Dose-response relationship in music therapy for people with serious mental disorders:
systematic review and meta-analysis
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CRD summary
The authors concluded that music therapy was effective for people with psychotic and non-psychotic severe mental disorders in improving their global state, symptoms, and functioning. The authors' conclusions appear to reflect the data presented, but the small number of studies for some outcomes means that their reliability is unclear.

Authors' objectives
To examine the benefits of music therapy for people with serious mental disorders.

Searching
PubMed and PsiTri databases were searched for articles in any language; searches were carried out in May 2006 (date range not specified). Search terms were reported. Search strategies from previous reviews written by the authors were also used (see Other Publications of Related Interest). Published and unpublished studies were considered.

Study selection
Prospective studies evaluating the effects of music therapy for adults with serious mental disorders (as diagnosed by an international classification system) were eligible for inclusion. Included studies had to evaluate music as a form of psychotherapy compared with no treatment, standard care, placebo, or an active control condition. Clinical outcomes that were evaluated by a standardised rating scale, completed by self-report or by an independent rater, were eligible for inclusion, but those rated by therapists were excluded.

In most of the included studies, the interventions were a combination of improvisation, playing music on instruments, singing, writing songs, listening to music, and verbal reflections on music experiences. Music therapy sessions were attended from one to six times per week for one to six months and the sessions were individual, group, or both. In half of the included studies, music therapy was compared with standard care and, in the other half, it was compared with, antidepressants, minimal therapeutic contact, cognitive therapy, no treatment, or no comparison group (four studies). Two thirds of participants were diagnosed with a psychotic disorder and the remaining participants were diagnosed with a non-psychotic disorder, which most frequently was depression. The age of participants ranged from 18 to 86 years, where reported. The severity of disorder was indicated by psychoticism, institutionalisation, classification as chronic, a lack of response to other therapy, or tendency to suicide. The outcomes included general mental state, functioning, and symptoms, such as negative or positive ones, depression, and anxiety. Included studies were conducted in Europe, North and Central America, and Asia.

Two reviewers independently assessed articles for inclusion and disagreements were resolved through discussion.

Assessment of study quality
Allocation concealment, blinding, and loss to follow-up were assessed. Studies with an attrition rate greater than 30% were excluded, as were studies that were definitely not blinded. The authors did not state how many reviewers assessed validity. [A: The authors confirmed that two reviewers independently assessed validity.]

Data extraction
Data were extracted and used to calculate odds ratios and corresponding 95% confidence intervals for dichotomous outcomes and the mean difference using Hedges' g method for continuous outcomes. Skew in the data for continuous outcomes was removed, using log transformation, where possible. Where data were missing for dichotomous outcomes, the negative outcome was assumed. Effect sizes were calculated and the beneficial effect of music therapy was represented by a positive effect size (for continuous outcomes) or by an odds ratio of less than one (for dichotomous outcomes). For randomised controlled trials (RCTs), only the post-test means were used. For controlled clinical trials (CCTs) the post-test mean was used for the experimental group and, to adjust for pre-test differences, for the control

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group, the pre-test difference between groups was subtracted from the post-test mean. For studies with no control
groups, the baseline values were used as control data (pre-test versus post-test values). Where necessary, the study
authors were contacted for additional information.

Two reviewers independently extracted the data and disagreements were resolved through discussion.

Methods of synthesis
The data were grouped by type of outcome. Where data from at least five studies were available for an outcome, these
were combined using a weighted mixed-effects meta-analysis, to simultaneously examine the study design (RCT, CCT,
or uncontrolled), the type of disorder (psychotic or non-psychotic), and the number of sessions provided. Model fits,
using different combinations of predictors, were compared using the adjusted R² method and the model with the best
fit was selected. Where data from between two and four studies were available for each outcome, these were pooled
using a fixed-effect model or, where there was evidence of statistical heterogeneity (I² >50%), a random-effects model.

Results of the review
Fifteen studies (n=691 patients) were included in the review and eight were RCTs, three were CCTs, and four were
uncontrolled studies. Allocation concealment was adequate for three studies. Assessor blinding was adequate in six
studies and uncertain in nine studies.

Five or more studies: Music therapy, when added to standard care, had strong significant effects on general symptoms
(seven studies), negative symptoms (eight studies), depression (seven studies), and functioning (five studies). Significant
dose-effect relationships were identified for general mental state (seven studies), negative symptoms (eight studies), and
depressive symptoms (seven studies), as well as functioning (five studies), with explained variance ranging from 66% to
78%. Small effect sizes for these outcomes were achieved after three to 10 sessions and large effects after 16 to 51
sessions. Neither study design nor type of disorder had any predictive effect on the outcomes.

Less than five studies: Music therapy had a significant effect compared with standard care for global state (OR 0.03,
95% CI 0.01 to 0.09; two studies), with no evidence of statistical heterogeneity, and for anxiety (ES 1.05, 95% CI 0.63
to 1.48; three studies), but with high statistical heterogeneity (I² 73.8%). The results were similar for anxiety when the
study with the weakest design was excluded from the analysis thus removing heterogeneity (ES 1.31, 95% CI 0.85 to
1.78; two studies). There were no significant differences between music therapy and standard care for positive
symptoms (four studies).

Data for other outcomes were also reported.

Authors' conclusions
The findings suggested that music therapy was effective for people with psychotic and non-psychotic severe mental
disorders in improving their global state, symptoms, and functioning. Some improvements were seen with a few therapy
sessions, but longer courses or more frequent sessions were required to achieve more substantial benefits.

CRD commentary
The review question was clearly defined with appropriate inclusion criteria. Some relevant sources were searched, but
the search was largely based on strategies from previous reviews. Efforts were made to reduce language and publication
bias. Some aspects of validity were assessed and the results were reported. Appropriate methods were used to reduce
reviewer error and bias in the selection of studies and extraction of data [A: and assessment of validity]. Studies were
combined in a meta-analysis and the heterogeneity and sources of variation were appropriately assessed. Only those
studies comparing music therapy with standard therapy were reported, as a lack of data precluded the meta-analysis of
other comparisons. Several studies did not have a comparison group and were prone to bias, for these studies pre-
intervention data were used for comparison and caution should be used in interpreting the data.

The authors’ conclusions appear to reflect the data presented, but the different study designs and small number of
studies for some outcomes mean that their reliability is unclear.
Implications of the review for practice and research

**Practice**: The authors stated that their findings supported the value of longer courses in music therapy for patients with severe mental disorders and these could be provided in out-patient or private practice settings, but the extent of benefit might vary between patients and across client groups. Music therapists should have extensive and adequate training.

**Research**: The authors stated that further robust studies were needed to evaluate the effectiveness of music therapy for patients with severe mental disorders. Research should evaluate music therapy for other disorders, such as borderline personality disorder and eating disorders, and for specific subgroups, such as patients with low therapy motivation. It should examine different types of music therapy and compare it with active control conditions.

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