [Summary of findings 2 Music therapy versus psychological treatment for depression](#); [Summary of findings 3 Active music therapy versus receptive music therapy for depression](#)

Comparison 1. Music therapy plus treatment as usual (TAU) versus TAU alone

Primary outcomes

Severity of depression symptoms (clinician-rated)

Four studies addressed clinician-rated severity of depression symptoms in the short term (up to three months) (Albornoz 2011; Chen 1992; Erkkilä 2011; Radulovic 1996). A significant short-term effect favoured music therapy (standardised mean difference (SMD) -0.98, 95% confidence interval (CI) -1.69 to -0.27, $P = 0.007$, 3 randomised controlled trials (RCTs), 1 clinical controlled trial (CCT), $n = 219$, moderate-quality evidence) (Analysis 1.1). Heterogeneity was high ($I^2 = 83\%$). See [Summary of findings for the main comparison](#).

Only one study evaluated the medium-term effect (up to six months) of clinician-rated depressive symptoms and found no significant effect (SMD -0.38, 95% CI -0.87 to 0.12, $P = 0.14$, 1 RCT, $n = 64$, moderate-quality evidence) (Erkkilä 2011) (Analysis 1.1).

Severity of depression symptoms (patient-reported)

In total, four studies evaluated patient-reported severity of symptoms. Three studies used the Beck Depression Inventory (BDI) (Albornoz 2011; Radulovic 1996; Zerhusen 1995). Hanser 1994 preferred to use the Geriatric Depression Scale (GDS). At short term, a significant effect favoured music therapy in patient-reported severity of symptoms (SMD -0.85, 95% CI -1.37 to -0.34, $P = 0.001$,

3 RCTs, 1 CCT, $n = 142$, moderate-quality evidence) (Analysis 1.2). Heterogeneity was moderate ($I^2 = 49\%$). See [Summary of findings for the main comparison](#). Researchers reported no data at medium term (Analysis 1.2).

Adverse events

One RCT provided data concerning this outcome, revealing no significant evidence that music therapy was associated with more or fewer adverse events than treatment as usual in the short term (odds ratio (OR) 0.45, 95% CI 0.02 to 11.46, $P = 0.63$, $n = 79$, low-quality evidence) or in the medium term (OR 0.69, 95% CI 0.06 to 7.91, $P = 0.76$, $n = 79$, low-quality evidence) (Erkkilä 2011) (Analysis 1.3). See [Summary of findings for the main comparison](#).

Secondary outcomes

Functioning

Only one RCT measured level of functioning using the Global Assessment of Functioning scale (GAF) (Erkkilä 2011). A significant effect favoured music therapy in the short term (SMD 0.51, 95% CI 0.02 to 1, $P = 0.04$, $n = 67$, low-quality evidence). On the contrary, investigators found no significant differences in the medium term (SMD 0.38, 95% CI -0.12 to 0.88, $P = 0.13$, $n = 64$, low-quality evidence). Heterogeneity was not applicable (Analysis 1.4). See [Summary of findings for the main comparison](#).

Quality of life

Only one study used the health-related quality of life survey distributed by RAND (RAND-36) to evaluate quality of life (Erkkilä 2011). Researchers found no significant differences between the music therapy group and the treatment as usual group, both in the short term (SMD 0.32, 95% CI -0.17 to 0.80, $P = 0.20$, $n = 67$, low-quality evidence) and in the medium term (SMD 0.26, 95% CI -0.23 to 0.76, $P = 0.30$, $n = 64$, low-quality evidence) (Analysis 1.5). Heterogeneity was not applicable. See [Summary of findings for the main comparison](#).

Leaving the study early

Included studies reported no significant differences in rates of leaving the study early between participants who attended music therapy and those in the treatment as usual group at short term (OR 0.49, 95% CI 0.14 to 1.70, $P = 0.26$, 5 RCTs, 1 CCT, $n = 293$, moderate-quality evidence). Heterogeneity was low ($I^2 = 0\%$) (Analysis 1.6). At medium term, only Erkkilä 2011 reported events of leaving the study early and noted no significant differences (OR 0.44, 95% CI 0.13 to 1.53, $P = 0.20$, $n = 79$, moderate-quality evidence). Heterogeneity was not applicable (Analysis 1.6). See [Summary of findings for the main comparison](#).

Anxiety

Three studies evaluated anxiety in the short term (Chen 1992; Erkkilä 2011; Radulovic 1996). Chen 1992 and Radulovic 1996 used the Hamilton Anxiety Scale (HAM-A) to assess outcome measures, and Erkkilä 2011 used the Hospital Anxiety and Depression Scale - Anxiety (HADS-A). Trialists reported a significant reduction in anxiety favouring music therapy in the short term (SMD -0.74, 95% CI -1.40 to -0.08, $P = 0.03$, 2 RCTs, 1 CCT, $n = 195$, low-quality evidence) (Analysis 1.7). Heterogeneity was high ($I^2 = 80\%$). Similarly, as for the outcome of clinician-rated depression reported above, Chen 1992 was the study showing the strongest positive

effect, again possibly as a result of the geriatric population included or the large number of music therapy sessions provided.

Erkkilä 2011 also measured anxiety symptoms in the medium term and found no significant differences between treatment groups (SMD -0.40, 95% CI -0.90 to 0.10, $P = 0.12$, $n = 64$, moderate-quality evidence) (Analysis 1.7). See [Summary of findings for the main comparison](#).

Self-esteem

One study measured self-esteem using the Rosenberg Self-Esteem Inventory (RSE) (Hanser 1994). Results showed no significant differences between music therapy and treatment as usual groups (SMD -0.63, 95% CI -1.53 to 0.27, $P = 0.17$, $n = 20$, low-quality evidence) (Analysis 1.8). Heterogeneity was not applicable. No data were available at medium term (Analysis 1.8).

Costs or cost-effectiveness

We found no eligible studies addressing this outcome.

Satisfaction with treatment

We found no eligible studies addressing this outcome.

Comparison 2. Music therapy versus psychological therapy

Primary outcomes

Severity of depression symptoms (clinician-rated)

One RCT measured severity of depressive symptoms at both short term and medium term (Atiwannapat 2016). Upon combining data regarding active and receptive music therapy approaches, we found no significant differences in comparison with psychological therapy (short-term: SMD -0.78, 95% CI -2.36 to 0.81, $P = 0.34$, $n = 11$, very low-quality evidence; medium-term: SMD -1.11, 95% CI -2.74 to 0.53, $P = 0.19$, $n = 11$, very low-quality evidence) (Analysis 2.1). Heterogeneity was not applicable. See [Summary of findings 2](#).

Severity of depression symptoms (patient-reported)

Investigators found no significant differences in patient-reported severity of depression symptoms, both at short term and at medium term. In particular, four RCTs evaluated changes in symptoms at short term (SMD -1.28, 95% CI -3.75 to 1.02, $P = 0.28$, $n = 131$, low-quality evidence) (Atiwannapat 2016; Hendricks 1999; Hendricks 2001; Zerhusen 1995). Heterogeneity was high ($I^2 = 96\%$). Only Atiwannapat 2016 evaluated patient-reported symptoms at medium term, noting no significant effects (SMD -0.68, 95% CI -2.26 to 0.89, $P = 0.40$, $n = 11$, very low-quality evidence) (Analysis 2.2). See [Summary of findings 2](#).

Adverse events

We found no eligible evidence addressing this outcome. See [Summary of findings 2](#).

Secondary outcomes

Functioning

We found no eligible evidence addressing this outcome. See [Summary of findings 2](#).

Quality of life

Only one study evaluated quality of life using the Thai version of Short Form (SF)-36 (Atiwannapat 2016). In the short term,

researchers found no significant differences between music therapy groups and psychological therapy groups (SMD 1.31, 95% CI -0.36 to 2.99, $P = 0.12$, $n = 11$, very low-quality evidence) (Analysis 2.3). Heterogeneity was not applicable. Investigators also found no significant effects in the medium term (SMD 0.93, 95% CI -0.67 to 2.54, $P = 0.25$, $n = 11$, very low-quality evidence) (Analysis 2.3). See [Summary of findings 2](#).

Leaving the study early

Four included studies recruited a total of 137 participants (Atiwannapat 2016; Hendricks 1999; Hendricks 2001; Zerhusen 1995). At short term, one participant in the music therapy group and three participants in the psychological therapy group left the study early (OR 0.17, 95% CI 0.02 to 1.49, $P = 0.11$, $n = 137$, moderate-quality evidence). Heterogeneity was low ($I^2 = 0\%$) (Analysis 2.4). Of note, in Hendricks 1999, two participants who were initially randomised left the study early. However, the study report does not specify to which group these participants belonged; we therefore decided to consider this missing information and assigned a value of zero. At medium term, data from Atiwannapat 2016 revealed no additional dropouts compared with the number reported at three-month follow-up, and showed no statistically significant differences between music therapy and psychological therapy groups (OR 0.11, 95% CI 0.01 to 1.92, $P = 0.13$, $n = 14$, very low-quality evidence) (Analysis 2.4). See [Summary of findings 2](#).

Anxiety

We found no eligible studies addressing this outcome. See [Summary of findings 2](#).

Self-esteem

We found no eligible studies addressing this outcome.

Costs or cost-effectiveness

We found no eligible studies addressing this outcome.

Satisfaction with treatment

We found no eligible studies addressing this outcome.

Comparison 3. Active music therapy versus receptive music therapy

Primary outcomes

Severity of depression symptoms (clinician-rated)

One RCT evaluated severity of depression symptoms in active and receptive music therapy (Atiwannapat 2016). An expert clinician administered the MADRS to study participants. Investigators found no significant differences between the two music therapy interventions in the short term (SMD -0.52, 95% CI -1.87 to 0.83, $P = 0.45$, $n = 9$, very low-quality evidence) or in the medium term (SMD -0.64, 95% CI -2.02 to 0.73, $P = 0.36$, $n = 9$, very low-quality evidence) (Analysis 3.1). Heterogeneity was not applicable. See [Summary of findings 3](#).

Severity of depression symptoms (patient-reported)

Atiwannapat 2016 used the Thai Depression Inventory (TDI) to evaluate patient-reported depressive symptoms. Trialists found no statistically significant differences between active and receptive music therapy groups in the short term (SMD -0.01, 95% CI -1.33 to 1.30, $P = 0.98$; $n = 9$, very low-quality evidence). Quality of evidence

was low in the short term. See [Summary of findings 3](#). Also in the medium term, analysis showed no differences between the two groups (SMD -0.16, 95% CI -1.48 to 1.16, $P = 0.82$, $n = 9$, very low-quality evidence) (Analysis 3.2). See [Summary of findings 3](#).

Adverse events

We found no eligible studies addressing this outcome. See [Summary of findings 3](#).

Secondary outcomes

Functioning

We found no eligible studies addressing this outcome. See [Summary of findings 3](#).

Quality of life

Atiwannapat 2016 evaluated quality of life using the Thai version of SF-36. Investigators found no significant differences between active music therapy and receptive music therapy in the short term (SMD -0.24, 95% CI -1.57 to 1.08, $P = 0.72$, $n = 9$, very low-quality evidence) (Analysis 3.3). They also found no significant effects in the medium term (SMD 0.02, 95% CI -1.29 to 1.34, $P = 0.97$, $n = 9$, very low-quality evidence) (Analysis 3.3). Heterogeneity was not applicable. One study including nine participants contributed data to this comparison. See [Summary of findings 3](#).

Leaving the study early

According to Atiwannapat 2016, the number of dropouts was higher in the receptive music therapy group, with one participant leaving the study in the first three months. On the contrary, no participants in the active music therapy group left the study early. However, this difference cannot be considered statistically significant (OR 0.27, 95% CI 0.01 to 8.46, $P = 0.46$, $n = 10$, very low-quality evidence) (Analysis 3.4). Heterogeneity was not applicable. See [Summary of findings 3](#).

Anxiety

We found no eligible studies addressing this outcome. See [Summary of findings 3](#).

Self-esteem

We found no eligible studies addressing this outcome.

Costs or cost-effectiveness

We found no eligible studies addressing this outcome.

Satisfaction with treatment

We found no eligible studies addressing this outcome.

Sensitivity analyses

We conducted sensitivity analyses to determine the impact of the risk of bias of included studies on primary outcomes.

For Comparison 1 (Music therapy plus TAU vs TAU), removing the study at high risk of bias from the meta-analysis did not change the significance of effects (Radulovic 1996). The effect estimate for clinician-rated depression symptoms (Analysis 1.1) became larger (SMD -1.12, 95% CI -2.10 to -0.14, $P = 0.03$, $n = 159$); and the effect estimate for patient-reported depression symptoms (Analysis 1.2) remained similar (SMD -0.98, 95% CI -1.82 to -0.14, $P = 0.02$, $n = 82$),

both in favour of music therapy plus TAU. Heterogeneity remained high for clinician-rated depression ($I^2 = 86\%$), and moderate for patient-reported depression symptoms ($I^2 = 66\%$).

For Comparison 2 (Music therapy vs psychological therapy), removing the study at high risk of bias did not change the non-significance of effects (Atiwannapat 2016). No studies remained for clinician-rated depression symptoms nor for patient-reported depression symptoms at medium term. Effects on patient-reported depression symptoms at short term (Analysis 2.2) remained non-significant (SMD -1.41, 95% CI -4.26 to 1.44, $P = 0.33$, $n = 120$). Heterogeneity remained high ($I^2 = 97\%$).

In summary, sensitivity analyses did not change results.

DISCUSSION

Summary of main results

Comparison 1. Music therapy plus treatment as usual (TAU) versus TAU

Review authors found a significant short-term effect of music therapy combined with treatment as usual versus treatment as usual alone according to both clinician-rated and patient-reported measures of depressive symptoms. The effect sizes found can be interpreted in accordance with common guidelines for interventions in the behavioural sciences (Cohen 1988), by which effect sizes of up to 0.2 are considered small, those around 0.5 medium, and those at 0.8 and above large.

Our results show a large effect size of music therapy for clinician-rated depressive symptoms (standardised mean difference (SMD) -0.98; moderate-quality evidence). The effect size translates to a difference of 9.8 points on the Hamilton Rating Scale for Depression (HAM-D), which normally has a standard deviation (SD) of around 10. This is likely to be a clinically important difference. We found a large effect size for music therapy (SMD -0.85), with moderate quality of evidence, when depressive symptoms were evaluated by means of self-reported instruments. This effect size can be translated to a change of 8.5 points on the Beck Depression Inventory (BDI). This difference is also likely to be clinically relevant. The beneficial effect of music therapy did not seem to be maintained in the medium term. However, only one study evaluated depressive symptoms over a period of six months (Erkkilä 2011), showing a trend towards significance in favour of music therapy. Music therapy was not associated with more or fewer adverse events than treatment as usual, with low quality of evidence.

In the short term, we found a significant reduction in anxiety symptoms, with a medium effect size (SMD -0.71; low-quality evidence). This effect size translates to a change of 5 points on the Hamilton Anxiety Scale (HAM-A), which has an $SD \approx 7$. This is likely to be a clinically relevant effect. Also the level of functioning improved in the short term with a medium effect size (SMD 0.51; low-quality evidence). The effect size translates to a change of about 5 points on the Global Assessment of Functioning scale (GAF) ($SD \approx 10$), which could be clinically relevant. We found no differences between music therapy added to treatment as usual versus treatment as usual alone in terms of quality of life/self-esteem/number of adverse events, with low quality of evidence. The proportion of participants who left the study early did not significantly differ between music

therapy plus TAU and TAU alone groups, and the quality of evidence was moderate.

Comparison 2. Music therapy versus psychological therapy

Review authors noted no significant differences between music therapy and psychological therapy in severity of depressive symptoms, for both clinician-rated (very low-quality evidence) and patient-reported outcomes (low-quality evidence). Also, we found no differences in quality of life and in the number of participants who left the study early, with evidence of very low and moderate quality, respectively. No studies reported the number of adverse events, and no studies measured anxiety and level of functioning.

Comparison 3. Active music therapy versus receptive music therapy

Review authors found no significant differences between active and receptive music therapy in severity of depressive symptoms for both clinician-rated and patient-reported outcomes. We also noted no differences in quality of life and in the number of participants who left the study early. Quality of evidence was very low for all outcomes. No studies reported the number of adverse events, and no studies measured anxiety and level of functioning.

Overall completeness and applicability of evidence

The present review included nine studies with a total of 421 participants. Of these, we included 411 participants in the meta-analysis. These individuals belonged to almost all age groups that could be affected by a depressive disorder, from adolescents to older people. However, investigators did not always report the specific type of depressive disorder, and, in some cases, expert clinicians did not perform diagnosis according to valid diagnostic criteria. Even if the included studies comprised participants from a broad age range, it would be useful to evaluate the effects of music therapy in larger samples of adults with a specific diagnosis of major depressive disorder, which is a chronic and severe condition for which patients might benefit from music therapy more than for minor depressive disorders. Additionally, included studies did not evaluate depression, and future researchers should take this into consideration. As clinical depression is not usually diagnosed in children, a future review may need to apply wider inclusion criteria to encompass studies that include this group. The largest randomised controlled trial (RCT) of music therapy ever completed ($n = 251$) found that children with emotional and behavioural problems aged 8 to 16 years who had received music therapy alongside treatment as usual had significantly reduced symptoms of depression compared with those who did not (Porter 2016).

With regards to the intervention, review authors considered active, receptive, and mixed music therapy methods. Seven studies conducted music therapy sessions in groups, and only two studies provided individual sessions. This aspect is important to consider because individual music therapy might be personalised and tailored to the characteristics of individual patients and might show a more beneficial effect than group sessions.

It is important to mention that only single studies addressed some outcomes (i.e. self-esteem, level of functioning), making these results not generalisable.

Quality of the evidence

Review authors rated quality of evidence for all comparisons using the five GRADE considerations (study limitations, consistency of effect, indirectness, imprecision, and publication bias; [Schünemann 2009](#)).

Limitations in study design or execution (risk of bias)

Concerning the main comparison, we downgraded the quality of evidence for the following outcomes for risk of bias (e.g. unclear randomisation, allocation concealment, blinding, absence of a study protocol): clinician-rated depression, patient-reported depression, leaving the study early, and anxiety. For both comparisons 2 and 3, we downgraded clinician-rated depression, patient-reported depression, quality of life, and leaving the study early by one level for similar reasons.

Inconsistency of results

We downgraded the quality of evidence by one level for inconsistency concerning anxiety in the main comparison and for patient-reported depression in the second comparison, because we noted some variation in effect sizes, small or non-overlap of confidence intervals, and high heterogeneity. Heterogeneity could be explained by differences in age groups, methods of music therapy, professionals providing music therapy, and quality of studies.

Indirectness of evidence

All included trials addressed the main review questions (PICO): treatment of depression in men and women of any age group, and receiving a music therapy intervention. Therefore, we did not downgrade any outcome in all comparisons for indirectness of evidence.

Imprecision

For the main comparison, we downgraded the quality of evidence for adverse events, functioning, and quality of life by two levels owing to wide confidence intervals, although we based this decision on an adequately powered, well-performed, and well-reported trial ([Erkkilä 2011](#)). For the second comparison, we downgraded clinician-rated depression and quality of life by two levels owing to small sample size. For the same reason, we downgraded by two levels the quality of evidence for clinician-rated depression, patient-reported depression, quality of life, and leaving the study early in the third comparison.

Publication bias

For all comparisons and for all outcomes, we did not downgrade the quality of evidence for publication bias, as we did not detect publication bias. We asked experts and known researchers in the field whether they were aware of reported or ongoing trials on music therapy for depression. We did not produce a funnel plot to assess possible publication bias, as the total number of studies (fewer than 10) meant that application of a formal test of asymmetry was not appropriate ([Sterne 2011](#)).

Potential biases in the review process

We undertook an extensive search of databases and additional sources and applied no restrictions concerning nationality or language within the search process; thus we believe that we

have identified and included in the present systematic review all potentially relevant studies. We translated non-English abstracts into English for assessment of eligibility. We translated possibly relevant and relevant non-English full-text study reports into English, to finalise the eligibility process. We included relevant non-English articles in the review. Furthermore, at least two review authors systematically extracted and managed trial data.

Some reports did not provide all information required to perform the meta-analysis (e.g. pre-post values, standard deviations). In such cases, as stated in the methods and results sections, we searched previously published literature (e.g. validation studies, similar studies with large sample sizes) to retrieve the missing information. This may limit the accuracy of the results.

We attempted to conduct a comprehensive search for studies, but the fact that studies found in the updated search have not yet been incorporated may present a source of potential bias.

Agreements and disagreements with other studies or reviews

In the current literature, we found a limited number of studies for comparison. Our meta-analysis confirms the conclusions of [Maratos 2008](#) and [Assche 2015](#), which showed a beneficial effect of music therapy on depressive symptoms. However, the previous Cochrane review only narratively reviewed the efficacy of music therapy for depression ([Maratos 2008](#)). Our findings are strengthened by the fact that data provided by included studies were meta-analysed. [Assche 2015](#) did not meta-analyse data from included studies. [Zhao 2016](#) considered music therapy for older adults only and included trials that assessed participants and interventions that were not eligible for this review. In a broader review, [Gold 2009](#) noted beneficial effects of music therapy on depressive symptoms, with a meta-regression analysis suggesting that effects increased with the number of sessions.

AUTHORS' CONCLUSIONS

Implications for practice

For people affected by depressive disorders

Evidence suggests that music therapy, when added to treatment as usual (e.g. psychotherapy in combination with medication, collaborative care, occupational therapy), can help people affected by depressive disorders, such as major depression, by improving symptoms related to the condition (moderate quality) and its most frequent comorbidities, such as anxiety (low quality). Additionally, social, occupational, and psychological functioning may improve among individuals who are involved in music therapy in addition to treatment as usual (low-quality evidence). Music therapy was not associated with more or fewer adverse events than treatment as usual (low-quality evidence). We highlighted no differences in improving depressive symptoms between a music therapy intervention and a psychological therapy or medication only. We noted no differences between active and receptive music therapy approaches (very low-quality evidence).

Active participation is crucial for the success of music therapy. Participants do not need musical skills, but motivation to work actively within a music therapy process is important. Some characteristics of these individuals, such as a tendency toward

symbolic processing and imagery, or particular personality traits, may favour engagement in music therapy.

For clinicians

Music therapy, when added to treatment as usual, seems to improve symptoms of depression (moderate-quality evidence). Music therapy seems to be beneficial also for anxiety (low-quality evidence), which is often a comorbidity of depression. Severely depressed individuals often experience impairment in maintaining relationships and work engagements. In this regard, evidence suggests significant amelioration in the level of functioning among those who attended music therapy sessions (low-quality evidence). Improvements in depressive symptoms and functioning are likely interrelated: Mitigation of depressive symptoms may lead to better outcomes in the socio-occupational sphere, and vice versa. In fact, positive effects might help support motivation as well as emotional and relational competencies of people affected by depression, from adolescents to older adults. Our results do not suggest superiority of music therapy over other psychological therapies (evidence of low to very low quality). Rather, music therapy should be considered in combination with standard care, with respect to patient preferences. We do not know whether one form of music therapy is better than another (very low-quality evidence).

When providing music therapy, clinicians must be mindful that the specific methods and techniques of music therapy, including among others adaptation of musical material to individual needs, musical improvisation, and discussion of personal topics emerging through musical processes, require specialised music therapy training. Training courses and qualified music therapists are available in many countries, but in some countries, training programmes of better quality may be needed.

For managers/policy makers

Evidence suggests that music therapy, when added to treatment as usual, can help people affected by depressive disorders, such as major depression, by improving symptoms related to depression (moderate-quality evidence; large effect size for clinician-reported depression and patient-reported depression) and its most frequent comorbidities, such as anxiety (low-quality evidence). We are uncertain whether music therapy is better than psychological therapy (evidence of low to very low quality). Neither do we know whether one form of music therapy is better than the other (very low-quality evidence).

Depression incurs high costs for healthcare systems and for society because it may cause impairment in both psychological and socio-occupational functioning. Reductions in depressive and anxious symptoms and consequent improvement in everyday life functioning may reduce the costs that burden both healthcare systems and society. Wider implementation may be slow because trained music therapists are not available everywhere. Currently, around 6000 qualified music therapists are practising in Europe (EMTC 2017) and 7000 in the USA (CBMT 2017), with large differences in numbers between and within countries.

Implications for research

In general, the quality of research concerning music therapy for patients with depressive disorders could be improved. Future researchers should adhere to guidelines such as the CONSORT

statement and should focus on particular points that deserve to be addressed (Schulz 2010).

Characteristics of the population

Further research is needed on the effectiveness of music therapy for adults with a specific diagnosis of major depressive disorder and other depressive disorders. It appears of primary importance to clarify the type of diagnosis, which should be possibly performed by clinicians according to an international diagnostic classification (e.g. *International Classification of Diseases (ICD)* or *Diagnostic and Statistical Manual of Mental Disorders (DSM)*), not just according to self-reported scales or questionnaires. Additionally, it would be desirable to investigate effects of music therapy both in recurrent depressive disorders and in single depressive episodes.

Relatively little research has focused on working-age people with depression. Only four of the nine included studies specifically addressed this broad and important age group, although the largest study did include working-age people. Future studies should also consider depression in children and adolescents.

Characteristics of the intervention

Music therapy characteristics

Future reports should better describe characteristics of the music therapy approaches adopted in these trials. Researchers should clearly describe the aims and rationale and specific methods, techniques, and procedures implemented by music therapists. First, it should be more consistently stated whether or not the intervention is conducted by a trained music therapist or a music therapy trainee. Interventions developed and conducted in trials by a certified music therapist are needed. Second, a thorough description of the interventions appears essential, to give professionals the opportunity to learn and apply effective methods and techniques in their clinical practice, as well as in music therapy training programmes and future trials. The topic of treatment fidelity is also relevant (Erkkilä 2014). In fact, only one study reported that therapists participated in extensive training to guarantee reliability of the intervention provided (Erkkilä 2011).

It would be desirable to conduct trials in which different music therapy methods are adopted, such as active and receptive music therapy or combinations thereof. This would be important for improved understanding of which form of music therapy could be better tolerated and more pleasant and beneficial for participants, as well as for enhanced knowledge of the mechanisms underlying treatment effects. It could also be hypothesised that a portion of the population is more likely to respond positively to music therapy as the result of individual features. This information could prove helpful in the development of different music therapy techniques that can be tailored to patient characteristics.

Duration of the intervention

To date, researchers have mainly considered short-term interventions and have provided limited attention to long-term effects of music therapy extending over more than six months. Actually, only one study evaluated effects of the intervention at medium term (Erkkilä 2011). Interventions of longer duration and longer follow-up periods are needed to better elucidate the medium-term and long-term effects of music therapy on symptoms of depression and its correlates. This is particularly important

because the length of trials often does not reflect the complexity of therapeutic processes, which usually last months or years.

Additionally, it would be useful to know the rate of attendance of participants at music therapy sessions; this information is rarely reported. In fact, analyses considering patient compliance could be useful toward understanding whether treatment adherence might influence outcomes.

Dosage of the intervention

Studies randomising high versus low 'dosage' of music therapy would be required. Such trials would require considerably larger sample sizes because expected differences in effect sizes between two active treatments will be smaller than those between music therapy as add-on treatment and standard care alone.

Outcomes

This review indicates that reduction in symptoms of depression and anxiety could be identified as the most frequently assessed outcomes. These are of general clinical importance in mental health care, but other health-related aspects (e.g. quality of life, level of functioning, personality, self-esteem) supported by music therapy could be similarly relevant to both the patient and the music therapeutic method. Of note, none of the included studies addressed outcomes such as cost, cost-effectiveness, or satisfaction with treatment. To gain knowledge about effects, mechanisms, and ingredients of music therapy for depression, better-designed trials must include similar and

meaningful outcomes, as well as mixed methods and outcomes more directly related to music therapy processes, such as the impact of music elements and specific music therapy techniques.

The studies included under [Studies awaiting classification](#), once assessed, may alter the conclusions of this review.

ACKNOWLEDGEMENTS

We would like to thank study authors Yadira Albornoz and Penchaya Atiwannapat for providing additional information concerning music therapy intervention from their respective studies; Vera Brandes and Mariette Broersen for providing their study reports; content experts for responding to our requests for information about possible ongoing studies; Sarah Dawson, Trials Search Co-ordinator for the Cochrane Common Mental Disorders (CCMD) Group, for undertaking searches for this review; Jaakko Erkkilä for providing additional information concerning his trial and valuable comments on an earlier version of this review; Sarah Davis, Editorial Assistant for the CCMD Group, for her kind assistance; Stenden University of Applied Sciences for support and full translation of a Chinese study into English; Jessica Sharp, Managing Editor for the CCMD Group, for her kind assistance, guidance, and support throughout the review process; Erik Scherder of the Vrije Universiteit Amsterdam for assisting throughout the review process and reviewing the final version of the review; Seng Kuong Ung for translating a Chinese study into English; Xu Wang for contributing to the first review; and Kun Zhao for sending Chinese full texts and translating Chinese abstracts into English.

REFERENCES

References to studies included in this review

Albornoz 2011 {published data only}

Albornoz Y. The effects of group improvisational music therapy on depression in adolescents and adults with substance abuse: a randomised controlled trial. *Nordic Journal of Music Therapy* 2011;**20**(3):208-24.

Atiwannapat 2016 {published data only}

Atiwannapat P, Thaipisuttikul P, Poopityastaporn P, Katekaew W. Active versus receptive group music therapy for major depressive disorder - a pilot study. *Complementary Therapies in Medicine* 2016;**26**:141-5. [PUBMED: 27261995]

Chen 1992 {published data only}

Chen X. Active music therapy for senile depression. *Chinese Journal of Neurology and Psychiatry* 1992;**25**(4):208-10. [PUBMED: 1478135]

Erkkilä 2011 {published data only}

Erkkilä J, Punkanen M, Fachner J, Ala-Ruona E, Pöntiö I, Tervaniemi M, et al. Individual music therapy for depression: randomised controlled trial. *British Journal of Psychiatry* 2011;**199**:132-9. [PUBMED: 21474494]

Hanser 1994 {published data only}

Hanser SB, Thompson LW. Effects of music therapy strategy on depressed older adults. *Journal of Gerontology* 1994;**49**(6):265-9. [PUBMED: 7963281]

Hendricks 1999 {published data only}

Hendricks CB, Robinson B, Bradford B, Davis K. Using music techniques to treat adolescent depression. *Journal of Humanistic Counseling, Education and Development* 1999;**38**:39-46.

Hendricks 2001 {published data only}

Hendricks CB. A study of the use of music therapy techniques in a group for the treatment of adolescent depression. *Dissertation Abstracts International* 2001;**62**(2-A):472.

Radulovic 1996 {published data only}

Radulovic R. The using of music therapy in treatment of depressive disorders. Summary of Master Thesis. Belgrade: Faculty of Medicine University of Belgrade, 1996. [PUBMED: 1941727]

Zerhusen 1995 {published data only}

Zerhusen JD, Boyle K, Wilson W. Out of the darkness: group cognitive therapy for depressed elderly. *Journal of Military Nursing Research* 1995;**1**:28-32. [PUBMED: 1941727]

References to studies excluded from this review

Ashida 2000 {published data only}

Ashida S. The effect of reminiscence music therapy sessions on changes in depressive symptoms in elderly persons with dementia. *Journal of Music Therapy* 2000;**37**(3):170-82. [PUBMED: 10990595]

Bae 2011 {published data only}

Bae MJ. Effect of Group Music Therapy on Student Music Therapists' Anxiety, Mood, Job Engagement and Self-Efficacy. [Unpublished PhD thesis]. Lawrence, KS: University of Kansas, 2011. [UMI Number: 3458209]

Bittman 2001 {published data only}

Bittman BB, Berk LS, Felten DL, Westengard J, Simonton OC, Pappas J, et al. Composite effects of group drumming music therapy on modulation of neuroendocrine-immune parameters in normal subjects. *Alternative Therapies in Health and Medicine* 2001;**7**(1):38-47. [PUBMED: 11191041]

Boothby 2011 {published data only}

Boothby DM, Robbins SJ. The effects of music listening and art production on negative mood: a randomized, controlled trial. *Arts in Psychotherapy* 2011;**38**:204-8.

Bradford 1991 {published data only}

Bradford DL. Music as an adjunctive therapeutic mode in the treatment of depression. *Dissertation Abstracts International* 1991;**51**:5020-1.

Brandes 2010 {published data only}

Brandes VM, Terris D, Fischer C, Loerbroks A, Jarczok MN, Ottowitz G, et al. Receptive music therapy for the treatment of depression. *Psychotherapy and Psychosomatics* 2010;**79**:321-2.

Broersen 2013 {unpublished data only}

Broersen M. Effect of active individual music therapy on depressive symptoms in patients with dementia: a pilot study. [Unpublished Master's thesis]. Heerlen, Netherlands: Zuyd University, Amsterdam, 2013:1-19.

Carolan 2016 {published data only}

Carolan K. Find your beat: therapeutic drumming for Parkinson's disease. *Clinical Social Work Journal* 2016;**44**(2):179-85.

Carr 2012 {published data only}

Carr C, d'Ardenne P, Sloboda A, Scott C, Wang D, Priebe S. Group music therapy for patients with persistent post-traumatic stress disorder - an exploratory randomized controlled trial with mixed methods evaluation. *Psychology and Psychotherapy: Theory, Research and Practice* 2011;**85**:179-202. [PUBMED: 22903909]

Cassileth 2003 {published data only}

Cassileth BR, Vickers AJ, Magill LA. Music therapy for mood disturbance during hospitalization for autologous stem cell transplantation: a randomized controlled trial. *Cancer* 2003;**98**(12):2723-9. [PUBMED: 14669295]

Castillo-Pérez 2010 {published data only}

Castillo-Pérez S, Gómez-Pérez V, Velasco MC, Pérez-Campos E, Mayoral MA. Effects on music therapy for depression on depression compared to psychotherapy. *Arts in Psychotherapy* 2010;**37**:387-90.

Chen 2015 {published data only}

Chen CJ, Sung HC, Lee MS, Chang CY. The effects of Chinese five-element music therapy on nursing students with depressed mood. *International Journal of Nursing Practice* 2015;**21**:192–9. [PUBMED: 24593291]

Chen 2016 {published data only}

* Chen XJ, Hannibal N, Gold C. Randomized trial of group music therapy with Chinese prisoners: impact on anxiety, depression, and self-esteem. *International Journal of Offender Therapy and Comparative Criminology* 2016;**60**(9):1064–81. [PUBMED: 25733743]

Chen XJ, Hannibal N, Xu K, Gold C. Group music therapy for prisoners: protocol for a randomised controlled trial. *Nordic Journal of Music Therapy* 2014;**23**(3):224–41. [DOI: [10.1080/08098131.2013.854268](https://doi.org/10.1080/08098131.2013.854268)]

Choi 2008 {published data only}

Choi AN, Lee MS, Lim HJ. Effects of group music intervention on depression, anxiety, and relationships in psychiatric patients: a pilot study. *Journal of Alternative and Complementary Medicine* 2008;**14**(5):567–70. [PUBMED: 18564958]

Chu 2014 {published data only}

Chu H, Yang CY, Lin Y, Ou KI, Lee TY, O'Brien AP, et al. The impact of group music therapy on depression and cognition in elderly persons with dementia: a randomized controlled study. *Biological Research for Nursing* 2014;**16**(2):209–17. [PUBMED: 23639952]

Clark 2006 {published data only}

Clark M, Isaacks-Downton G, Wells N, Redlin-Frazier S, Eck C, Hepworth JT, et al. Use of preferred music to reduce emotional distress and symptom activity during radiation therapy. *Journal of Music Therapy* 2006;**43**(3):247–65. [PUBMED: 17037953]

Cross 2012 {published data only}

Cross K, Flores R, Butterfield J, Blackman M, Lee S. The effect of passive listening versus active observation of music and dance performances on memory recognition and mild to moderate depression in cognitively impaired older adults. *Psychological Reports* 2012;**111**(2):413–23. [ISSN 0033-2941; PUBMED: 23234087]

Huang 2010 {published data only}

Huang C, Luo SP, Fang ZH. Observation on the intervention effect of musical therapy on aged depressive disorders. *Journal of Clinical Research* 2010;**27**:1696–8.

Iliya 2015 {published data only}

Iliya YA. Music therapy as grief therapy for adults with mental illness and complicated grief: a pilot study. *Death Studies* 2015;**39**(3):173–84. [PUBMED: 25730407]

Li 2002 {published data only}

Li YM. The effect of feeling music therapy on the rehabilitation of post-stroke depression. *Chinese Journal of Clinical Rehabilitation* 2002;**6**(19):2952–3. [ISSN: 1671-5926]

Liu 2014 {published data only}

Liu X, Yang H, Zou R, Tong F, Tang H, Luo Y. The effect of music therapy and countermeasures design during cancer therapy in China. *Psycho-oncology* 2014;**23**(3):193.

Lu 2012 {published data only}

Lu R, Wang J, Meng YQ. Music therapy on rehabilitation of patients with post stroke depression in the elderly. *Medical Journal of National Defending Forces Southwest China* 2012;**22**:405–6.

Lu 2013 {published data only}

Lu SF, Lo CH, Sung HC, Hsieh TC, Yu SC, Chang SC. Effects of group music intervention on psychiatric symptoms and depression in patient with schizophrenia. *Complementary Therapies in Medicine* 2013;**21**:682–8. [PUBMED: 24280478]

Mohammadi 2011 {published data only}

Mohammadi AZ, Shahabi T, Panah FM. An evaluation of the effect of group music therapy on stress, anxiety, and depression levels in nursing home residents. *Canadian Journal of Music Therapy* 2011;**17**(1):55–68.

No author 2008 {published data only}

Music therapy may offer hope for people with depression. *South African Journal of Psychiatry* 2008; Vol. 14, issue 3:66. [1608-9685]

Raglio 2015 {published data only}

Raglio A, Bellandi D, Baiardi P, Gianotti M, Ubezio MC, Zancchi E, et al. Effect of active music therapy and individualized listening to music on dementia: a multicenter randomized controlled trial. *Journal of the American Geriatrics Society* 2015;**63**:1534–9. [PUBMED: 26289682]

Romito 2013 {published data only}

Romito F, Lagattolla F, Costanzo C, Giotta F, Mattioli V. Music therapy and emotional expression during chemotherapy. How do breast cancer patients feel?. *European Journal of Integrative Medicine* 2013;**5**:438–42.

Schwantes 2014 {published data only}

Schwantes M, McKinney C, Hannibal N. Music therapy's effects on levels of depression, anxiety, and social isolation in Mexican farm workers living in the United States: a randomized controlled trial. *Arts in Psychotherapy* 2014;**41**:120–6.

Werner 2015 {published data only}

Werner J, Wosch T, Gold C. Effectiveness of group music therapy versus recreational group singing for depressive symptoms of elderly nursing home residents: pragmatic trial. *Aging and Mental Health* 2015;**21**(2):1–9. [PUBMED: 26457893]

Wu 2002 {published data only}

WU SM. Effects of music therapy on anxiety, depression and self-esteem of undergraduates. *Psychologia: An International Journal of Psychology in the Orient* 2002;**45**:104–14.

References to studies awaiting assessment

Ahessy 2016 {published data only}

Ahessy B. The use of a music therapy choir to reduce depression and improve quality of life in older adults - a randomized control trial. *Music and Medicine* 2016;**8**(1):17-28.

Jasemi 2016 {published data only}

Jasemi M, Aazami S, Zabihi RE. The effects of music therapy on anxiety and depression of cancer patients. *Indian Journal of Palliative Care* 2016;**22**(4):455-8.

Kim 2014 {published data only}

Kim HW, Kim SO, Kim HG, Jeon HR. Effects of music therapy and phone counseling on postpartum depression and maternal identity in high risk women. *Perspectives in Nursing Science* 2014;**11**(1):63-73.

Kumar 2013 {published data only}

Kumar G, Singh BK. To access the role of music therapy in depression and their comparison with drug therapy. *International Journal of Pharmaceutical Sciences and Research* 2013;**4**(8):3099-102.

Tang 2011 {published data only}

Tang SY, Xu YH, Li J, Du Q. The role of music therapy in treatment of senile depression. *Guide China Medicine* 2011;**9**:112-3.

Additional references

Albornoz 2009

Albornoz Y. The Effects of Group Improvisational Music Therapy on Depression in Adolescents and Adults With Substance Abuse. [PhD thesis]. Philadelphia, PA: Temple University, 2009.

Albornoz 2016

Albornoz Y. Artistic Music Therapy: An Individual Group and Social Approach. New Braunfels, Texas: Barcelona Publishers, 2016.

APA 1980

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-III). 3rd Edition. Washington, DC: American Psychiatric Association, 1980.

APA 1987

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R). 3rd Edition. Washington, DC: American Psychiatric Association, 1987.

APA 1994

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). 4th Edition. Washington, DC: American Psychiatric Association, 1994.

APA 2000

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR). 4th Edition. Washington, DC: American Psychiatric Association, 2000.

APA 2013

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-5). 5th Edition. Washington, DC: American Psychiatric Association, 2013.

Assche 2015

van Assche E, de Backer J, Vermot R. Music therapy and depression [Muziektherapie bij depressie]. *Tijdschrift voor Psychiatrie* 2015;**57**(11):823-9. [PUBMED: 26552929]

Baumgartner 2006

Baumgartner T, Esslen M, Jancke L. From emotion perception to emotion experience: emotions evoked by pictures and classical music. *International Journal of Psychophysiology* 2006;**60**:34-43. [DOI: [10.1016/j.ijpsycho.2005.04.007](https://doi.org/10.1016/j.ijpsycho.2005.04.007); PUBMED: 15993964]

Baumgartner 2006a

Baumgartner T, Lutz K, Schmidt CF, Jäncke L. The emotional power of music: how music enhances the feeling of affective pictures. *Brain Research* 2006;**1075**(1):151-64. [DOI: [10.1016/j.brainres.2005.12.065](https://doi.org/10.1016/j.brainres.2005.12.065); PUBMED: 16458860]

Beck 1961

Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Archives of General Psychiatry* 1961;**4**:561-71. [PUBMED: 13688369]

Beck 1988

Beck AT, Steer RA, Garbin MG. Psychometric properties of the Beck Depression Inventory: twenty-five years of evaluation. *Clinical Psychology Review* 1988;**8**(1):77-100. [DOI: [10.1016/0272-7358\(88\)90050-5](https://doi.org/10.1016/0272-7358(88)90050-5)]

Benson 2014

Benson T, Potts HW. A short generic patient experience questionnaire: howRwe development and validation. *BMC Health Services Research* 2014;**14**(1):208-27. [DOI: [10.1186/s12913-014-0499-z](https://doi.org/10.1186/s12913-014-0499-z); PUBMED: 25331177]

Bouwman 2013

Bouwman C, de Jong K, Timman R, Zijlstra-Vlasveld M, Van der Feltz-Cornelis C, Tan Swan S, et al. Feasibility, reliability and validity of a questionnaire on healthcare consumption and productivity loss in patients with a psychiatric disorder (TiC-P). *BMC Health Services Research* 2013;**13**:217. [DOI: [10.1186/1472-6963-13-217](https://doi.org/10.1186/1472-6963-13-217); PUBMED: 23768141]

Brooks 1995

Brooks R. EuroQol: the current state of play. *Health Policy* 1995;**37**:53-72. [PUBMED: 10158943]

Bruscia 1991

Bruscia KE. Case Studies in Music Therapy. Barcelona Publishers: Gilsum, New Hampshire, USA, 1991.

Bruscia 2014

Bruscia KE. Defining Music Therapy. 3rd Edition. University Park, Illinois, USA: Barcelona Publishers, 2014.

Bruscia 2015

Bruscia KE. Notes on the Practice of Guided Imagery and Music. Dallas, Texas, USA: Barcelona Publishers, 2015.

CBMT 2017

Certification Board for Music Therapists. Downingtown, Pennsylvania, USA: The Certification Board for Music Therapists. 2017. Available from <http://cbmt.org/>. Version accessed 8 November 2017.

Cohen 1988

Cohen J. Statistical Power Analysis for the Behavioral Sciences. 2nd Edition. Hillsdale, New Jersey, USA: Lawrence Earlbaum Associates, 1988.

Davidson 1986

Davidson J, Turnbull CD, Strickland R. The Montgomery-Åsberg Depression Scale: reliability and validity. *Acta Psychiatrica Scandinavica* 1986;**73**(5):544-8. [DOI: [10.1111/j.1600-0447.1986.tb02723.x](https://doi.org/10.1111/j.1600-0447.1986.tb02723.x)]

Derogatis 1977

Derogatis LR, Cleary PA. Factorial invariance across gender for the primary symptom dimensions of the SCL-90. *British Journal of Social and Clinical Psychology* 1977;**16**(4):247-356. [PUBMED: 588890]

Edwards 2016

Edwards J. The Oxford Handbook of Music Therapy. Oxford: Oxford University Press, 2016.

Egger 1997

Egger M, Smith GD, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal* 1997;**315**(7109):629-34. [DOI: [10.1136/bmj.315.7109.629](https://doi.org/10.1136/bmj.315.7109.629); PUBMED: 9310563]

EMTC 2017

European Music Therapy Confederation. EMTC Member Associations 2017. Available from <http://www.emtc-eu.com/members>. Version accessed 8 November 2017.

Erkkilä 2008

Erkkilä J, Gold C, Fachner J, Ala-Ruona E, Punkanen M, Vanhala M. The effect of improvisational music therapy on the treatment of depression: protocol for a randomised controlled trial. *BMC Psychiatry* 2008;**8**(50):1-9. [DOI: [10.1186/1471-244X-8-50](https://doi.org/10.1186/1471-244X-8-50)]

Erkkilä 2014

Erkkilä J. Improvisational experiences of Psychodynamic Music Therapy for people with depression. In: De Backer J, Sutton J editor(s). The Music in Music Therapy: Psychodynamic Music Therapy in Europe: Clinical, Theoretical and Research Approaches. London: Jessica Kingsley Publishers, 2014:260-81.

Fils 2010

Fils JM, Penick EC, Nickel EJ, Othmer E, DeSouza C, Gabrielli WF, et al. Minor versus major depression: a comparative clinical study. *Primary Care Companion to the Journal of Clinical*

Psychiatry 2010;**12**(1):1-7. [DOI: [10.4088/PCC.08m00752blu](https://doi.org/10.4088/PCC.08m00752blu); PUBMED: 402882809]

Gold 2009

Gold C, Solli HP, Krüger V, Lie SA. Dose-response relationship in music therapy for people with serious mental disorders: systematic review and meta-analysis. *Clinical Psychology Review* 2009;**29**:193-207. [DOI: [10.1016/j.cpr.2009.01.001](https://doi.org/10.1016/j.cpr.2009.01.001); PUBMED: 19269725]

Gotlib 2014

Rottenberg J, Bylsma LM. Emotional functioning in depression. In: Gotlib IH, Hammen CL editor(s). Handbook of Depression. 3d. New York: The Guilford Press, 2014:103-21.

GRADEproGDT 2015 [Computer program]

Hamilton, ON: McMaster University (developed by Evidence Prime). Available from grade.pro. GRADEproGDT. Hamilton, ON: McMaster University (developed by Evidence Prime). Available from grade.pro, 2015. Version accessed 10 May 2017.

Grocke 2007

Grocke D, Wigram T. Receptive Methods in Music Therapy. London: Jessica Kingsley Publishers, 2007.

Grocke 2015

Grocke D, Moe T. Guided Imagery & Music (GIM) and Music Imagery Methods for Individual and Group Therapy. London: Jessica Kingsley Publishers, 2015.

Hamilton 1959

Hamilton M. The assessment of anxiety states by rating. *British Journal of Medical Psychology* 1959;**32**:50-5. [PUBMED: 13638508]

Hamilton 1960

Hamilton M. A rating scale for depression. *Journal of Neurology, Neurosurgery and Psychiatry* 1960;**23**:56-62. [DOI: [10.1136/jnnp.23.1.56](https://doi.org/10.1136/jnnp.23.1.56); PUBMED: 14399272]

Hamilton 1966

Hamilton M. Assessment of change in psychiatric state by means of rating scales. *Proceedings of the Royal Society of Medicine* 1966;**59**(1):10-3. [PUBMED: 5922401]

Hamilton 1967

Hamilton M. Development of rating scale for primary depressive illness. *British Journal of Social and Clinical Psychology* 1967;**6**:278-96. [PUBMED: 6080235]

Hamilton 1969

Hamilton M. Standardised assessment and recording of depressive symptoms. *Psychiatry, Neurologica, Neurochirurgia* 1969;**72**:201-5. [PUBMED: 5792061]

Hamilton 1980

Hamilton M. Rating depressive patients. *Journal of Clinical Psychiatry* 1980;**41**:21-4. [PUBMED: 7440521]

Hays 1993

Hays RD, Sherbourne CD, Mazel RM. The RAND 36-item health survey 1.0. *Health Economics* 1993;**2**(3):217–27. [DOI: [10.1002/hec.4730020305](https://doi.org/10.1002/hec.4730020305); PUBMED: 8275167]

Higgins 2015

Higgins JP, Green S, editors. *Cochrane Handbook for Systematic Reviews of Interventions*. 2015. Chichester, West Sussex: John Wiley & Sons Ltd, 2015.

Hoffmann 2013

Hoffmann T, Bennett S, Del Mar C. *Evidence-Based Practice Across the Health Professions*. 2nd Edition. Chatswood, New South Wales: Elsevier Australia, 2013.

Juslin 2010

Juslin PN, Liljestrom S, Vastfjall D, Lundqvist LO. How does music evoke emotions. Exploring the underlying mechanisms. In: Juslin PN, Sloboda JA editor(s). *Handbook of Music and Emotion. Theory, Research, Applications*. New York: Oxford University Press, 2010:605–42.

Koelsch 2015

Koelsch S, Jancke L. Music and the heart. *European Heart Journal* 2015;**36**:3043–8. [DOI: [10.1093/eurheartj/ehv430](https://doi.org/10.1093/eurheartj/ehv430)]

Lotrakul 1999

Lotrakul M, Sukanich P. Development of the Thai Depression Inventory. *Journal of the Medical Association of Thailand* 1999;**82**(12):1200–7. [ISSN: 01252208; PUBMED: 10659561]

Maier 1988

Maier M, Buller R, Philipp M, Heuser I. The Hamilton Anxiety Scale: reliability, validity and sensitivity to change in anxiety and depressive disorders. *Journal of Affective Disorders* 1988;**14**(1):61–8. [PUBMED: 2963053]

Maratos 2011

Maratos A, Crawford MJ, Procter S. Music therapy for depression: it seems to work, but how?. *British Journal of Psychiatry* 2011;**199**(2):92–3. [DOI: [10.1192/bjp.bp.110.087494](https://doi.org/10.1192/bjp.bp.110.087494)]

Montgomery 1979

Montgomery SA, Asberg M. A new depression scale designed to be sensitive to change. *British Journal of Psychiatry* 1979;**134**(4):382–9. [PUBMED: 444788]

Nordoff 1977

Nordoff P, Robbins C. Creative music therapy. In: Nordoff P, Robbins C editor(s). *Creative Music Therapy*. New York, New York, USA: John Day, 1977.

Odell-Miller 1995

Odell-Miller H. Why provide music therapy in the community for adults with mental health problems?. *British Journal of Music Therapy* 1995;**9**:4–10. [DOI: [10.1177/135945759500900102](https://doi.org/10.1177/135945759500900102)]

Palazidou 2012

Palazidou E. The neurobiology of depression. *British Medical Bulletin* 2012;**101**(1):127–45. [DOI: [10.1093/bmb/lds004](https://doi.org/10.1093/bmb/lds004)]

Porter 2016

Porter S, McConnell T, McLaughlin K, Lynn F, Cardwell C, Braiden HJ, et al. Music therapy for children and adolescents with behavioural and emotional problems: a randomised controlled trial. *Journal of Child Psychology and Psychiatry* 2016:1–9. [DOI: [10.1111/jcpp.12656](https://doi.org/10.1111/jcpp.12656); PUBMED: 27786359]

Punkanen 2011

Punkanen M. *Improvisational Music Therapy and Perception of Emotions in Music by People With Depression*. [PhD thesis]. Jyväskylä: University of Jyväskylä, University of Jyväskylä, 2011. Available from <https://jyx.jyu.fi/dspace/bitstream/handle/123456789/27199/9789513943042.pdf>. Version accessed 8 November 2017.

RevMan 2014 [Computer program]

The Nordic Cochrane Centre, The Cochrane Collaboration. Review Manager (RevMan). Version 5.3 for Windows. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2014.

Richards 2014

Richards SC, O'Hara MW. *The Oxford Handbook of Depression and Comorbidity*. New York, New York, USA: Oxford University Press, 2014.

Rosenberg 1979

Rosenberg M. *Conceiving the Self*. New York, NY, USA: Basic Books, 1979.

Rush 1986

Rush AJ, Giles DE, Schlessler MA, Fulton CL, Weissenburger JE, Burns CT. The Inventory of Depressive Symptomatology (IDS): preliminary findings. *Psychiatry Research* 1986;**18**(1):65–87. [DOI: [10.1016/0165-1781\(86\)90060-0](https://doi.org/10.1016/0165-1781(86)90060-0); PUBMED: 3737788]

Schulz 2010

Schulz KF, Altman DG, Moher D. CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. *Journal of Clinical Epidemiology* 2010;**63**(8):834–40. [DOI: [10.1016/j.jclinepi.2010.02.005](https://doi.org/10.1016/j.jclinepi.2010.02.005); PUBMED: 20346629]

Schünemann 2009

Schünemann H, Brozek J, Oxman A, editors. *GRADE handbook for grading quality of evidence and strength of recommendation*. Version 3.2 [updated March 2009]. GRADE Handbook for Grading Quality of Evidence and Strength of Recommendation. Version 3.2. The GRADE Working Group, 2013. Available from <https://gdt.grade.pro.org/app/handbook/handbook.html>. Version accessed 8 November 2017.

Silverman 2015

Silverman MJ. *Music Therapy in Mental Health for Illness Management and Recovery*. Oxford: Oxford University Press, 2015.

Standley 1991

Standley K. *Music as a therapeutic intervention in medical and dental treatment: research and clinical applications*. The Art and Science of Music Therapy: A Handbook. New York, New York, USA: Routledge, Taylor & Francis Group, 1991.

Sterne 2000

Sterne JAC, Gavaghan D, Egger M. Publication and related bias in meta-analysis: power of statistical tests and prevalence in the literature. *Journal of Clinical Epidemiology* 2000;**53**(11):1119-29. [DOI: [10.1016/S0895-4356\(00\)00242-0](https://doi.org/10.1016/S0895-4356(00)00242-0); PUBMED: 11106885]

Sterne 2011

Sterne JAC, Egger M, Moher D (editors). Chapter 10: Addressing reporting biases.. Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions*. Version 5.1.0 (updated March 2011). The Cochrane Collaboration, 2011. Available from www.handbook.cochrane.org.

Straus 2011

Straus S, Richardson W, Glasziou P. *Evidence-Based Medicine: How to Practice and Teach EBM*. 4th Edition. Edinburgh, Scotland: Churchill Livingstone, 2011.

Thaut 1999

Thaut MH. *Techniques of neurologic music therapy in neurologic rehabilitation. Training Manual for Neurologic Music Therapy*. Fort Collins, Colorado, USA: Colorado State University, 1999.

Thaut 2014

Thaut MH, Hoemberg V. *Handbook of Neurologic Music Therapy*. Oxford: Oxford University Press, 2014.

Trondalen 2016

Trondalen G. *Relational Music Therapy: An Intersubjective Perspective*. Dallas, Texas, USA: Barcelona Publishers, 2016.

Tyrer 2005

Tyrer P, Nur U, Crawford M, Karlsen S, McLean C, Rao B, Johnson T. The Social Functioning Questionnaire: a rapid and robust measure of perceived functioning. *International Journal of Social Psychiatry* 2005;**51**:265-75. [DOI: [10.1177/0020764005057391](https://doi.org/10.1177/0020764005057391); PUBMED: 28095167]

Ware 1992

Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical Care* 1992;**30**:473-83. [PUBMED: 1593914]

WFMT 2011

World Federation of Music Therapy. *Supporting music therapy worldwide. What is music therapy? 2011*. Available from http://www.wfmt.info/WFMT/About_WFMT.. World Federation of Music therapy., Version accessed 8 November 2017.

Wheeler 2015

Wheeler BL. *Music Therapy Handbook*. New York, New York, USA: Guilford Publications, 2015.

Wheeler 2015a

Gardstrom S, Sorel S. Music therapy methods. In: Wheeler BL editor(s). *Music Therapy Handbook*. New York, New York, USA: The Guilford Press, 2015.

WHO 1992

World Health Organization. *The ICD-10 Classification of Mental and Behavioral Disorders: Clinical Descriptions and Diagnostic Guidelines*. Geneva, Switzerland: World Health Organization, 1992.

WHO 2012

World Health Organization. *Depression a global public health concern*. 2012. Available from http://www.who.int/mental_health/management/depression/who_paper_depression_wfmh_2012.pdf.. Geneva: World Health Organisation, Version accessed 8 November 2017.

WHO 2017

World Health Organization. *Depression*. 2017. Available from <http://www.who.int/mediacentre/factsheets/fs369/en/>. Version accessed 8 November 2017.

Wigram 2014

Wigram T. The religion of evidence-based practice: helpful or harmful to music therapy?. In: De Backer J, Sutton J editor(s). *The Music in Music Therapy. Psychodynamic Music Therapy in Europe: Clinical, Theoretical and Research Approaches*. London: Jessica Kingsley Publishers, 2014.

Yesavage 1983

Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey MB, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *Journal of Psychiatric Research* 1983;**17**(1):37-49. [DOI: [10.1016/0022-3956\(82\)90033-4](https://doi.org/10.1016/0022-3956(82)90033-4); PUBMED: 7183759]

Zhao 2016

Zhao K, Bai ZG, Bo A, Chi I. A systematic review and meta-analysis of music therapy for the older adults with depression. *International Journal of Geriatric Psychiatry* 2016;**31**(11):1188-98. [DOI: [10.1002/gps.4494](https://doi.org/10.1002/gps.4494); PUBMED: 27094452]

Zigmond 1983

Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica* 1983;**67**:361-70. [DOI: [10.1111/j.1600-0447.1983.tb09716.x](https://doi.org/10.1111/j.1600-0447.1983.tb09716.x)]

References to other published versions of this review
Maratos 2003

Maratos A, Gold C. Music therapy for depression. *Cochrane Database of Systematic Reviews* 2003, Issue 4. [DOI: [10.1002/14651858.CD004517](https://doi.org/10.1002/14651858.CD004517)]

Maratos 2008

Maratos A, Gold C, Wang X, Crawford M. Music therapy for depression. *Cochrane Database of Systematic Reviews* 2008, Issue 1. [DOI: [10.1002/14651858.CD004517.pub2](https://doi.org/10.1002/14651858.CD004517.pub2); PUBMED: 18254052]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Albornoz 2011

Methods	<p><i>Study design:</i> randomised controlled trial, pre-test post-test control group design</p> <p><i>Aim of study:</i> to determine the effectiveness of improvisational music therapy in relieving symptoms of depression among adolescents and adults with substance abuse</p> <p><i>Number of arms:</i> 2</p> <p><i>Experimental arm:</i> music therapy and standard treatment</p> <p><i>Control arm:</i> standard treatment</p> <p><i>Consumer involvement:</i> evaluating depression, using patient-reported BDI</p> <p><i>Informed consent:</i> yes; opportunity to provide informed consent</p> <p><i>Ethical approval:</i> yes; approval of the Institutional Review Board (IRB-10739) was obtained</p> <p><i>Power calculation:</i> unclear; the Statistical Program for Power Analysis and Sample Size was used to compute effect size and power</p>
Participants	<p><i>Description:</i> patients</p> <p><i>Geographical location:</i> Mérida, Venezuela, South America</p> <p><i>Methods of recruitment of participants:</i> The researcher requested referrals at the beginning of each 3-month treatment cycle at the facility, when new patients were admitted. Each set of newly admitted patients who met inclusion criteria was randomly assigned to the experimental or control condition.</p> <p><i>Setting:</i> foundation; Fundación José Felix Ribas (FJFR)</p> <p><i>Principal health problem:</i> substance abuse</p> <p><i>Inclusion:</i> (1) some kind of addiction problem, including addiction or abuse of psychotropic and pharmacological substances such as alcohol; (2) recently admitted to the treatment program for substance abuse at the centre; and (3) scores on BDI or HRSD indicating that they were significantly depressed (e.g. > 10 on the BDI, > 7 on the HRSD)</p> <p><i>Exclusion:</i> (1) unable to communicate (aphasia); (2) diagnosis of mental retardation and incapable of symbolic thinking; (3) hearing losses that impaired ability to hear music or the spoken word; and (4) not receiving medication for depression</p> <p><i>Severity of depression:</i> mild to severe</p> <p><i>Number of prior depressive episodes:</i> not reported</p> <p><i>Comorbidity:</i> depression</p> <p><i>Age, range, mean (standard deviation):</i> range 16 to 60 years of age. Mean not reported</p> <p><i>Sex:</i> male</p> <p><i>Sociodemographics:</i> not reported</p> <p><i>Ethnicity:</i> not reported</p> <p><i>Exclusion important groups:</i> no</p> <p><i>Total numbers included in this trial:</i> N = 24</p> <p><i>Numbers included in music therapy:</i> n = 12</p>

Albornoz 2011 (Continued)

Numbers included in control group: n = 12

Interventions

Treatment arm

Intervention: music therapy

Excluded intervention: not reported

Name of intervention: Artistic Music Therapy (MAR) (see also [Albornoz 2016](#))

Aims and rationale: not reported

Method: active music therapy

What was done:(materials) simple percussion, other materials not reported;*(procedures)* free music improvisation, free discussion, explorations in other artistic media (e.g. movement, poetry, psychodrama) and public performance;*(mode of delivery)* face-to-face;*(co-interventions)* treatment as usual;*(medication)* not reported

Location: Fundación José Felix Ribas (FJFR), located in Mérida, Venezuela. Specific location for music therapy not reported

Tailoring (how, when, why, what): MAR sessions unfold from moment to moment according to participants' responses and needs.

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: once weekly

Duration of session: 2 hours

Duration of treatment: 3 months

Delivered number of sessions: 12

Individual or group: group

Who delivered intervention: researcher, therapist

Therapist training: Doctor of Philosophy in Music Therapy, Bachelor of Music, Master of Music Therapy, Technicature in Rehabilitation

Therapist's post-qualifying experience: Technicature in Rehabilitation

Monitoring of adherence to music therapy paradigm/protocol: not reported

Control arm

Intervention: treatment as usual

Excluded intervention: music therapy

Name of intervention: treatment as usual

Aims and rationale: not reported

Type of therapy: individual psychotherapy, group psychotherapy (emotional and cognitive-behavioural groups), family and couple groups, and morning

groups conducted by advanced patients, pharmacotherapy, recreational, social and sport activities, special activities, general medical care, and social work assistance

What was done:(materials) not reported;*(procedures)* not reported;*(mode of delivery)* not reported;*(co-interventions)* not reported;*(medication)* not reported

Albornoz 2011 (Continued)

Location: Fundación José Felix Ribas (FJFR), located in Mérida, Venezuela. Specific location not reported

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: not reported

Duration of session: not reported

Duration of treatment: 3 months

Delivered number of sessions: not reported

Individual or group: not reported

Who delivered intervention: not reported

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Outcomes	Clinician-rated depression: HRSD Patient-reported depression: BDI
Notes	<p><i>Funding for trial:</i> not reported</p> <p><i>Notable conflicts:</i> not reported</p> <p><i>Other:</i> none</p> <p><i>Key conclusions:</i> (1) Individuals with substance abuse showed significant improvement in clinician-reported depression (HRSD) as a result of improvisation therapy, but did not show significant improvement in patient-reported depression (BDI), when compared with individuals in regular treatment programme alone. (2) Psychologists apparently perceived greater improvement in depression among participants than participants perceived in themselves.</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The investigators describe a random component in the sequence generation process. <i>Quote:</i> "Each set of newly admitted patients who met inclusion criteria was randomly assigned to the experimental or control condition. A statistician used the Excel1 program to generate random number lists in blocks; each list contained the numbers of subjects to be assigned to control and experimental groups."
Allocation concealment (selection bias)	Low risk	Participants and investigators enrolling participants could not foresee assignment. <i>Quote:</i> "Sequentially numbered envelopes were created to ensure allocation concealment."

Albornoz 2011 (Continued)

Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Personnel were blinded. For participants, blinding was not possible. <i>Quote:</i> "The psychologist provided an evaluation of the participant's level of depression on the HRSD. The psychologist did not know which participants were in the experimental and control groups. Moreover, the psychologist did not treat any of the participants." <i>Quote:</i> "Dependent variables used in this study were: (1) self-rated depression scores on the BDI, and (2) psychologist-rated depression scores on the HRSD."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Outcome assessment for HRSD was blinded. For BDI, blinded outcome assessment was not possible. <i>Quote:</i> "The researcher who administered the BDI had no access to medical charts and the psychologist did not know which participants were in the experimental and control group." <i>Quote:</i> "Dependent variables used in this study were: (1) self-rated depression scores on the BDI, and (2) psychologist-rated depression scores on the HRSD."
Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing. <i>Quote:</i> See Results Table 2.
Selective reporting (reporting bias)	Low risk	An earlier published dissertation was available, and all outcomes were reported as planned. <i>Quote:</i> "The researcher administered the BDI as a pre-test to all participants referred by the psychologist at the facility and did not have access to medical charts. In addition, the psychologist provided an evaluation of the participant's level of depression on the HRSD." (See Albornoz 2009 and Table 1 in study report.)
Other bias	Low risk	The study appears to be free of other sources of bias.

Atiwannapat 2016

Methods	<p><i>Study design:</i> single-blinded randomised controlled trial</p> <p><i>Aim of study:</i> to compare the effectiveness of music therapy (active and receptive groups) and group counselling in MDD</p> <p><i>Number of arms:</i> 3</p> <p><i>Experimental arm:</i> music therapy (active)</p> <p><i>Control arm 1:</i> music therapy (receptive)</p> <p><i>Control arm 2:</i> counselling</p> <p><i>Consumer involvement:</i> evaluating depression and quality of life, using patient-reported TDI, SF-36 Thai</p> <p><i>Informed consent:</i> yes; method not reported</p> <p><i>Ethical approval:</i> yes; study was approved by the Institution Committee on Human Rights Related to Research Involving Human Subjects</p> <p><i>Power calculation:</i> not reported</p>
Participants	<i>Description:</i> outpatients

Music therapy for depression (Review)

Atiwannapat 2016 (Continued)

Geographical location: Asia, Thailand, Bangkok

Methods of recruitment of participants: not reported

Setting: hospital

Principal health problem: major depressive disorder (MDD)

Inclusion: ICD-10 diagnosis of MDD; score ≥ 7 on the Montgomery-Asberg Depression Rating Scale (MADRS) Thai version required. Eligibility did not include medication status and music skills.

Exclusion: severe depression with repeated suicidal behaviour/psychotic symptoms or need for hospitalisation, substance abuse/dependence, hearing or communication problems, and treatment with psychotherapy or electroconvulsive therapy

Severity of depression: mild to severe depression

Number of prior depressive episodes: duration of depression in years, mean (SD) 9.48 (12.56) active music therapy; 8.95 (11.59) receptive music therapy; 8.77 (13.09) counselling

Comorbidity: medical comorbidity

Age, range, mean (standard deviation): 18 to 65 years; mean (SD) 41.6 (11.15) active music therapy; 54.4 (6.73) receptive music therapy; 55.25 (10.21) counselling

Sex: male and female

Sociodemographics active music therapy: married (n = 1); employed (n = 5); musical background (patient-reported): sings (n = 1), plays an instrument (n = 1), both (n = 1)

Sociodemographics receptive music therapy (n = 3); employed (n = 2); musical background (patient-reported): sings (n = 2), plays an instrument (n = 0), both (n = 0)

Sociodemographics counselling: married (n = 2); employed (n = 2); musical background (patient-reported): sings (n = 1), plays an instrument (n = 0), both (n = 0)

Ethnicity: not reported

Exclusion important groups: not reported

Total numbers included in this trial: N = 14

Numbers included in active music therapy: n = 5

Numbers included in receptive music therapy: n = 5

Numbers included in control group: n = 4

Interventions
Treatment arm

Intervention: active music therapy

Excluded intervention: treatment with psychotherapy or electroconvulsive therapy

Name of intervention: not reported

Aims and rationale: "To improve depressive symptoms and quality of life. CBT was used as the theoretical framework, but therapists did not limit themselves. To encourage positive ideas and behaviour, increase relaxation, support positive engagement between the group members and also between the therapists and the group members, provide outlet or expression, and encourage positive coping skills and socialisation" (info e-mail)." "The music therapists will utilize ISO principle which is a music therapy technique that uses the music that, first, matches the mood/state of the subjects, then, slowly alters the music speed and style to change the mood/state of the subjects." (info unpublished MT protocol)

Method: active music therapy

Atiwannapat 2016 (Continued)

What was done:(materials) voice, percussion, such as maracas, egg shakers, and rhythm sticks;*(procedures)* each session contained 3 phases: opening (10 to 15 minutes), 1 or 2 main interventions (35 to 45 minutes), and closing (5 to 10 minutes). All sessions were facilitated by a board-certified (MT-BC) music therapist and a music therapy assistant. Sessions began with group singing. Main interventions were (1) Instrument choir playing, including anklung, tone bars, and hand bells; (2) song writing and group performance; and (3) improvisation using percussion such as maracas, egg shakers, and rhythm sticks. Sessions ended with group singing and instrument playing;*(mode of delivery)* face-to-face;*(co-interventions)* treatment as usual = counselling and medication, but not psychotherapy and not electroconvulsive therapy;*(medication)* SSRIs

Location: Department of Psychiatry, Faculty of Medicine, Ramathibodi Hospital, Mahidol University

Tailoring (how, when, why, what): not reported. "The music therapy approach they used changed occasionally according to moment-to-moment needs of the groups.

The order of the interventions was sometimes changed according to needs of the groups (info e-mail)."

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: 1 hour

Duration of treatment: 12 sessions

Delivered number of sessions: Average number of sessions per participant was 8 (SD 2.6), range 5 to 12.

Individual or group: group

Who delivered intervention: board-certified (MT-BC) music therapist (PP) and music therapy assistant

Therapist training: Bachelor of Music Therapy

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Control arm

Intervention: receptive music therapy (control arm 2: counselling; all info reported between brackets)

Excluded intervention: treatment with psychotherapy or electroconvulsive therapy (treatment with psychotherapy or electroconvulsive therapy)

Name of intervention: not reported (not reported)

Aims and rationale: to improve depressive symptoms and quality of life. "The music therapists will utilize ISO principle which is a music therapy technique that uses the music that, first, matches the mood/state of the subjects, then, slowly alters the music speed and style to change the mood/state of the subjects (info MT protocol)." (to improve depressive symptoms and quality of life, problem-solving and coping skills)

Method/Type of therapy: receptive music therapy (counselling and medication)

What was done:(materials) for both receptive group and counselling group not reported;*(procedures)* each session contained 3 phases: opening (10 to 15 minutes), 1 or 2 main interventions (35 to 45 minutes), and closing (5 to 10 minutes). All sessions were facilitated by a board-certified (MT-BC) music therapist and a music therapy assistant. Sessions began with music listening. Main interventions were (1) lyric analysis including sharing thoughts and comments, (2) song writing, facilitated by music therapist, but participants selected words of their choice; and (3) drawing while listening to the music. Sessions ended with music and relaxation. Active music-making behaviours were not actively reinforced (group interventions, focus on problem-solving, and improved coping skills); *(mode of delivery)* face-

Atiwannapat 2016 (Continued)

to-face (face-to-face);(co-interventions) treatment as usual, medication, but not psychotherapy and not electroconvulsive therapy (medication, but not psychotherapy and not electroconvulsive therapy)

Location: Department of Psychiatry, Faculty of Medicine, Ramathibodi Hospital, Mahidol University (Department of Psychiatry, Faculty of Medicine, Ramathibodi Hospital, Mahidol University)

Tailoring (how, when, why, what): not reported (not reported)

Modification intervention: not reported (not reported)

Quality of delivery: not reported (not reported)

Intensity of sessions: weekly (weekly)

Duration of session: 1 hour (1 hour)

Duration of treatment: 12 sessions (12 sessions)

Delivered number of sessions: 7.6 (SD 4.0, range 2 to 11); (6.8 (SD 5.6, range 1 to 12)). When dropouts were excluded, average number of sessions in receptive and control groups was increased to 9 (SD 2.8, range 5 to 11); (11.5 (SD 0.7, range 11 to 12))

Individual or group: group (group)

Who delivered intervention: board-certified (MT-BC) music therapist and music therapy assistant (senior psychiatry resident)

Therapist training: not reported (not reported)

Therapist's post-qualifying experience: not reported (not reported)

Tailoring (how, why, when, what): not reported (not reported)

Modification intervention: not reported (not reported)

Monitoring of adherence to music therapy paradigm/protocol: not reported (not reported)

Outcomes	<p>Clinician-rated depression: MADRS Thai</p> <p>Patient-reported depression: TDI</p> <p>Quality of life: Thai SF-36</p>
Notes	<p><i>Funding for trial:</i> This study was supported by a Research Grant from the Faculty of Medicine, Ramathibodi Hospital, Mahidol University Number RF 57011.</p> <p><i>Notable conflicts:</i> Trial authors report no conflicts of interest in this work.</p> <p><i>Other:</i> none</p> <p><i>Key conclusions:</i> Group music therapy is an interesting adjunctive treatment for MDD. The receptive group may reach peak therapeutic effect faster, but the active group may have higher peak effect. Further trials evaluating these non-invasive interventions in MDD are required.</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	<p>The investigators describe a random component in the sequence generation process.</p> <p><i>Quote:</i> "Participants were randomly assigned to active group, receptive group, and counselling group using drawing lots 1:1:1 randomization."</p>

Atiwannapat 2016 (Continued)

Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement of 'Low risk' or 'High risk'. The method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Personnel were blinded. For participants, blinding was not possible. <i>Quote:</i> "One well-trained psychiatric nurse who evaluated patients' outcomes, including MADRS rating, was blinded to assigned interventions." <i>Quote:</i> "The secondary outcomes were the change from baseline in self-rated depression score ... and quality of life..."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Primary outcome was blinded. For patient-reported secondary outcomes, blinding of outcome assessment was not possible. <i>Quote:</i> "One well-trained psychiatric nurse who evaluated patients' outcomes, including MADRS rating, was blinded to assigned interventions. The primary outcome was the change from baseline in MADRS Thai depression total score."
Incomplete outcome data (attrition bias) All outcomes	High risk	The proportion of and reason for data missing from one of the control arms were large enough to have a clinically relevant effect because of the small group. <i>Quote:</i> "There was no dropout in the active music therapy groups. One (20%) patient in the receptive group dropped out... due to unknown reason. Two patients (50%) dropped out in the control group due to lack of motivation."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in the methods section. <i>Quote:</i> "The efficacy analyses used an intention-to-treat group with all randomly assigned patients who had at least one post-baseline assessment" (and Table 1).
Other bias	Low risk	The study appears to be free of other sources of bias.

Chen 1992

Methods	<i>Study design:</i> randomised controlled trial <i>Aim of study:</i> to assess the effect of music therapy for geriatric depression <i>Number of arms:</i> 2 <i>Experimental arm:</i> music therapy and tricyclic antidepressants <i>Control arm:</i> tricyclic antidepressants <i>Consumer involvement:</i> Only clinician-rated outcome measures were used. <i>Informed consent:</i> not reported <i>Ethical approval:</i> not reported <i>Power calculation:</i> not reported
Participants	<i>Description:</i> patients <i>Geographical location:</i> Asia, Beijing <i>Methods of recruitment of participants:</i> not reported

Music therapy for depression (Review)

Chen 1992 (Continued)

Setting: hospital

Principal health problem: geriatric depression; some experienced episodes of bipolar disorder

Diagnostic criteria for inclusion: geriatric depression.

Diagnostic criteria for exclusion: not reported

Severity of depression: > 17 on the HAM-D

Number of prior depressive episodes: not reported

Comorbidity: unclear whether anxiety was a comorbidity

Age, range, mean (standard deviation): experimental group: 60 to 77, mean 63.91 (SD 4.85); control group: 60 to 79, mean 64.12 (SD 4.75)

Sex: male and female

Sociodemographics intervention group: Treatment periods range from 3 months to 3 years; high school education and beyond (n = 15); junior high school and lower (n = 19); interested in music (n = 14); not interested in music (n = 20)

Sociodemographics control group: Treatment periods range from 2 months to 3 years; high school education and beyond (n = 14); junior high school and lower (n = 20); interested in music (n = 12); not interested in music (n = 22)

Ethnicity: Chinese.

Exclusion important groups: no

Total numbers included in this trial: N = 68

Numbers included in music therapy: n = 34

Numbers included in control group: n = 34

Interventions
Treatment arm

Intervention: music therapy

Excluded intervention: no interventions

Name of intervention: not reported

Aims and rationale: to decrease depressive symptoms

Method: active music therapy

What was done:(materials) digital piano, accordion, guitar, violin, erhu, several types of percussion instruments; enough material to ensure that 1 was available for every procedure; *(procedures)* the doctor and the music therapist chose lyrical, smooth, and lively music. The choice of music was based on the participant's situation. The music therapist also wrote 9 songs based on participant preferences. These songs had been evaluated by composers and psychiatrists, who considered them suitable for use in the treatment of geriatric depression, easy to learn, and having a clear rhythm. Apart from the musical performance, the music therapist wrote a number of songs in call and response style, in which a question-answer pattern in the music was used to ask participants whether they had slept well and what they had on their mind; these questions and answers allowed for an emotional connection with participants and gave rise to emotional resonance, which increased emotional response and interest in life;*(mode of delivery)* face-to-face; *(co-interventions)* standard care, e.g. medication and hospitalisation; *(medication)* tricyclic antidepressants

Location: music therapy treatment room

Tailoring (how, when, why, what): The music therapist wrote 9 songs based on participant preferences.

Chen 1992 (Continued)

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: 6 times a week

Duration of session: 1 hour

Duration of treatment: 8 weeks

Delivered number of sessions: 48 sessions

Individual or group: group

Who delivered intervention: music therapist and a doctor

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Control arm

Intervention: tricyclic antidepressants

Excluded intervention: music therapy

Name of intervention: not reported

Aims and rationale: to decrease depression

Type of TAU: antidepressants

What was done:(materials) tricyclic antidepressants;*(procedures)* both treatment group and control group underwent treatment with the tricyclic antidepressant amitriptyline, starting with 25 mg/d, which was increased to 50 mg/d within 3 days; *(mode of delivery)* face-to-face; *(co-interventions)* not reported

Location: not reported

Tailoring (how, when, why, what): After 2 weeks, a clinical physician decided on increasing or decreasing the amount of medication based on the participant's condition (not based on the assessment score on the scale).

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: not reported

Duration of session: not reported

Duration of treatment: not reported

Delivered number of sessions: not reported

Individual or group: not reported

Who delivered intervention: a clinical physician

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to TAU: not reported

Chen 1992 (Continued)

Outcomes	Clinician-rated depression: HAM-D Anxiety: HAM-A
Notes	<i>Funding for trial:</i> not reported <i>Notable conflicts:</i> not reported <i>Other:</i> missing SD for clinician-rated depression and anxiety <i>Key conclusions:</i> (1) Results of this report show that under equivalent conditions, participants with geriatric depression treated with music therapy showed quicker alleviation of clinical symptoms, and the dose of medication was lower, with lighter side effects. (2) Data show no significant differences between results of music therapy in terms of individual symptoms, and no relation with whether or not participants had a musical hobby. (3) Easy-listening, smooth, and lively music was accepted more easily by participants with geriatric depression and yielded better treatment results. (4) The rate of bedriddenness decreased over the course of treatment. The atmosphere in the patient area was lively, and worry and fear among older adults with regard to hospitalisation were eliminated. Music therapy is a way for participant and the therapist to communicate emotions, mobilise participant co-operation in treatment, and decrease the difficulty of nursing those with geriatric depression. This benefited management of the treatment area.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Information about the sequence generation process was insufficient to permit judgement of 'Low risk' or 'High risk'. Method of randomisation was not reported. <i>Quote:</i> "68 hospitalised patients diagnosed with geriatric depression have been randomly divided into a music-therapy treatment group and a control (observation) group."
Allocation concealment (selection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. Method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Study did not address this outcome.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing. <i>Quote:</i> "When assessing clinical treatment results by the end of week 8, 32 cases of the treatment group showed alleviation (94.7%), while 2 cases showed either improvement or no change, whereas in the control group, 23 cases showed alleviation (68.0%) and 11 cases showed either improvement or no change."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in the methods section.

Chen 1992 (Continued)

Quote: "The patients in both groups were assessed using the HAMD depression and anxiety scale" (and Table 1).

Other bias	Unclear risk	Risk of bias may be present, but information was insufficient for assessment of whether an important risk of bias existed.
------------	--------------	--

Erkkilä 2011

Methods	<p><i>Study design:</i> randomised controlled trial</p> <p><i>Aim of study:</i> to assess the effects of music therapy on depression for working-age adults and TAU vs the effects of TAU</p> <p><i>Number of arms:</i> 2</p> <p><i>Experimental arm:</i> music therapy and TAU</p> <p><i>Control arm:</i> TAU</p> <p><i>Consumer involvement:</i> evaluating anxiety, quality of life, alexithymia, and using patient-reported HADS-A, RAND-36, TAS-20</p> <p><i>Informed consent:</i> yes; all participants gave signed informed consent to the study</p> <p><i>Ethical approval:</i> yes; the ethical board of the Central Finland Health Care District gave its approval for the study on 24 October 2007</p> <p><i>Power calculation:</i> yes; details in the study protocol</p>
Participants	<p><i>Description:</i> patients and people in the community</p> <p><i>Geographical location:</i> Europe, Finland, Jyväskylä</p> <p><i>Methods of recruitment of participants:</i> Clinicians identified potential participants among their patients and gave them information about the study; newspaper advertisements were launched to boost recruitment.</p> <p><i>Setting:</i> music therapy clinic for Research and Training, University of Jyväskylä; also, Central Finland Health Care District's psychiatric health centres and the psychiatric polyclinics of Jyväskylä City</p> <p><i>Principal health problem:</i> depression</p> <p><i>Inclusion:</i> clients who had a primary diagnosis of depression, F32 or F33, according to ICD-10 classification</p> <p><i>Exclusion:</i> clients who had a history of repeated suicidal behaviour or psychosis, acute and severe substance misuse, severity of depression that prevented them from participating in the measurements or engaging in verbal conversation, or had insufficient knowledge of the Finnish language</p> <p><i>Severity of depression:</i> mild to severe</p> <p><i>Number of prior depressive episodes:</i> not reported</p> <p><i>Comorbidity:</i> anxiety</p> <p><i>Age, range, mean (standard deviation):</i> 18 to 50 years, mean in music therapy group 35.8 (9.0), mean in control group 35.5 (10.5)</p> <p><i>Sex:</i> female and male</p> <p><i>Sociodemographics intervention group:</i> sing (n = 11); play an instrument (n = 14); have musical training (n = 7); patient-reported musician/singer (n = 9)</p>

Erkkilä 2011 (Continued)

Sociodemographics control group: sing (n = 12); play an instrument (n = 13); have musical training (n = 6); patient-reported musician/singer (n = 8)

Ethnicity: not reported

Exclusion important groups: no

Total numbers included in this trial: N = 79

Numbers included in music therapy: n = 33

Numbers included in control group: n = 46

Interventions

Treatment arm

Intervention: music therapy

Excluded intervention: not reported

Name of intervention: Individual Psychodynamic Music Therapy (IPMT) (Erkkilä 2008; Erkkilä 2014)

Aims and rationale: The basic principle of the intervention is to encourage and engage clients in expressive musical interaction, based on psychodynamic principles.

Method: active music therapy (Psychodynamic Improvisational Music Therapy)

What was done:(materials) a selection of instruments where available for both music therapist and client, including a mallet instrument, a percussion instrument, and an acoustic djembe drum;*(procedures)* free improvisation in music therapy. Music therapists were trained and supervised before and during intervention using video;*(mode of delivery)* face-to-face;*(co-interventions)* TAU, e.g. psychotherapy, psychiatric counselling when needed, and/or antidepressant; *(medication)* SSRI, SNRI

Location: music therapy clinic for Research and Training at the University of Jyväskylä, Finland

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: The intervention was well delivered. For treatment fidelity, therapists participated in extensive training before the study, lasting for 15 months.

During the study, video recordings of clinical sessions were used frequently in supervision, for monitoring both adherence to the method and competence in its application.

Intensity of sessions: bi-weekly

Duration of session: 1 hour

Duration of treatment: 20 sessions

Delivered number of sessions: 18 to 20

Individual or group: individual

Who delivered intervention: 10 qualified music therapists (3 male, 7 female); 15 months prior training and 2 monthly group sessions throughout the study

Therapist training: professional training in music therapy

Therapist's post-qualifying experience: supervision (group-based, 2 monthly sessions throughout the study, extensive training before the study, lasting for 15 months)

Monitoring of adherence to music therapy paradigm/protocol: Video recordings of clinical sessions were used in supervision.

Control arm

Erkkilä 2011 (Continued)

Intervention: TAU

Excluded intervention: music therapy

Name of intervention: not reported

Aims and rationale: not reported

Type of therapy: psychotherapy, psychiatric counselling when needed, antidepressant (SSRI, SNRI)

What was done:(materials) not reported;*(procedures)* 5 to 6 individual sessions of psychotherapy were conducted by nurses specially trained in depression;*(mode of delivery)* not reported;*(co-interventions)* antidepressants, including SSRIs and SNRIs, psychiatric counselling when needed (appointments for advice follow-up and support when needed);*(medication)* antidepressants, including SSRIs and SNRIs

Location: not reported

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: not reported

Duration of session: not reported

Duration of treatment: 5 to 6 sessions, number of psychiatric counselling sessions not reported, not reported for medication use

Delivered number of sessions: not reported

Individual or group: individual

Who delivered intervention: nurses specially trained in psychotherapy for depression; no information reported on medication and delivery of psychiatric counselling

Therapist training: not reported

Therapist's post-qualifying experience: trained in depression

Tailoring (how, why, when, what): not reported

Modification intervention: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Outcomes

Clinician-rated depression: MADRS

Adverse events: qualitative data report

Anxiety: HADS-A

Functioning: GAF

Quality of life: RAND-36

Alexithymia: TAS-20

Notes

Funding for trial: The NEST programme of European Commission, and programme for Centres of Excellence in research, Academy of Finland

Notable conflicts: none

Other: none

Erkkilä 2011 (Continued)

Key conclusions: Individual music therapy added to standard care is effective for depression, anxiety, and functioning among working-age people with depression.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The investigators describe a random component in the sequence generation process. <i>Quote:</i> "An independent person at Uni Health, Bergen, Norway, generated the randomisation list using a spreadsheet software program."
Allocation concealment (selection bias)	Low risk	Participants and investigators enrolling participants could not foresee assignment. <i>Quote:</i> "An independent person kept each participant's allocation concealed from the investigators until a decision about inclusion was made. Once all baseline data had been collected and informed consent obtained, the investigators used email to receive the allocation for the respective participant."
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Personnel were blinded and participants were not, but the review authors judge that the outcome was not likely to be influenced by lack of blinding. <i>Quote:</i> "One masked clinical expert (I.P.), with training in psychiatric nursing and long experience in psychiatry, conducted all the psychiatric assessments."
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Depression and anxiety were blinded. <i>Quote:</i> "One masked clinical expert (I.P.), with training in psychiatric nursing and long experience in psychiatry, conducted all the psychiatric assessments."
Incomplete outcome data (attrition bias) All outcomes	Low risk	Missing data have been imputed via appropriate methods. <i>Quote:</i> "All analyses were intention-to-treat. For dichotomous outcomes, this meant that we assumed the negative outcome when the information was missing. For continuous outcomes, intention-to-treat meant that we retained data from all participants for whom the information was available. Full intention-to-treat including all randomised participants is not possible for continuous outcomes. Multiple imputations is not recommended when data are missing on dependent but not on independent variables, as it would only serve to increase standard errors. As a sensitivity analysis for the primary outcome, we assumed no change for those where the outcome was unobserved. Distributions of scores and change scores were examined graphically, and if unusual outliers were found they were excluded in a sensitivity analysis."
Selective reporting (reporting bias)	Low risk	A protocol for the study was available, and all expected outcomes were identified and reported as planned. <i>Quote:</i> "Symptoms of depression will be measured with the ... MADRS... Anxiety will be evaluated by the ...HADS... General functioning will be measured using ...GAF ... Quality of life will be evaluated by the RAND-36... Alexithymia will be evaluated with the TAS-20, ..." (Erkkilä 2008 and Table 2 in study report)
Other bias	Low risk	The study appears to be free of other sources of bias.

Hanser 1994

Methods	<p><i>Study design:</i> randomised controlled trial</p> <p><i>Aim of study:</i> This study examined the effect of a music listening, stress reduction strategy, offered through home visits with a therapist as opposed to self-administered techniques with moderate and indirect therapist contact. It compared these conditions with a no-contact, wait-list control group for symptoms of depression, distress, mood, and self-esteem in older adults with a diagnosis of major or minor depression.</p> <p><i>Number of arms:</i> 3</p> <p><i>Experimental arm:</i> home-based music therapy</p> <p><i>Control arm:</i> self-administered music listening (arm 2: outside the scope of this review; not music therapy); arm 3: wait-list group, but attending a centre for older adults</p> <p><i>Consumer involvement:</i> evaluating distress, self-concept, mood, using patient-reported BSI-GSI, RSE, POMS</p> <p><i>Informed consent:</i> yes, "All 30 individuals volunteered to participate in the research"</p> <p><i>Ethical approval:</i> not reported</p> <p><i>Power calculation:</i> not reported</p>
Participants	<p><i>Description:</i> patients</p> <p><i>Geographical location:</i> Northern America, California, Palo Alto</p> <p><i>Methods of recruitment of participants:</i> not reported</p> <p><i>Setting:</i> Older Adult and Family Research and Resource Center</p> <p><i>Principal health problem:</i> major or minor depressive disorder</p> <p><i>Diagnostic criteria for inclusion:</i> not reported</p> <p><i>Diagnostic criteria for exclusion:</i> not reported</p> <p><i>Severity of depression:</i> major to minor depression</p> <p><i>Number of prior depressive episodes:</i> not reported</p> <p><i>Comorbidity:</i> not reported</p> <p><i>Age, range, mean (standard deviation):</i> range = 61 to 86 years; mean 67.9 years; SD not reported</p> <p><i>Sex:</i> female and male</p> <p><i>Sociodemographics intervention and control group:</i> fair to good health, highly educated (all but 1 completed high school, and 7 had college degrees)</p> <p><i>Ethnicity:</i> not reported</p> <p><i>Exclusion important groups:</i> not reported</p> <p><i>Total numbers included in this trial:</i> N = 32</p> <p><i>Numbers included in music therapy:</i> n = 11 (10, of whom 1 was lost to follow-up + 1 was replaced)</p> <p><i>Numbers included in control group 1:</i> n = 10 (outside the scope of this review)</p> <p><i>Numbers included in control group 2:</i> n = 11 (10, of whom 1 was lost to follow-up + 1 was replaced)</p>
Interventions	<p><u><i>Treatment arm</i></u></p> <p><i>Intervention:</i> music therapy</p>

Hanser 1994 (Continued)

Excluded intervention: any other form of treatment or psychoactive medication

Name of intervention: home-based music therapy

Aims and rationale: stress reduction, provide pleasant experiences, compatible with dysfunctional thinking and depressed mood, to improve self-esteem

Method: receptive music therapy

What was done:(materials) set of music-facilitated techniques, when necessary cassette players, additional tapes;*(procedures)* appropriate music was selected by participants with assistance of a registered and board-certified music therapist and after participants were interviewed. After observing relaxation response, music was recommended. Music therapist recommended music. Participants were instructed to find some time each day to practice techniques, also to complete a music listening log. The therapist introduced a single technique every week;*(mode of delivery)* face-to-face; *(co-interventions)* no co-interventions; *(medication)* no medication

Location: at home

Tailoring (how, when, why, what): The therapist interviewed participants individually to determine music preferences and previous experiences with music and helped them to identify compositions that had been paired with positive associations or meaningful memories. Whenever possible, familiar music, preferably from the participant's collection of recordings, was recommended to accompany the various techniques.

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: ½ to 1 full hour

Duration of treatment: 8 weeks

Delivered number of sessions: not reported

Individual or group: individual

Who delivered intervention: music therapist

Therapist training: registered and board-certified

Therapist's post-qualifying experience: postdoctoral training in gerontology

Monitoring of adherence to music therapy paradigm/protocol: completing a music listening log, using a 5-point rating scale to monitor enjoyment and relaxation level of each piece of music and prescribed exercise. Participants were interviewed over the telephone regarding their compliance and satisfaction with the programme by an independent research assistant.

Control arm

Intervention: self-administered listening techniques with moderate, indirect therapist contact; control arm 2: waiting list)

Excluded intervention: any other form of treatment or psychoactive medication

Name of intervention: not reported

Aims and rationale: not reported

Type of TAU: not reported

What was done:(materials) for control arm 1, 1 set of music-facilitated techniques, cassette players, additional tapes; *(procedures)* the therapist spoke with the participant in weekly 20-minute telephone conversations, discussing results of the music listening logs and effects of music; *(mode of delivery)*

Hanser 1994 (Continued)

self-administered every day; weekly telephone evaluation;(co-interventions) no co-interventions; (medication) no medication

Location: at home

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: everyday self-administered sessions; weekly one 20-minute telephone call

Duration of session: not reported

Duration of treatment: 8 weeks

Delivered number of sessions: 8 times 20-minute telephone conversations

Individual or group: individual

Who delivered intervention: music therapist

Therapist training: registered and board-certified

Therapist's post-qualifying experience: postdoctoral training in gerontology

Tailoring (how, why, when, what): not reported

Modification intervention: not reported

Monitoring of adherence to TAU: The therapist spoke with the participant in weekly 20-minute telephone conversations, discussing results of the participant's music listening logs and effects of music. Participants were interviewed over the telephone regarding their compliance and satisfaction with the programme by an independent research assistant.

Outcomes

Patient-reported depression: GDS

Overall distress: BSI-GSI

Self-concept: RSE

Mood: POMS

Notes

Funding for trial: This research was supported by a National Research Service Award to Suzanne Hanser (Grant AG-05469-02) from the National Institute on Aging.

Notable conflicts: not reported

Other: See number of participants.

Key conclusions: Participants in both music conditions performed significantly better than controls on standardised tests of depression, distress, self-esteem, and mood. These improvements were clinically significant and were maintained over a 9-month follow-up period.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Information about the sequence generation process was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of randomisation was not reported.

Hanser 1994 (Continued)

		Quote: "Participants were assigned randomly to one of three conditions."
Allocation concealment (selection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. Method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Study did not address this outcome.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing.
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and the primary measure of depression was identified and reported as planned in the methods section. The BDI was related to this outcome but was utilised only for clinical practice, not for research purposes. Quote: "GDS was the primary measure of depression. The Beck Depression Inventory was administered weekly to all participants for the purpose of monitoring levels of depression only."
Other bias	Unclear risk	Risk of bias may be present, but information was insufficient for assessment of whether an important risk of bias exists.

Hendricks 1999

Methods	<p><i>Study design:</i> randomised controlled trial, parallel groups</p> <p><i>Aim of study:</i> The purpose of this study was to examine the effectiveness of using music techniques in a group intervention with adolescents who had been identified as exhibiting symptoms of depression.</p> <p><i>Number of arms:</i> 2</p> <p><i>Experimental arm:</i> group music therapy</p> <p><i>Control arm:</i> cognitive-behavioural group activities without music therapy</p> <p><i>Consumer involvement:</i> evaluating depression, using patient-reported BDI</p> <p><i>Informed consent:</i> yes; "Parental consent was obtained for all the participants"</p> <p><i>Ethical approval:</i> not reported</p> <p><i>Power calculation:</i> not reported</p>
Participants	<p><i>Description:</i> junior high school students</p> <p><i>Geographical location:</i> Northern America, a middle-sized southwestern town</p> <p><i>Methods of recruitment of participants:</i> not reported</p> <p><i>Setting:</i> public junior high school</p>

Hendricks 1999 (Continued)

Principal health problem: symptoms of depression

Diagnostic criteria for inclusion: symptoms of depression

Diagnostic criteria for exclusion: not reported

Severity of depression: not reported

Number of prior depressive episodes: not reported

Comorbidity: not reported

Age, range, mean (standard deviation): range 14 to 15 years; mean and SD not reported

Sex: female, male

Sociodemographics intervention group: not reported

Sociodemographics control group: not reported

Ethnicity: Anglo (n = 15), Hispanic (n = 3), Asian American (n = 1)

Exclusion important groups: not reported

Total numbers included in this trial: N = 20

Numbers included in music therapy: n = 10

Numbers included in control group: n = 10

Interventions

Music therapy arm

Intervention: music therapy

Excluded intervention: not reported

Name of intervention: not reported

Aims and rationale: Researchers presented pleasant and potentially reinforcing music that served as stimuli for deep body relaxation, positive imagery and mood, and clear thinking, all of which are incompatible with worry.

Method: combination of active and receptive music therapy

What was done:(materials) for listening activities not reported; for improvisation piano and guitar; (*procedures*) as music was played, the group facilitator observed the participant who chose the song for responses indicating relaxation; (*mode of delivery*) face-to-face; (*co-interventions*) short-term individual psychotherapy; (*medication*) not reported

Location: not reported

Tailoring (how, when, why, what): Each of the participants was interviewed separately to determine music preferences and previous experience with music. Participants were then asked to choose a song that had special meaning for them and to share this song with the group.

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: not reported

Duration of treatment: 8 weeks

Delivered number of sessions: not reported

Hendricks 1999 (Continued)

Individual or group: group

Who delivered intervention: group facilitator, e.g. therapist

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Control arm

Intervention: cognitive-behavioural group activities

Excluded intervention: music therapy

Name of intervention: not reported

Aims and rationale: The focus of discussion every week was self-concept and how depression affected self-concept.

Type of TAU: individual psychotherapy

What was done:(materials) not reported;*(procedures)* every week, the facilitator focused on 1 adjective from a list of adjectives and how it was part of participants' concept of who they were. Once the facilitator presented the adjective, participants discussed whether the adjective described them. At the end of each group session, a different participant was placed in the "hot seat" while the rest of the group participants used positive reinforcement to broaden the self-concept of the participant in the "hot seat";*(mode of delivery)* face-to-face;*(co-interventions)* short-term individual psychotherapy; *(medication)* not reported

Location: not reported

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: not reported

Duration of treatment: 8 weeks

Delivered number of sessions: not reported

Individual or group: group

Who delivered intervention: group facilitator

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to TAU: not reported

Outcomes	Patient-reported depression: BDI
----------	----------------------------------

Notes	<p><i>Funding for trial:</i> not reported</p> <p><i>Notable conflicts:</i> not reported</p> <p><i>Other:</i> missing SD for patient-reported depression</p> <p><i>Key conclusions:</i> "Music therapy techniques had made a significant difference."</p>
-------	--

Hendricks 1999 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Information about the sequence generation process was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of randomisation was not reported. <i>Quote:</i> "Participants were randomly assigned to one of the following treatment conditions..."
Allocation concealment (selection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	The study did not address this outcome. <i>Quote:</i> "Participants in both the treatment and the control groups of the study completed the Beck Depression Inventory."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. For participants, blinding was not possible because of subjective outcomes. <i>Quote:</i> "All the participants in both the treatment and the control groups completed the BDI during the 1st week and 8th week of treatment."
Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing. <i>Quote:</i> "All the participants in both the treatment and the control groups completed the BDI during the 1st week and 8th week of treatment."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in introduction and methods section. <i>Quote:</i> "The hypothesis of the study was that music therapy techniques would alleviate depressive symptoms more effectively than would nonmusic therapy techniques. All participants in both the treatment and the control groups completed the BDI during the 1st week and 8th week of treatment."
Other bias	Unclear risk	Risk of bias may be present, but information is insufficient for assessment of whether an important risk of bias exists.

Hendricks 2001

Methods	<p><i>Study design:</i> randomised controlled trial, quasi-experimental design consisting of pretest and post-test comparison, random assignment</p> <p><i>Aim of study:</i> to examine the effects of addition of music therapy to an existing cognitive-behavioural model of group psychotherapy for treatment of different age groups of adolescents for depression</p> <p><i>Number of arms:</i> 2</p> <p><i>Experimental arm:</i> music therapy</p> <p><i>Control arm:</i> cognitive-based therapy</p> <p><i>Consumer involvement:</i> evaluating depression and self-concept, using patient-reported BDI, PHSCS</p>
---------	---

Music therapy for depression (Review)

Hendricks 2001 (Continued)

Informed consent: yes; "After the consent form and treatment authorization were received the participant was randomly assigned to the group"

Ethical approval: not reported

Power calculation: not reported

Participants

Description : junior and senior high school students

Geographical location: Northern America, United States, a mid-size city in the southwestern region

Methods of recruitment of participants: recommended for treatment by referral from school counsellors

Setting: public junior and senior high school

Principal health problem: symptoms of depression

Diagnostic criteria for inclusion: symptoms of depression

Diagnostic criteria for exclusion: not reported

Severity of depression: not reported

Number of prior depressive episodes: not reported

Comorbidity: no

Age, range, mean (standard deviation): range 12 to 18, mean not reported

Sex: female and male

Sociodemographics intervention group: male and female

Ethnicity: Caucasian, Hispanic, African American, and Asian American

Sociodemographics control group: male and female

Ethnicity: Caucasian, Hispanic, African American, and Asian American

Exclusion important groups: not reported

Total numbers included in this trial: N = 63

Numbers included in music therapy: n = 31

Numbers included in control group: n = 32

Interventions

Music therapy arm

Intervention: music therapy

Excluded intervention: not reported

Name of intervention: not reported

Aims and rationale: not reported

Method: receptive music therapy

What was done:(materials) recorded music that was chosen by one of the group members; *(procedures)* sessions consisted of 4 parts: (1) group participation exercise designed to build rapport; (2) listening to 1 piece of recorded music that was chosen by one of the group members; (3) discussion of depressive feelings and how those feelings could be cognitively and behaviourally challenged; (4) discussion about ways to change behaviour as related to the music and depressive feelings; *(mode of delivery)* face-to-face; *(co-interventions)* each member was given the opportunity for counselling on an individual basis; *(medication)* not reported

Hendricks 2001 (Continued)

Location: not reported

Tailoring (how, when, why, what): Group members were able to choose music.

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: 1 hour

Duration of treatment: 12 weeks

Delivered number of sessions: not reported

Individual or group: group

Who delivered intervention: counsellor-researcher

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: not reported

Control arm

Intervention: cognitive-based therapy

Excluded intervention: music therapy

Name of intervention: not reported

Aims and rationale: not reported

Type of TAU: not reported. See co-interventions.

What was done:(materials) not reported;*(procedures)* sessions consisted of 3 parts: (1) group participation exercise to build rapport, (2) discussion of 1 depressive feeling and how that feeling could be cognitively and behaviourally challenged, (3) discussion about ways to change behaviour as they related to the feeling; *(mode of delivery)* face-to-face;*(co-interventions)* each member was given the opportunity for counselling on an individual basis; *(medication)* not reported

Location: not reported

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: weekly

Duration of session: 1 hour

Duration of treatment: 12 weeks

Delivered number of sessions: not reported

Individual or group: group

Who delivered intervention: counsellor-researcher

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Hendricks 2001 (Continued)

Monitoring of adherence to TAU: not reported

Outcomes	Patient-reported depression: BDI Self-concept: PHSCS
Notes	Funding for trial: not reported Notable conflicts: not reported Other: no Key conclusions: Participants in music therapy showed lower depression and higher self-concept than participants in the groups that utilised cognitive-based therapy.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Information about the sequence generation process was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of randomisation was not reported. Quote: "After the consent form and treatment authorization were received... the participant was randomly assigned to the group."
Allocation concealment (selection bias)	Low risk	Quote: "Instruments in the packets were coded to insure the integrity of each protocol."
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	The study did not address this outcome. For participants, blinding was not possible because of subjective outcomes. Quote: "Participants completed the Beck Depression Inventory..."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. For participants, blinding was not possible because of subjective outcomes. Quote: "All of the participants receive the instrument packet."
Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing. Quote: "Upon examination, there were no missing instruments."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in introduction and methods section. Quote: "Upon examination, there were no missing instruments."
Other bias	Unclear risk	Risk of bias may be present, but information is insufficient for assessment of whether an important risk of bias exists.

Radulovic 1996

Methods	Study design: clinical controlled trial; parallel groups
---------	--

Radulovic 1996 (Continued)

Aim of study: The principal objective of this research is to establish musical therapy as a valid psychotherapeutic treatment of depressive disorders, based on a clear methodological procedure and strict protocols suited to our population.

Number of arms: 2

Experimental arm: music therapy plus antidepressants

Control arm: antidepressants only

Consumer involvement: evaluating depression, using patient-reported BDI

Informed consent: not reported

Ethical approval: not reported

Power calculation: not reported

Participants

Description: patients

Geographical location: Europe, Belgrade

Methods of recruitment of participants: not reported

Setting: Centre for Disorders and Borderline Cases

Principal health problem: depression

Diagnostic criteria for inclusion: depression

Diagnostic criteria for exclusion: professional musicians; psychotically retarded, agitated, or paranoid to such a degree that it would hinder communication inside the group and have a destructive effect; no more than 2 expressly suicidal participants in a group

Severity of depression: moderately to severely depressed, including psychotic depression

Number of prior depressive episodes: not reported

Comorbidity: unclear whether anxiety was a comorbidity

Age, range, mean (standard deviation): range 21 to 62; mean 40 years

Sex: female and male

Sociodemographics intervention group: marital status: single (n = 8), married (n = 13), divorced (n = 8), widowed (n = 1); children: no children (n = 12), 1 child (n = 6), 2 or more children (n = 12); educational degree: primary school (n = 6), secondary school (n = 11), skilled worker (n = 1), higher skilled worker (n = 3), college of higher education (n = 1), university degree (n = 8); social status (n = 3), pupil/ student (n = 3), employed (n = 20), unemployed (n = 6), retired (n = 1); residence: house/apartment owner (n = 18), sitting tenant (n = 2), subtenant (n = 10)

Sociodemographics control group: marital status: single (n = 3), married (n = 17), divorced (n = 7), widowed (n = 2); children: none (n = 5), 1 (n = 7), 2 or more (n = 18); educational degree: primary school (n = 14), secondary school (n = 10), skilled worker (n = 3), higher skilled worker (n = 0), college of higher education (n = 0), university degree (n = 2); pupil/student (n = 0), employed (n = 20), unemployed (n = 4), retired (n = 4); residence: house/apartment owner (n = 23), sitting tenant (n = 2), subtenant (n = 4)

Ethnicity: not reported

Exclusion important groups: no

Total numbers included in this trial: N = 60

Numbers included in music therapy: n = 30

Radulovic 1996 (Continued)

Numbers included in control group: n = 30

Interventions

Treatment arm

Intervention: music therapy

Excluded intervention: not reported

Name of intervention: not reported

Aims and rationale: not reported

Method: receptive music therapy

What was done:(materials) not reported;*(procedures)* group analytical listening to music, using guided fantasies;*(mode of delivery)* face-to-face;*(co-interventions)* treatment as usual, e.g. antidepressives and supportive-cognitive therapeutic forms, hospitalisation *(medication)* antidepressive medicaments. The antidepressive medications that participants were given belonged to the tricycline and tetracycline groups and were orally applied; the initial dosage was 100 mg, which grew to 150 to 300 mg, which was a full therapeutic dosage. Participants were also given anxiolytics, 30 mg per day, and, when necessary, sedative neuroleptics, 25 to 150 mg per day.

Location: "In a room situated in the villa 'Avala', which was turned into a musical therapy cabinet and fulfilled the basic isolation and acoustic criteria."

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: Protocols were presented at regular supervisions.

Intensity of sessions: twice a week

Duration of session: 20 minutes

Duration of treatment: 6 weeks

Delivered number of sessions: not reported

Individual or group: group

Who delivered intervention: a skilled therapist

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to music therapy paradigm/protocol: The protocol was written down after each session, so that the course of the therapeutic process was documented.

Control arm

Intervention: Treatment as usual, e.g. antidepressives and supportive-cognitive therapeutic forms (hospitalisation)

Excluded intervention: music therapy

Name of intervention: not reported

Aims and rationale: not reported

Type of TAU: antidepressant medication plus hospitalisation

What was done:(materials) antidepressives; *(procedures)* the antidepressive medications that participants were given belonged to the tricycline and tetracycline groups and were orally applied; the initial daily dosage was 100 mg, which grew to 150 to 300 mg, which was a full therapeutic dosage. Parti-

Radulovic 1996 (Continued)

pants were also given anxiolytics, 30 mg per day, and, when necessary, sedative neuroleptics, 25 to 150 mg per day. They were treated with medicaments (in the above specified dosages), as well as supportive-cognitive therapeutic forms; (*mode of delivery*) not reported; (*co-interventions*) not reported; (*medication*) see above

Location: not reported

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: not reported

Intensity of sessions: not reported

Duration of session: not reported

Duration of treatment: not reported

Delivered number of sessions: not reported

Individual or group: not reported

Who delivered intervention: not reported

Therapist training: not reported

Therapist's post-qualifying experience: not reported

Monitoring of adherence to TAU: not reported

Outcomes	Patient-reported depression: BDI Anxiety: HAM-A
Notes	<i>Funding for trial:</i> not reported <i>Notable conflicts:</i> no <i>Other:</i> missing SD for clinician-rated depression, patient-reported depression, anxiety <i>Key conclusions:</i> The depressive disorder participant group simultaneously treated by medications and musical therapy showed much better results compared with the control depressive participant group, which was treated with medications and supportive-cognitive psychotherapeutic methods.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Random sequence generation was not truly random. <i>Quote:</i> "We had a total of sixty patients, divided into two groups of thirty."
Allocation concealment (selection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	The study did not address this outcome.
Blinding of outcome assessment (detection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'.

Music therapy for depression (Review)

Radulovic 1996 (Continued)

All outcomes

Incomplete outcome data (attrition bias) All outcomes	Low risk	No outcome data were missing. <i>Quote:</i> "The analysis comprised a sample group of 30 patients suffering from depression, treated with musical therapy, while the control group consisted of a sample of 30 depressive patients, treated with standard medication...For the purposes of establishing the quality of the acquired data, a Kolmogorov-Smirnov normal distribution test was done, which established that both samples were characterized by normal distribution."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in the methods section. <i>Quote:</i> "Depression and anxiety estimation scales. Consisting of special forms that the patients were asked to fill in upon reception and on the third and sixth weeks of therapy (BECK, HAMD, HAMA I, III, VI)" and Table 3
Other bias	Unclear risk	Risk of bias may be present, but information is insufficient for assessment of whether an important risk of bias exists.

Zerhusen 1995

Methods	<p><i>Study design:</i> randomised controlled trial</p> <p><i>Aim of study:</i> To judge the effectiveness of cognitive therapy, the treatment group was compared with two control groups.</p> <p><i>Number of arms:</i> 3</p> <p><i>Experimental arm:</i> cognitive therapy</p> <p><i>Control arm:</i> music therapy (1), treatment as usual (2)</p> <p><i>Consumer involvement:</i> evaluating depression, using patient-reported BDI</p> <p><i>Informed consent:</i> unclear. "...they were asked to participate"</p> <p><i>Ethical approval:</i> yes; "Approval for their involvement in this study was obtained from the Institutional Board of Wright State University, as well as from the administration of the nursing home"</p> <p><i>Power calculation:</i> not reported</p>
Participants	<p><i>Description:</i> residents of a nursing home</p> <p><i>Geographical location:</i> Northern America, Miamisburg, Ohio</p> <p><i>Methods of recruitment of participants:</i> not reported</p> <p><i>Setting:</i> nursing home</p> <p><i>Principal health problem:</i> clinical depression</p> <p><i>Diagnostic criteria for inclusion:</i> moderate to severe depression</p> <p><i>Diagnostic criteria for exclusion:</i> organic brain syndrome</p> <p><i>Severity of depression:</i> moderately to severely depressed</p> <p><i>Number of prior depressive episodes:</i> not reported</p> <p><i>Comorbidity:</i> not reported</p>

Music therapy for depression (Review)

Zerhusen 1995 (Continued)

Age, range, mean (standard deviation): range 70 to 82, mean 77 years

Sex: men, and for female unclear

Sociodemographics intervention group: not reported

Sociodemographics control group: not reported

Ethnicity: "There were two black men in the group; all others were white."

Exclusion important groups: no

Total numbers included in this trial: N = 60

Numbers included in music therapy: n = 20

Numbers included in control group 1: n = 20

Numbers included in control group 2: n = 20

Interventions

Treatment arm

Intervention: psychological therapy

Excluded intervention: not reported

Name of intervention: not reported

Aims and rationale: not reported

Type of therapy: group cognitive-behavioural therapy

What was done:(materials) not reported;*(procedures)* help residents discard automatic thoughts of a self-defeating nature, replace thoughts with more realistic ones, and adopt new behaviours, especially in relating to other people in 4 phases: phase 1: preparation of residents for cognitive therapy; phase 2: basic techniques for changing behaviour; phase 3: basic techniques for changing cognition; phase 4: preparation of residents for termination of treatment;*(mode of delivery)* face-to-face;*(co-interventions)* not reported;*(medication)* not reported

Location: private meeting rooms

Tailoring (how, when, why, what): not reported

Modification intervention: not reported

Quality of delivery: Preparation of group leaders was carried out in videotaped sessions, instructions, role playing, brief lectures, blackboard demonstrations, case studies, and homework assignments of reading the cognitive therapy manual and listening to cassette tapes on techniques. Performance of leaders was rated by their group members.

Intensity of sessions: twice weekly

Duration of session: 1½ hours

Duration of treatment: 10 weeks

Delivered number of sessions: not reported

Individual or group: group of 20, divided into 3 smaller groups

Who delivered intervention: group leaders: professional personnel of the nursing home; nurses; 2 RNs and 1 social worker

Therapist training: 1 Associate degree in nursing and a Bachelor of Science in education; 1 diploma in nursing; social worker had a Bachelor of Arts degree in social psychology and experience in the field of social work

Zerhusen 1995 (Continued)

Therapist's post-qualifying experience: varied from a first job to semiretirement

Monitoring of adherence to paradigm/protocol: Attendance records were kept to determine if residents would attend the groups regularly.

Control arm

Intervention: control arm 1 music therapy (control arm 2 between brackets: treatment as usual)

Excluded intervention: not reported (not reported)

Name of intervention: not reported (not reported)

Aims and rationale: not reported (not reported)

Method: receptive music therapy (rehabilitation services, such as whirlpool therapy designed to improve functional level or to arrest deterioration)

What was done for music therapy:(materials) not reported (not reported);(*procedures*) residents listened to many kinds of music, including old-time favourites, hymns, and country melodies. One resident also played popular and semiclassical piano music (not reported)(*mode of delivery*) face-to-face (not reported);(*co-interventions*) not reported (not reported);(*medication*) not reported (not reported)

Location: not reported (not reported)

Tailoring (how, when, why, what): not reported (not reported)

Modification intervention: not reported (not reported)

Quality of delivery: not reported (not reported)

Intensity of sessions: twice weekly (not reported)

Duration of session: 1 hour (not reported)

Duration of treatment: 10 weeks (not reported)

Delivered number of sessions: not reported (not reported)

Individual or group: group therapy in a group of 20 participants (not reported)

Who delivered intervention: for music therapy, a trained professional (not reported)

Therapist training: for music therapy trained, no further information (not reported)

Therapist's post-qualifying experience: not reported (not reported)

Monitoring of adherence: not reported (not reported)

Outcomes	Patient-reported depression: BDI
Notes	<p><i>Funding for trial:</i> not reported</p> <p><i>Notable conflicts:</i> not reported</p> <p><i>Other:</i> missing SD for patient-reported depression</p> <p><i>Key conclusions:</i> Cognitive therapy was found to be effective in older people. Residents attended sessions regularly, and the change in the depression level for group participants was highly significant statistically and clinically noticeable.</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
------	--------------------	-----------------------

Zerhusen 1995 (Continued)

Random sequence generation (selection bias)	Unclear risk	Information about the sequence generation process was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of randomisation was not reported. <i>Quote:</i> "Those who qualified as moderately to severely depressed and free from organic brain syndrome were randomly assigned to one of three groups."
Allocation concealment (selection bias)	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'. The method of concealment was not described.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	The study did not address this outcome.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information was insufficient to permit judgement of 'Low risk' or 'High risk'.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Missing outcome data balanced in numbers across intervention groups, with similar reasons for missing data across groups <i>Quote:</i> "Only one resident dropped out ... the corresponding subjects in the other two groups were therefore also discarded in the data analysis, leaving 19 subjects in each group for the purpose of data analysis."
Selective reporting (reporting bias)	Unclear risk	A protocol for the study was not available, and all expected outcomes were identified and reported as planned in the methods section. <i>Quote:</i> The Beck Depression Inventory was administered to all participants ... to compare with the initial score" and Table 1
Other bias	Unclear risk	Risk of bias may be present, but information is insufficient for assessment of whether an important risk of bias exists.

BDI: Beck Depression Inventory; BSI-GSI: Brief Symptom Inventory-Global Severity Index; FJFR: Fundación José Felix Ribas; GDS: Geriatric Depression Scale; HADS-A: Hospital Anxiety and Depression Scale - Anxiety; HAM-A: Hamilton Anxiety Scale; HAM-D: Hamilton Depression Scale; HRSD: Hamilton Rating Scale for Depression; ICD-10: International Classification of Disease, Tenth Edition; IRB: institutional review board; MADRS: Montgomery-Åsberg Depression Rating Scale; MAR: Artistic Music Therapy; MDD: major depressive disorder; PHSCS: Piers-Harris Self-Concept Scale; POMS: Profile of Mood States; RAND-36: health-related quality of life survey distributed by RAND; RSE: Rosenberg Self-Esteem Inventory; SD: standard deviation; SF-36 Thai: Thai version of the Short Form-36 Health Survey; SNRI: serotonin and norepinephrine reuptake inhibitor; SSRI: selective serotonin reuptake inhibitor; TAS-20: Toronto Alexithymia Scale; TAU: treatment as usual; TDI: Thai Depression Inventory.

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Ashida 2000	Ineligible study population, i.e. participants had a primary diagnosis of dementia but were not depressed. Outcome was depression.
Bae 2011	Ineligible study population, i.e. participants were students but were not depressed. Outcome was depression.

Study	Reason for exclusion
Bittman 2001	Ineligible study population, i.e. participants were adults but were not depressed. Outcome was depression.
Boothby 2011	Ineligible study population, i.e. participants were adults not known to be suffering from any mood-related disorders. Outcome was depression.
Bradford 1991	No full text, i.e. dissertation available
Brandes 2010	The intervention was not music therapy, but music listening.
Broersen 2013	Ineligible study population, i.e. participants had a primary diagnosis of dementia. Outcome was depression.
Carolan 2016	Not a randomised controlled trial, i.e. qualitative study assessing a therapeutic drumming programme for Parkinson's disease to address non-motor symptoms, including depression and anxiety
Carr 2012	Ineligible study population, i.e. participants had persistent post-traumatic stress disorder but were not depressed. Outcome was depression.
Cassileth 2003	Ineligible study population, i.e. participants were adults who had hematological malignancy but were not depressed. Outcome was depression.
Castillo-Pérez 2010	The intervention was not music therapy, but music listening. No therapist was involved.
Chen 2015	No relevant comparator intervention
Chen 2016	Ineligible study population, i.e. participants were adult inmates who were depressed or had anxiety. Outcome was depression.
Choi 2008	Ineligible study population, i.e. participants had mental disorders, but not all participants were depressed. Outcome was depression.
Chu 2014	Ineligible study population, i.e. participants had dementia but were not depressed. Outcome was depression.
Clark 2006	Ineligible study population, i.e. participants had cancer but were not depressed. Outcome was depression.
Cross 2012	Ineligible study population, i.e. participants were cognitively impaired older adults, but not all participants were depressed. Outcome was depression.
Huang 2010	The intervention was not music therapy, but music listening.
Iliya 2015	Ineligible study population, i.e. participants had complicated grief and mental illness but were not depressed. Outcome was depression.
Li 2002	No full text available
Liu 2014	No full text available
Lu 2012	The intervention was not music therapy, but music listening.
Lu 2013	Ineligible study population, i.e. participants had a primary diagnosis of schizophrenia but were not depressed. Outcome was depression.

Study	Reason for exclusion
Mohammadi 2011	Ineligible study population, i.e. participants were nursing home residents, but not all participants were depressed. Outcome was depression.
No author 2008	Not a randomised controlled trial, i.e. a response to the Maratos 2008 review
Raglio 2015	Ineligible study population, i.e. participants had a primary diagnosis of dementia but were not depressed. Outcome was depression.
Romito 2013	Ineligible study population, i.e. participants had a primary diagnosis of cancer but were not depressed. Outcome was depression.
Schwantes 2014	Ineligible study population, i.e. participants were local farm workers but were not depressed. Outcome was depression.
Werner 2015	Ineligible study population, i.e. participants were older people who were nursing home residents but were not depressed. Outcome was depression.
Wu 2002	No relevant comparator intervention

Characteristics of studies awaiting assessment [ordered by study ID]

[Ahessy 2016](#)

Methods	<i>Design:</i> RCT, mixed method
Participants	<i>Description:</i> older adults
Interventions	<i>Experimental group:</i> music therapy choir intervention <i>Control group:</i> standard daily care
Outcomes	Clinician-rated depression: Cornell Scale Quality of life: Cornell Brown Cognitive functioning: Mini Mental State Examination
Notes	<i>Based on abstract only</i> <i>Design:</i> unclear whether RCT <i>Description:</i> unclear whether adults were depressed or depression was an outcome <i>Intervention:</i> unclear whether intervention group received music therapy only or music therapy and TAU

[Jasemi 2016](#)

Methods	<i>Design:</i> quasi-experimental design
Participants	<i>Description:</i> people with cancer, depression, and anxiety
Interventions	<i>Experimental group:</i> listened to light music at least 20 minutes per day for 3 days

Music therapy for depression (Review)

Jasemi 2016 (Continued)

	<i>Control group:</i> not reported
Outcomes	Depression: Hospital Anxiety and Depression Scale Anxiety: Hospital Anxiety and Depression Scale
Notes	<i>Based on abstract only</i> <i>Design:</i> unclear whether truly randomised <i>Description:</i> unclear whether all participants were depressed or depression was an outcome <i>Intervention:</i> unclear whether a music therapist was involved in the intervention group. For both intervention group and control group, TAU was not reported.

Kim 2014

Methods	<i>Design:</i> a non-equivalent control group time series research design
Participants	<i>Description:</i> postpartum depression and maternal identity in high-risk women
Interventions	<i>Experimental group:</i> 4 weeks of music therapy and phone counselling <i>Control group:</i> not reported
Outcomes	Postpartum depression: scale not reported Maternal identity: scale not reported
Notes	<i>Based on abstract only</i> <i>Design:</i> unclear whether randomised <i>Description:</i> unclear whether all participants were depressed or depression was an outcome <i>Intervention:</i> unclear whether a music therapist was involved in music therapy or phone counselling only

Kumar 2013

Methods	<i>Design:</i> lack of information <i>Blinding:</i> no information <i>Duration:</i> 6 weeks
Participants	<i>Description:</i> patients attending psychiatry <i>Diagnosis:</i> mild to severe depression (ICD-10) <i>Age:</i> range 21 to 60; mean not reported <i>Sex:</i> male and female <i>Setting:</i> Department of Psychiatry, M.L.B. Medical College Jhansi, Uttar Pradesh, India <i>Total numbers included in this trial:</i> 90

Kumar 2013 (Continued)

	<p><i>Numbers in drug therapy:</i> 30</p> <p><i>Numbers in music therapy:</i> 30</p> <p><i>Numbers in music therapy combined with drug therapy:</i> 30</p>
Interventions	<p><i>Experimental group:</i> drug therapy</p> <p><i>Control group 1:</i> music therapy; no further information</p> <p><i>Control group 2:</i> music therapy (no further information) and drug therapy</p>
Outcomes	Clinician-rated depression: HAM-D
Notes	<p><i>Funding:</i> not reported</p> <p><i>Notable conflicts:</i> unknown</p> <p><i>Key conclusions:</i> Music therapy is comparable with drug therapy in mild cases of depression, but in moderate and severe cases, effect of music therapy in reducing symptoms of depression is negligible.</p>

Tang 2011

Methods	<p><i>Design:</i> parallel, quasi-randomised</p> <p><i>Blinding:</i> no information</p> <p><i>Duration:</i> 6 weeks</p>
Participants	<p><i>Description:</i> older adults with depression</p> <p><i>Diagnosis:</i> depression (CCMD-3) and HAM-D-17 score ≥ 18</p> <p><i>Age:</i> ≥ 60</p> <p><i>Sex:</i> male and female</p> <p><i>Setting:</i> Department of Psychosomatic Diseases, Chongqing Sanxia Mental Health Centre, China</p> <p><i>Total numbers included in this trial:</i> 80</p> <p><i>Numbers in music therapy:</i> 40</p> <p><i>Numbers in TAU:</i> 40</p>
Interventions	<p><i>Experimental group:</i> music therapy</p> <p><i>Control group:</i> TAU (antidepressants and normal social activity)</p>
Outcomes	<p>Clinician-rated depression: HAM-D</p> <p>Adverse events: any</p>
Notes	<p><i>Funding:</i> not reported</p> <p><i>Notable conflicts:</i> unknown</p> <p><i>Key conclusions:</i> The addition of collective singing as a complementary therapy for depression in older adults is more effective than medication therapy alone.</p>

Tang 2011 (Continued)

Comment: More details are needed on the intervention and the statistical analysis before the study can be included.

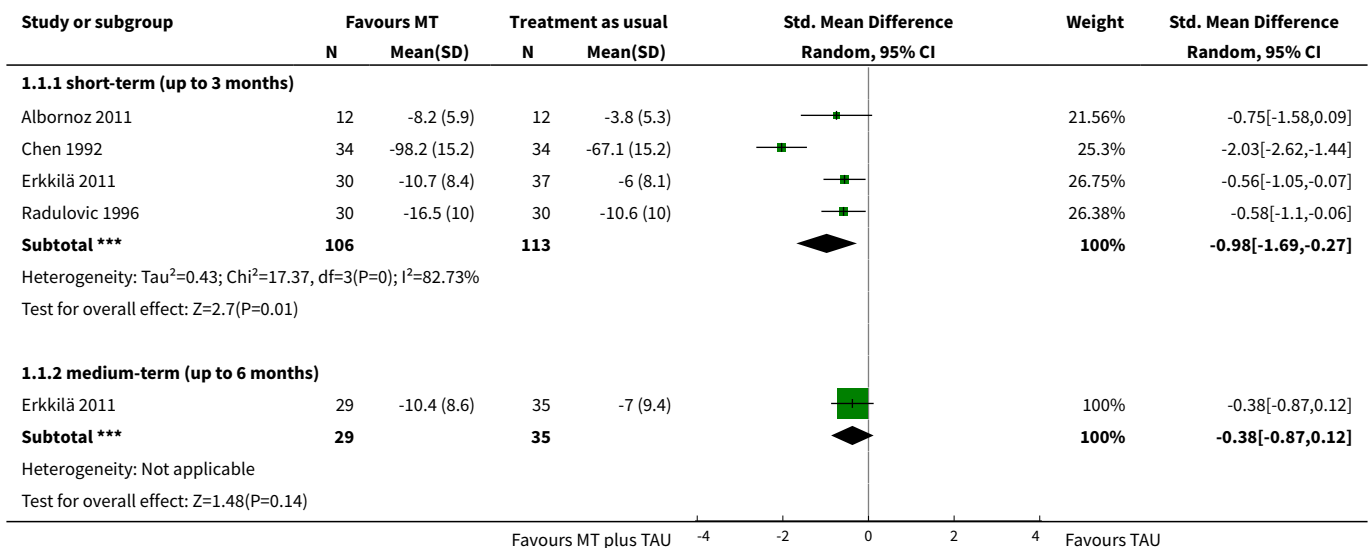
HAM-D: Hamilton Depression Scale.; ICD-10: International Classification of Disease, Tenth Edition; RCT: randomized controlled trial; TAU: treatment as usual.

DATA AND ANALYSES
Comparison 1. Music therapy plus TAU versus TAU alone (primary comparison)

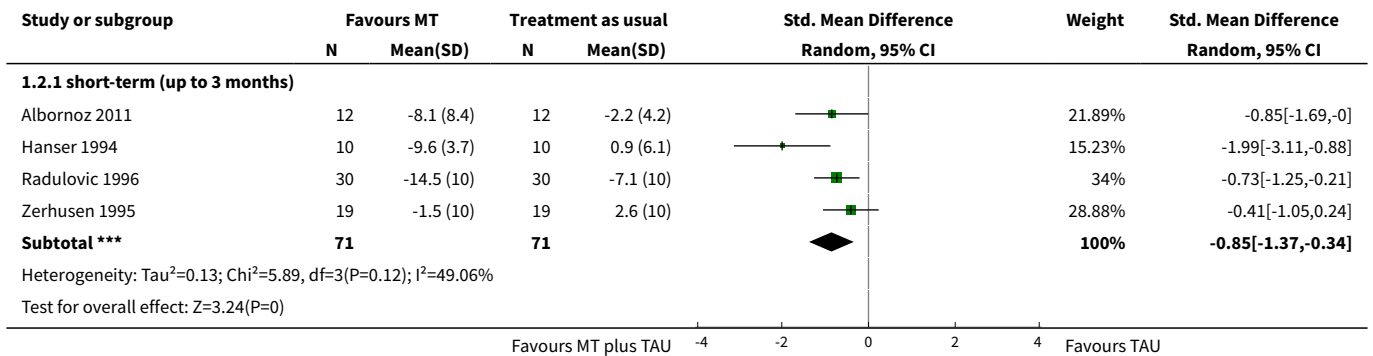
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Severity of depression symptoms, clinician-rated (primary outcome; high=poor)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 short-term (up to 3 months)	4	219	Std. Mean Difference (IV, Random, 95% CI)	-0.98 [-1.69, -0.27]
1.2 medium-term (up to 6 months)	1	64	Std. Mean Difference (IV, Random, 95% CI)	-0.38 [-0.87, 0.12]
2 Severity of depression symptoms, patient-reported (primary outcome; high=poor)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 short-term (up to 3 months)	4	142	Std. Mean Difference (IV, Random, 95% CI)	-0.85 [-1.37, -0.34]
3 Any adverse event	1		Odds Ratio (M-H, Random, 95% CI)	Totals not selected
3.1 short-term (up to 3 months)	1		Odds Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 medium-term (up to 6 months)	1		Odds Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Functioning (high=good)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
4.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
5 Quality of life (high=good)	1		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
5.1 short-term (up to 3 months)	1	67	Std. Mean Difference (IV, Random, 95% CI)	0.32 [-0.17, 0.80]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.2 medium-term (up to 6 months)	1	64	Std. Mean Difference (IV, Random, 95% CI)	0.26 [-0.23, 0.76]
6 Leaving the study early	6		Odds Ratio (M-H, Random, 95% CI)	Subtotals only
6.1 short-term (up to 3 months)	6	293	Odds Ratio (M-H, Random, 95% CI)	0.49 [0.14, 1.70]
6.2 medium-term (up to 6 months)	1	79	Odds Ratio (M-H, Random, 95% CI)	0.44 [0.13, 1.53]
7 Anxiety (high=poor)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1 short-term (up to 3 months)	3	195	Std. Mean Difference (IV, Random, 95% CI)	-0.74 [-1.40, -0.08]
7.2 medium-term (up to 6 months)	1	64	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-0.90, 0.10]
8 Self-esteem (high=good)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
8.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

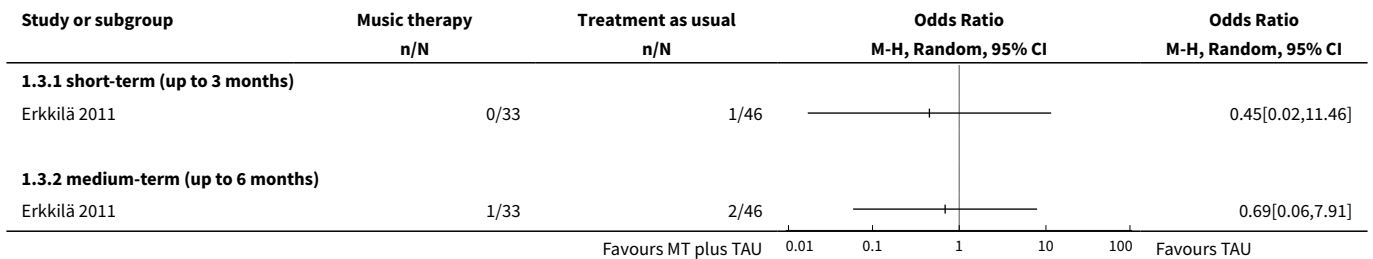
Analysis 1.1. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 1 Severity of depression symptoms, clinician-rated (primary outcome; high=poor).



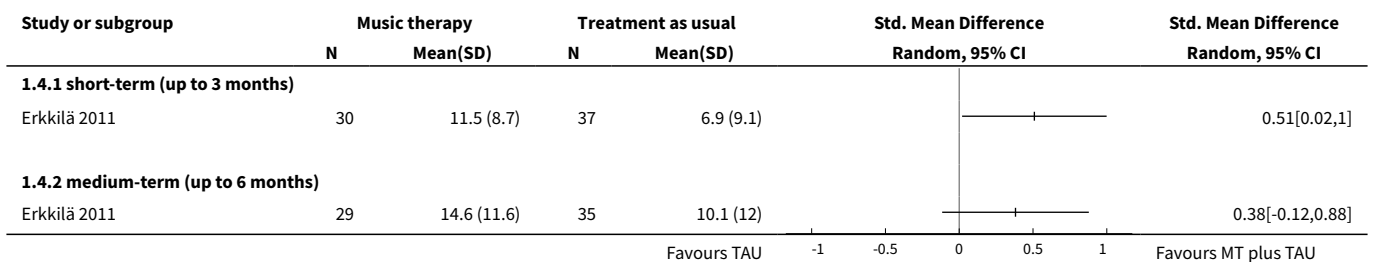
Analysis 1.2. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 2 Severity of depression symptoms, patient-reported (primary outcome; high=poor).



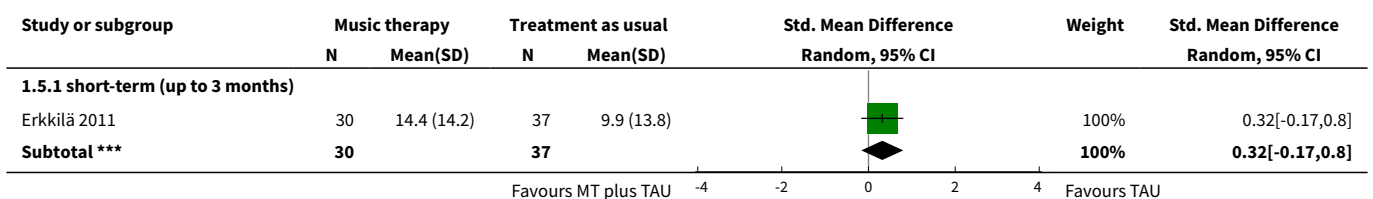
Analysis 1.3. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 3 Any adverse event.

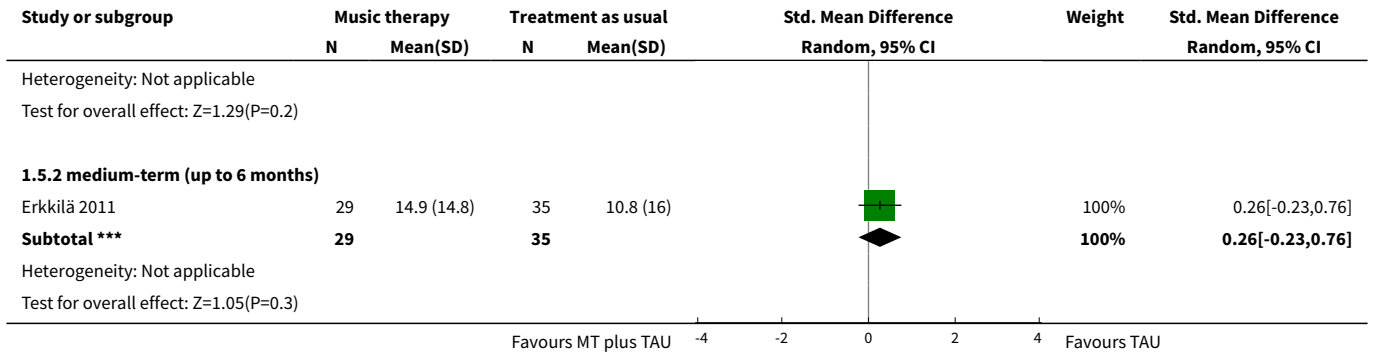


Analysis 1.4. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 4 Functioning (high=good).

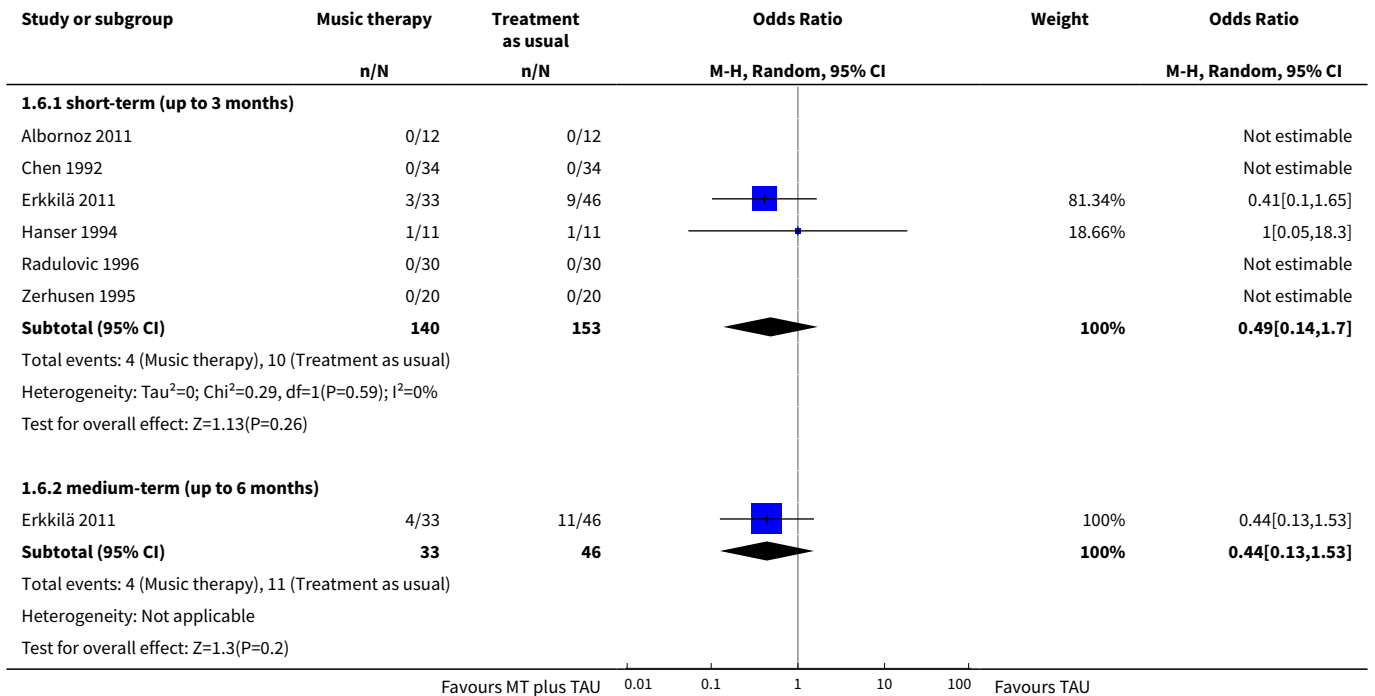


Analysis 1.5. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 5 Quality of life (high=good).

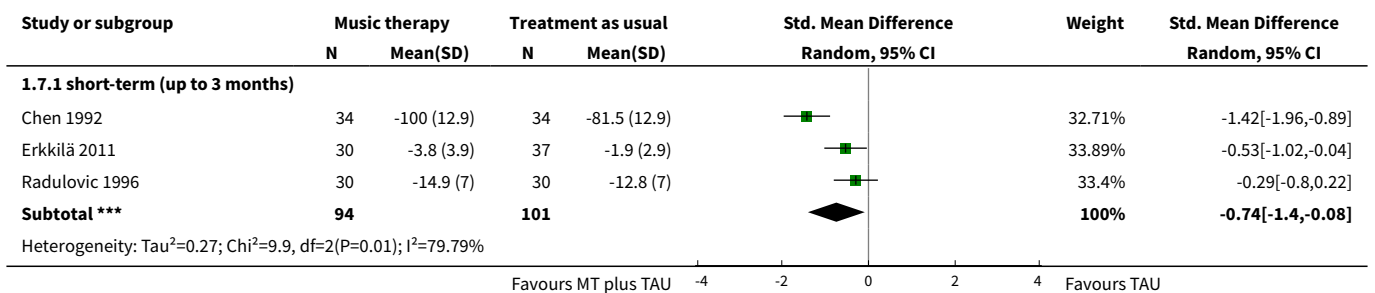


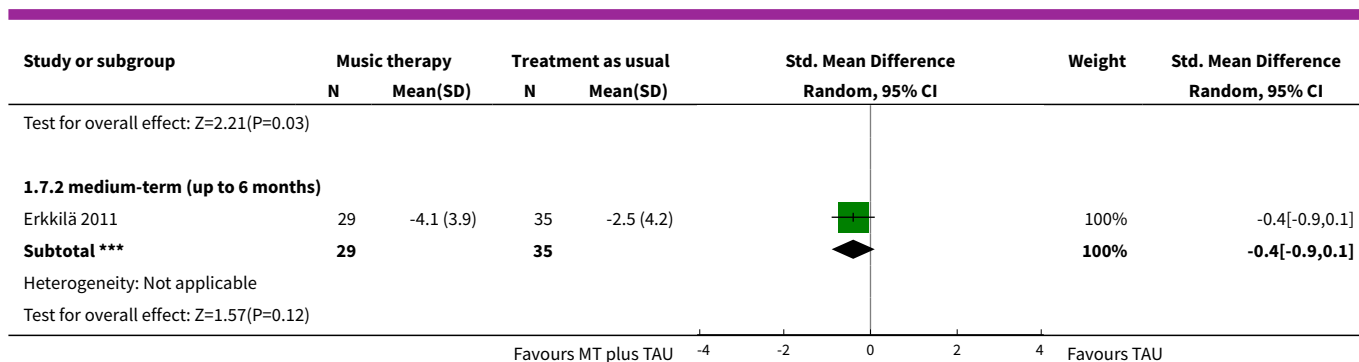


Analysis 1.6. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 6 Leaving the study early.

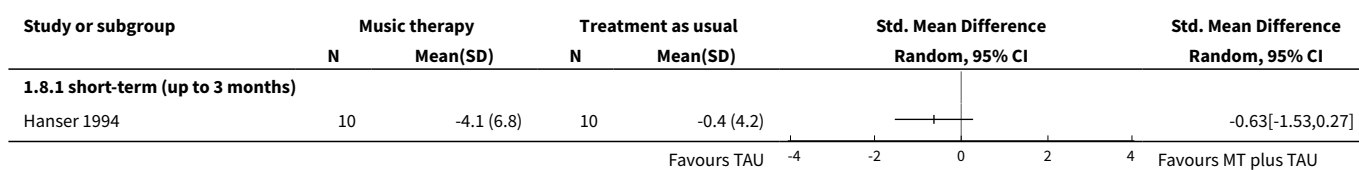


Analysis 1.7. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 7 Anxiety (high=poor).





Analysis 1.8. Comparison 1 Music therapy plus TAU versus TAU alone (primary comparison), Outcome 8 Self-esteem (high=good).



Comparison 2. Music therapy versus psychological therapy

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Severity of depressive symptoms, clinician-rated (primary outcome; high=poor)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 short-term (up to 3 months)	4	131	Std. Mean Difference (IV, Random, 95% CI)	-1.28 [-3.57, 1.02]
2.2 medium-term (up to 6 months)	1	11	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-2.26, 0.89]
3 Quality of life (high=good)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Leaving the study early	4		Odds Ratio (M-H, Random, 95% CI)	Subtotals only
4.1 short-term (up to 3 months)	4	137	Odds Ratio (M-H, Random, 95% CI)	0.17 [0.02, 1.49]
4.2 medium-term (up to 6 months)	1	14	Odds Ratio (M-H, Random, 95% CI)	0.11 [0.01, 1.92]

Analysis 2.1. Comparison 2 Music therapy versus psychological therapy, Outcome 1 Severity of depressive symptoms, clinician-rated (primary outcome; high=poor).

Study or subgroup	Music therapy		Psychological therapy		Std. Mean Difference Random, 95% CI	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)		
2.1.1 short-term (up to 3 months)						
Atiwannapat 2016	9	-8.4 (9.1)	2	-1 (5.7)		-0.78[-2.36,0.81]
2.1.2 medium-term (up to 6 months)						
Atiwannapat 2016	9	-11.7 (8.5)	2	-1.5 (7.8)		-1.11[-2.74,0.53]

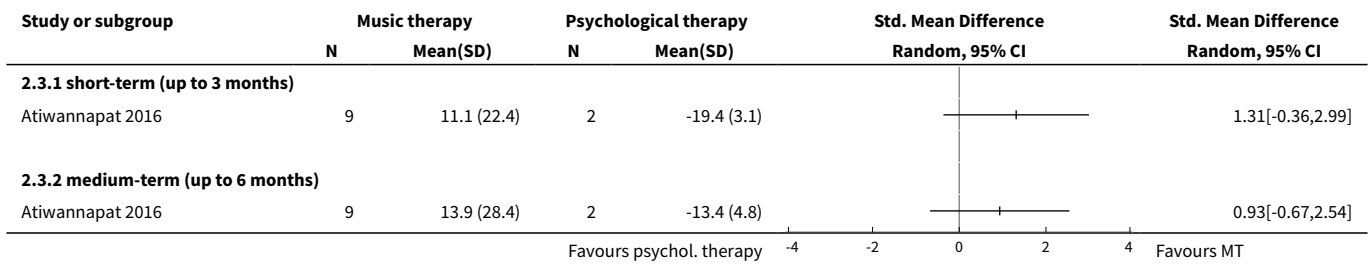
Favours MT -4 -2 0 2 4 Favours psychol. therapy

Analysis 2.2. Comparison 2 Music therapy versus psychological therapy, Outcome 2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor).

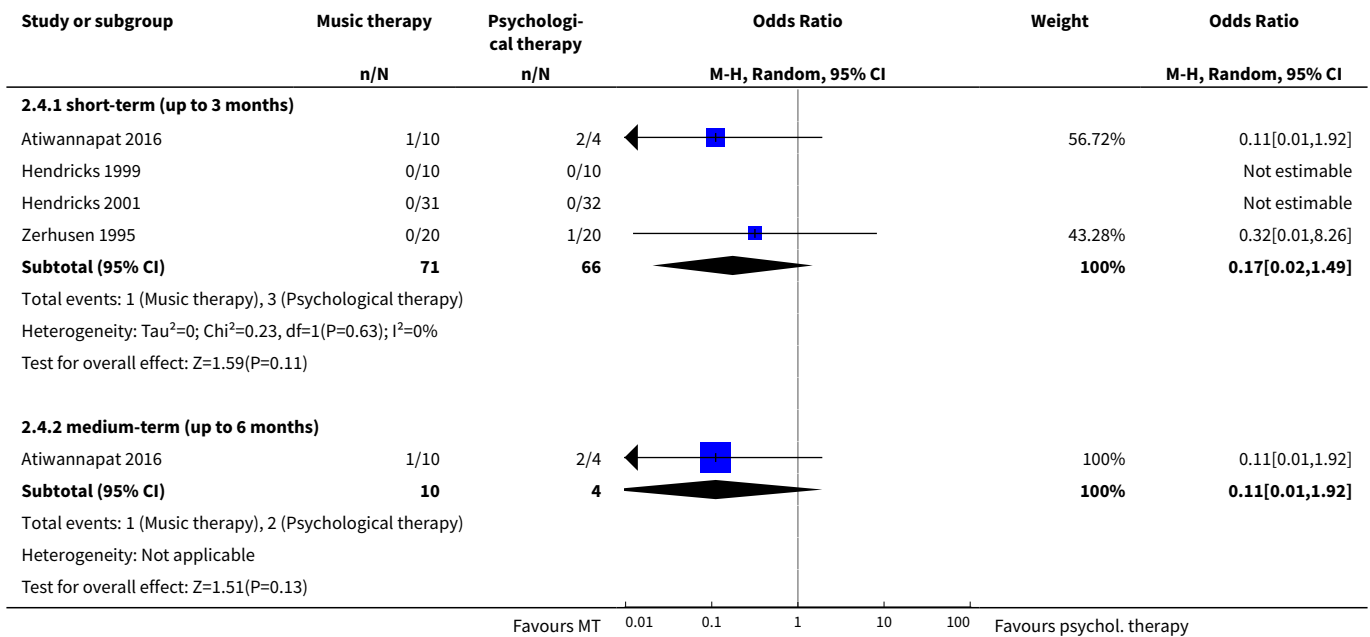
Study or subgroup	Music therapy		Psychological therapy		Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)			
2.2.1 short-term (up to 3 months)							
Atiwannapat 2016	9	-8.3 (10.2)	2	0.5 (0.7)		23.52%	-0.84[-2.44,0.75]
Hendricks 1999	9	-37.7 (10)	10	-14 (10)		24.72%	-2.26[-3.47,-1.05]
Hendricks 2001	31	-12.7 (2.3)	32	-3.9 (3.2)		25.83%	-3.07[-3.82,-2.33]
Zerhusen 1995	19	-1.5 (10)	19	-12.4 (10)		25.93%	1.06[0.38,1.75]
Subtotal ***	68		63			100%	-1.28[-3.57,1.02]
Heterogeneity: Tau ² =5.14; Chi ² =69.05, df=3(P<0.0001); I ² =95.66%							
Test for overall effect: Z=1.09(P=0.28)							
2.2.2 medium-term (up to 6 months)							
Atiwannapat 2016	9	-9.4 (14.7)	2	1 (5.7)		100%	-0.68[-2.26,0.89]
Subtotal ***	9		2			100%	-0.68[-2.26,0.89]
Heterogeneity: Tau ² =0; Chi ² =0, df=0(P<0.0001); I ² =100%							
Test for overall effect: Z=0.85(P=0.4)							

Favours MT -4 -2 0 2 4 Favours psychol. therapy

Analysis 2.3. Comparison 2 Music therapy versus psychological therapy, Outcome 3 Quality of life (high=good).



Analysis 2.4. Comparison 2 Music therapy versus psychological therapy, Outcome 4 Leaving the study early.



Comparison 3. Active music therapy versus receptive music therapy

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Severity of depressive symptoms, clinician-reported (primary outcome; high=poor)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3 Quality of life (high=good)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 short-term (up to 3 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 medium-term (up to 6 months)	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Leaving the study early	1		Odds Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 short-term (up to 3 months)	1		Odds Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.2 medium-term (up to 6 months)	1		Odds Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Analysis 3.1. Comparison 3 Active music therapy versus receptive music therapy, Outcome 1 Severity of depressive symptoms, clinician-reported (primary outcome; high=poor).

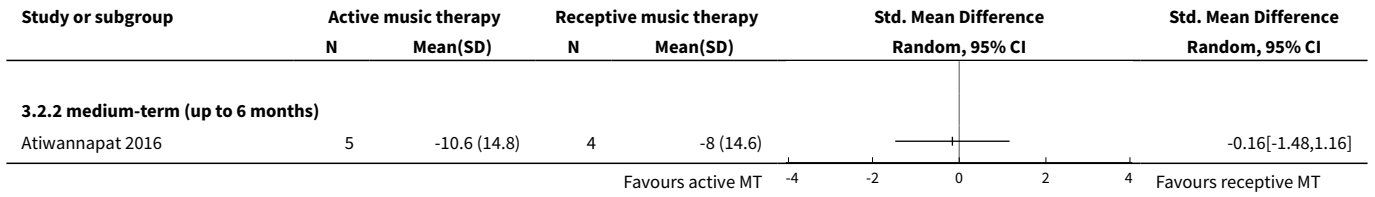
Study or subgroup	Active music therapy		Receptive music therapy		Std. Mean Difference Random, 95% CI	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)		
3.1.1 short-term (up to 3 months)						
Atiwannapat 2016	5	-10.8 (3.6)	4	-5.5 (13.2)		-0.52[-1.87,0.83]
3.1.2 medium-term (up to 6 months)						
Atiwannapat 2016	5	-14.4 (9)	4	-8.2 (7.7)		-0.64[-2.02,0.73]

Favours active MT -2 -1 0 1 2 Favours receptive MT

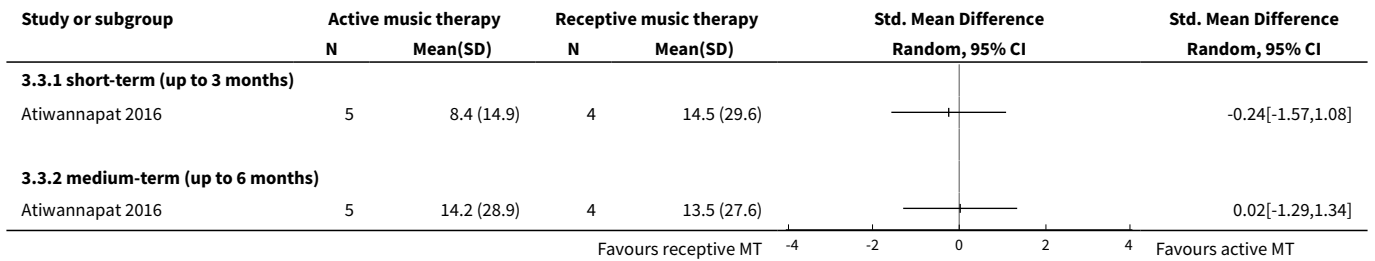
Analysis 3.2. Comparison 3 Active music therapy versus receptive music therapy, Outcome 2 Severity of depressive symptoms, patient-reported (primary outcome; high=poor).

Study or subgroup	Active music therapy		Receptive music therapy		Std. Mean Difference Random, 95% CI	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)		
3.2.1 short-term (up to 3 months)						
Atiwannapat 2016	5	-8.4 (8.6)	4	-8.2 (11.9)		-0.01[-1.33,1.3]

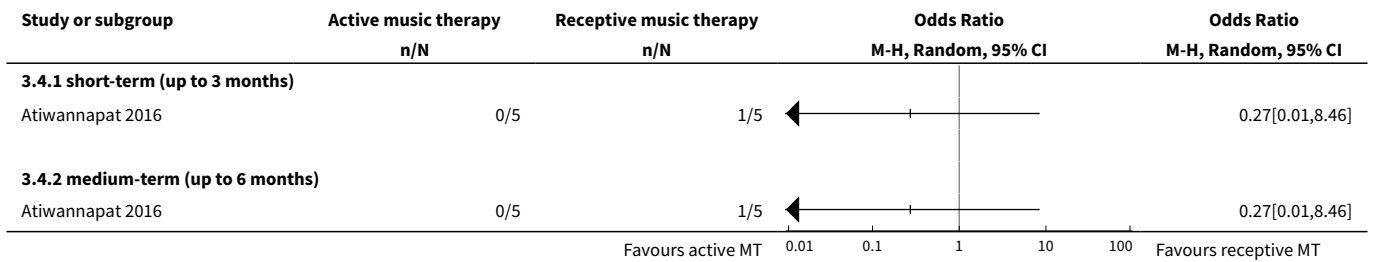
Favours active MT -4 -2 0 2 4 Favours receptive MT



Analysis 3.3. Comparison 3 Active music therapy versus receptive music therapy, Outcome 3 Quality of life (high=good).



Analysis 3.4. Comparison 3 Active music therapy versus receptive music therapy, Outcome 4 Leaving the study early.



APPENDICES

Appendix 1. Search review - 2008 - Music therapy for depression

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

Music therapy for depression (Review)

#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. PsycINFO
8. PSYndex
9. The internet was also searched using general search engines e.g. Google.com

Handsearches

The following specialist journals were hand searched

British Journal of Music Therapy 1987 -2003
Journal of Music Therapy 1964 - 1998
Nordic Journal of Music Therapy 1992 -2003
Music Therapy Perspectives 1982 - 1984 and 1986 - 1998
Canadian Journal of Music Therapy - Newsletter and Bulletin 1985 and 1986, summer 1991-93
Musiktherapeutische Umschau 1980 onwards
Music Therapy 1981 - 1996
Australian Journal of Music Therapy Vol 12 2001
Australian MT Association Bulletin 1984 - 1988
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.

Appendix 2. Search review - 2017 - Music therapy for depression

Search strategy for CCMD-CTR, 6 May 2016

The CCMD-CTR is a specialised register, containing reports of RCTs for common mental disorders only (see: <http://cmd.cochrane.org/specialised-register>).

ti = title

ab = abstract

kw = keywords

ky = other keywords

mh = MeSH headings

mc = MeSH check words

emt = EMTREE headings

This register is current to 6 May 2016, and all years (to 2016) were included.

#	Query
#1	(depress* or dysthymi* or "affect disorder*" or "affective symptom*" or "mood disorder*"):ti,ab,kw,ky,emt,mh,mc
#2	(music*):ti,ab,kw,ky,emt,mh,mc
#3	(#1 and #2)

Search results: 223
Search strategy for Wiley/Cochrane Library, 17 June 2016

#	Query
#1	(depress* or dysthymi* or "affective disorder*" or "affective symptom*" or mood):ti,ab,kw (Word variations have been searched)
#2	MeSH descriptor: [Depression] explode all trees
#3	MeSH descriptor: [Mood Disorders] explode all trees
#4	(#1 or #2 or #3)
#5	music*:ti,ab,kw (Word variations have been searched)
#6	MeSH descriptor: [Music Therapy] this term only
#7	MeSH descriptor: [Music] this term only
#8	(#5 or #6 or #7)
#9	(#4 and #8)

Search results: 336

Distribution of results per database: Cochrane Reviews: 12; Other Reviews (DARE): 6; CENTRAL (Trials): 316; Method Studies: 1; Technology Assessments (HTA): 1; Economic Evaluations (EED): 0.

Search strategy for Thomson Reuters/Web of Science, 21 June 2016

TOPIC = words in title, abstract, (author) keywords

TITLE = words in title

Indexes = SCI-EXPANDED, SSCI, A&HCI, ESCI

Timespan = All years

#	Query	Results
---	-------	---------

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

(Continued)

#7	#6 AND #5	1,218
#6	TOPIC: (random* or control* or study or trial or compar* or group or groups or therapy or treatment or intervention)	19,393,570
#5	#4 AND #3	1,495
#4	#2 OR #1	659,969
#3	TOPIC: (music or musical)	116,047
#2	TITLE: (mood or mental)	127,058
#1	TOPIC: (depress* or dysthymi* or affect disorder* or affective symptom* or mood disorder*)	557,190

Search strategy for Ebsco/PsycInfo, 5 July 2016

CCDAN OVID/PsycInfo RCT filter, received by e-mail June 21, 2016 from information specialist Sarah Dawson was adapted to Ebsco/PsycInfo by JCFK. An adaptation table is available upon request.

DE = descriptor, keyword

PT = publication type keyword

Nx = words near to each, x places apart

TX = text word

TI = words in title

AB = words in abstract

#	Query	Results
S4	S1 AND S2 AND S3	206
S3	DE "Treatment Effectiveness Evaluation" OR DE "Clinical Trials" OR DE "Mental Health Program Evaluation" OR DE "Placebo" OR TI placebo* OR AB placebo* OR AB randomly OR TX randomi* OR TI trial OR AB trial OR TX ((singl* OR doubl* OR trebl* OR tripl*) N3 (blind* OR mask* OR dummy)) OR TI (control* N3 (trial* OR study OR studies OR group*)) OR AB (control* N3 (trial* OR study OR studies OR group*)) OR TI factorial* OR AB factorial* OR TI allocat* OR AB allocat* OR TI assign* OR AB assign* OR TI volunteer* OR AB volunteer* OR TI (crossover* OR "cross over*") OR AB (crossover* OR "cross over*") OR TX (quasi N5 (experimental OR random*))	421,721
S2	(DE "Music Therapy" OR DE "Music" OR DE "Musical Instruments" OR DE "Rock Music") OR TI (music OR musical) OR AB (music OR musical)	30,882
S1	(DE "Major Depression" OR DE "Anaclitic Depression" OR DE "Dysthymic Disorder" OR DE "Endogenous Depression" OR DE "Late Life Depression" OR DE "Postpartum Depression" OR DE "Reactive Depression" OR DE "Recurrent Depression" OR DE "Treatment Resistant Depression" OR DE "Depression (Emotion)" OR DE "Atypical Depression" OR DE "Seasonal Affective Disorder" OR DE "Affective Disorders") OR TI (depression OR depressive OR depressed OR	257,631

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

(Continued)

dysthymia OR dysthymic OR "affective disorder" OR "affective disorders" OR mdd) OR AB (depression OR depressive OR depressed OR dysthymia OR dysthymic OR "affective disorder" OR "affective disorders" OR mdd)

Search strategy for Ebsco/CINAHL, 5 July 2016

MH = Mapped heading keyword

+ = Mapped heading with explosion

PT = publication type keyword

Nx = words near to each, x places apart

TX = text word

TI = words in title

AB = words in abstract

#	Query	Results
S4	S1 AND S2 AND S3	108
S3	(MH "Clinical Trials+") OR (PT Clinical trial) OR (TX clini* N1 trial*) OR (TX ((singl* N1 blind*) or (singl* N1 mask*)) or TX ((doubl* N1 blind*) or (doubl* N1 mask*)) OR or TX ((tripl* N1 blind*) or (tripl* N1 mask*))) OR (TX randomi* control*) OR (MH "Random Assignment") OR ((TX random* allocat*) or (TX allocat* random*)) OR (TX placebo*) OR (TX (waitlist* or (wait* and list*)) and (control* or group)) OR ((TX "treatment as usual" or (TX TAU)) OR (TX (control* N3 (trial* or study or studies or group*))) OR (MH "Quantitative Studies")	277,083
S2	((MH "Music Therapy") OR (MH "Music Therapy (Iowa NIC)") OR (MH "Music")) OR TI (music OR musical) OR AB (music OR musical)	8,681
S1	((MH "Depression+") OR (MH "Affective Disorders") OR (MH "Seasonal Affective Disorder") OR (MH "Premenstrual Dysphoric Disorder") OR (MH "Affective Disorders, Psychotic+") OR (MH "Bipolar Disorder+") OR (MH "Affective Symptoms")) OR TI (depression OR depressive OR depressed OR dysthymia OR dysthymic OR "affective disorder" OR "affective disorders" OR mdd) OR AB (depression OR depressive OR depressed OR dysthymia OR dysthymic OR "affective disorder" OR "affective disorders" OR mdd)	78,588

Search strategy for Embase.com, 5 July 2016

RCT filter from: Cochrane Handbook, Version 5.0.1, [updated September 2008], eds: Higgins & Green, chapter 6.3.2.2, What is in The Cochrane Central Register of Controlled Trials (CENTRAL) from Embase? [<http://www.cochrane-handbook.org>], notation as a search string by JCFK (January 2009). This search string is based on research by the UK Cochrane Centre "for reports of trials not indexed as trials in MEDLINE (Lefebvre 2008)."

/exp = Emtree keywords with explosion

/de = Emtree keywords without explosion

NEXT/x = words in that order next to each other, x places apart

:ab,ti = words in title or abstract

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

#	Query	Results
#4	#1 AND #2 AND #3	418
#3	random* OR factorial* OR crossover* OR cross NEXT/1 over* OR placebo* OR (doubl* AND blind*) OR (singl* AND blind*) OR assign* OR allocat* OR volunteer* OR 'crossover procedure'/exp OR 'double blind procedure'/exp OR 'randomized controlled trial'/exp OR 'single blind procedure'/exp	1,942,534
#2	'music therapy'/exp OR 'music'/de OR music:ab,ti OR musical:ab,ti	23,120
#1	'depression'/exp OR 'mood disorder'/de OR 'affective neurosis'/exp OR 'affective psychosis'/exp OR 'blunted affect'/exp OR 'major affective disorder'/exp OR 'minor affective disorder'/exp OR 'schizoaffective psychosis'/exp OR 'emotional disorder'/exp OR depression:ab,ti OR depressive:ab,ti OR depressed:ab,ti OR dysthymia:ab,ti OR dysthymic:ab,ti OR 'affective disorder':ab,ti OR 'affective disorders':ab,ti OR mdd:ab,ti	617,323

Search strategy for PubMed, 5 July 2016

RCT filter from: Box 6.4.a: Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity-maximizing version (2008 revision) http://handbook.cochrane.org/chapter_6/box_6_4_a_cochrane_hsss_2008_sensmax_pubmed.htm, viewed July 5, 2016. Adapted for PubMed by JCFK.

[Mesh] = Medical subject headings

[tiab] = words in title or abstract

[pt] = Publication Type, from MeSH Database

[sh] = Subheading, qualifier from MeSH Database

[tw] = words title, abstract, or MeSH

#	Query	Results
#20	#17 AND #18 AND #19	275
#19	randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized[tiab] OR placebo[tiab] OR drug therapy[sh] OR randomly[tiab] OR trial[tiab] OR groups[tiab] NOT (animals[MeSH Terms] NOT humans[MeSH Terms])	3,305,954
#18	"music therapy"[MeSH Terms] OR "music"[MeSH Terms] OR music[tw] OR musical[tw]	19,659
#17	"depressive disorder"[MeSH Terms] OR "depressive disorder, major"[MeSH Terms] OR "mood disorders"[MeSH Terms] OR "dysthymic disorder"[MeSH Terms] OR depression[tw] OR depressive[tw] OR depressed[tw] OR dysthymia[tw] OR dysthymic[tw] OR "affective symptoms"[MeSH Terms] OR "affective disorder" OR "affective disorders" OR mdd[tiab]	429,262

Search strategy for WHO/ICTRP, 6 September 2016

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

depress* in Condition

music* in Intervention

- 4 results

Search strategy for ClinicalTrials.gov, 6 September 2016

Conditions: depressive OR depression OR depressed OR dysthymia OR dysthymic OR "affective disorder" OR "affective disorders" OR mdd

Interventions: music OR musical

- 25 results

Search strategy for National Guideline Clearing House, 6 September 2016

(depress* OR dysthymi* OR "affective disorder" OR "affective disorders" OR mdd) AND (music*)

- 11 results

Search strategy for OpenGrey, 6 September 2016

(depress* OR dysthymi* OR "affective disorder" OR "affective disorders" OR mdd) AND (music*)

- 11 results

Search strategy for DART-Europe E-theses Portal, 7 September 2016

Keywords = (depress* OR dysthymi* OR "affective disorder" OR "affective disorders" OR mdd) AND (music*)

- 16 results

Search strategy for ETHOS, 7 September 2016

You searched all theses for: "depress*" OR dysthymi*" OR "affective disorder" OR "affective disorders" OR mdd" AND music*" no results

- 0 records were found.

Search strategy for Open Access Theses and Dissertations, 7 September 2016

Does not execute search.

Search strategy for ProQuest Dissertations and Theses Database, 7 September 2016

Title: (depress* OR dysthymi* OR "affective disorder" OR "affective disorders" OR mdd) AND (music*)

- 1 result

Appendix 3. Update search 2017

In compliance with Cochrane MECIR standard C37 (searches to be rerun within 12 months of publication), CCMD's information specialist ran a pre-publication, update search on 11 August 2017, details below.

1. CENTRAL (the Cochrane Library) (c/o Cochrane Register of Studies Online) (2016/17)
("music therapy" or music:ti) and depress* AND 30/06/2016 TO 11/08/2017:DL (n = 51)

2. Ovid XSearch (2016/17)

Database: AMED (Allied and Complementary Medicine) <1985 to August 2017>, PsycINFO <1806 to August Week 1 2017>, Journals@OVID, OVID fulltext Journals@Bristol, PsycARTICLES Full Text, Embase <1974 to 2017 Week 33>, Ovid MEDLINE(R) Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to 11-August-2017>,
Search Strategy:

- 1 music therapy.hw,ab,kf,kw,id.
- 2 (music adj2 (active or receptive)).hw,ab,kf,kw,id.
- 3 music.ti.
- 4 or/1-3 (40556)
- 5 (trial or study).af.
- 6 random*.ti,ab,hw,kf,kw,id.
- 7 (group? or control*).ti,ab,hw,kf,kw,id.
- 8 (therap* or treat* or effect* or efficac* or compar* or versus).ti.
- 9 or/5-8 (45614917)
- 10 depress*.ti,hw,kf,kw,id,ot.
- 11 (depress* adj2 (major or disorder?)).mp.
- 12 or/10-11
- 13 (4 and 9 and 12)
- 14 (2016* or 2017*).yr,ed,dc,dd.
- 15 (13 and 14)
- 16 remove duplicates from 15 (n = 187)

3. PubMed, not MEDLINE (all years)

- #11 Search (#9 AND #10) (n = 65)
- #10 Search depression OR depressive OR depressed [all fields]
- #9 Search (#4 AND #8)
- #8 Search (#5 OR #6 OR #7)
- #7 Search publisher[sb]
- #6 Search pubmednotmedline[sb]
- #5 Search indatareview [sb]
- #4 Search (#1 OR #2 OR #3)
- #3 Search music therapy[MeSH Terms]
- #2 Search "music therapy"
- #1 Search music[Title]

4. Web of Science (all years)

Cited Reference Search of included studies to date (n = 180)

WHAT'S NEW

Date	Event	Description
11 August 2017	New citation required and conclusions have changed	Updated the search from May to September 2016 and added 4 trial reports (Albornoz 2011 ; Atiwannapat 2016 ; Erkkilä 2011 ; Hendricks 2001) to the included studies. Amended, peer-reviewed, and accepted the Methods section in June 2016. Updated the search again in August 2017 and added 3 trial reports (Ahessy 2016 ; Jasemi 2016 ; Kim 2014) to 'Studies awaiting classification'

HISTORY

Protocol first published: Issue 4, 2003

Review first published: Issue 1, 2008

Date	Event	Description
3 November 2008	Amended	Converted to new review format
3 September 2007	New citation required and conclusions have changed	Made substantive amendments

Music therapy for depression (Review)

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

CONTRIBUTIONS OF AUTHORS

Review Maratos 2008

Idea of the review: Maratos.

First review author: Maratos

Writing the review: Maratos, Crawford.

Designing study protocol: Maratos, Gold.

Handsearching journals: Maratos, Gold.

Extracting study data: Maratos, Crawford, Wang.

Performing analysis: Maratos, Crawford, Wang.

Review Aalbers 2017

Idea of updating the review: Vink, Aalbers.

First review author and co-ordinator of the current review: Aalbers.

Writing the review: Aalbers, Fusar-Poli, Freeman, Ket, Gold (reviewed and approved by Vink, Spreen, Maratos, Crawford, Chen).

Preparing the Background: Aalbers, Freeman.

Determining Objectives, criteria for considering studies: Aalbers, Freeman, Maratos, Gold.

Developing search strategies, methods: Ket, Aalbers.

Conducting database searches and other searches: Ket, Aalbers.

Screening search results: Aalbers, Freeman.

Screening retrieved papers against inclusion criteria: Aalbers, Freeman.

Appraising quality of papers: Aalbers, Vink, Spreen.

Extracting study data: Aalbers, Freeman.

Assessing risk of bias: Aalbers, Freeman.

Writing to authors of papers for additional information: Aalbers.

Providing additional data about papers: Aalbers.

Obtaining and screening data on unpublished studies: Aalbers; Freeman.

Managing data for the review: Aalbers, Freeman, Fusar-Poli, Vink, Gold.

Entering data into Review Manager: Aalbers, Fusar-Poli, Gold.

Analysing RevMan statistical data: Aalbers, Fusar-Poli, Gold.

Performing other statistical analysis not using RevMan: Gold, Spreen.

Interpreting data: Aalbers, Fusar-Poli, Gold, Vink, Spreen, Crawford.

Making statistical inferences: Aalbers, Fusar-Poli, Gold, Spreen.

Serving as guarantor for the review (one author): Aalbers.

Taking responsibility for reading and checking the review before submission: Aalbers.

DECLARATIONS OF INTEREST

SA: none known.

LF-Pi: none known.

REF: none known.

MS: none known.

JCFK: none known.

ACV: none known.

AM: none known.

MC: none known.

X-JC: I am a music therapist.

CG: I am a co-author of one included study. I am a clinically trained music therapist and an associate editor of the Cochrane Developmental, Psychosocial and Learning Problems Group. I am an editor of the *Nordic Journal of Music Therapy*, where one included trial was published, and have been involved in trials that included, but were not specifically focused on, people with depressive disorders.

SOURCES OF SUPPORT

Internal sources

- Central and North West London NHS Foundation Trust, London, UK.
- Sogn og Fjordane University College, Norway.

- School of Social Work and Arts Therapies, Stenden University of Applied Sciences Leeuwarden, Netherlands.
Time, translation of a Chinese study report and supervising the PhD project
- Clinical, Neuro & Developmental Psychology, Vrije Universiteit Amsterdam, Amsterdam, Netherlands.
Supervising the PhD project
- Music Therapy, Artez School of Music, Enschede, Netherlands.
Supervising the review project
- Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy.

External sources

- The Research Council of Norway, Norway.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

In compliance with developments in systematic review methods since publication of the first version of this review ([Maratos 2008](#)), we have made a distinction between primary and secondary outcomes. To avoid lack of balance and the possibility of bias, we added adverse events as a primary outcome ([Higgins 2015](#)). We added anxiety as a secondary outcome because anxiety is a common comorbidity with depression ([Gotlib 2014](#)). We examined clinician-rated and patient-reported depression separately to retain both sources of information and because many studies reported both; the Cochrane Group approved this change. We commented on the quality of the body evidence using GRADE profile software and included 'Summary of findings' tables as recommended by Higgins and colleagues ([Higgins 2015](#)). We submitted these protocol amendments and received approval before we began work on the review update.

INDEX TERMS

Medical Subject Headings (MeSH)

Anxiety [therapy]; Combined Modality Therapy; Depression [*therapy]; Music Therapy [*methods]; Patient Reported Outcome Measures; Psychotherapy; Quality of Life; Randomized Controlled Trials as Topic; Treatment Outcome

MeSH check words

Adult; Humans