



Music Interventions for Early-Stage Cognitive Decline: A Systematic Review and Meta-Analysis



Jennie L. Dorris, MM¹, Stephen Neely, PhD², Juleen Rodakowski, OTD, MS, OTR/L, FAOTA¹

Corresponding author contact information: jenniedorris@pitt.edu

¹ Department of Occupational Therapy, University of Pittsburgh, ² School of Music, Carnegie Mellon University

BACKGROUND AND SIGNIFICANCE

• Dementia is a debilitating disease that can alter cognitive functioning for older adults.



- Supporting cognitive functioning is critical to help protect against cognitive decline and slow the progression of the disease.
- Music has shown potential to influence cognitive outcomes.

• Classification of music activities would clarify which activities may have caused the effects.

METHODS

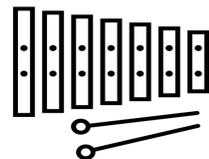
STUDY TYPE: Systematic review and meta-analysis.

INCLUSION CRITERIA: Published randomized controlled trials between 2010 and 2021.

PARTICIPANTS: Older adults with probable MCI, mild, or moderate dementia.

INTERVENTION: Active music-making, defined as physically participating in music.

OUTCOMES: Cognitive functioning.



APPRAISAL AND ANALYSIS

- Studies were critically appraised; studies with similar methodology were meta-analyzed with a random-effects model.
- Activities were categorized using the Reporting Guidelines for Music-based Interventions.

Research Questions:

What are the effects of active music-making interventions compared to controls on cognitive functioning for older adults with probable MCI and mild or moderate dementia?

What specific music activities were used in each intervention?

RESULTS

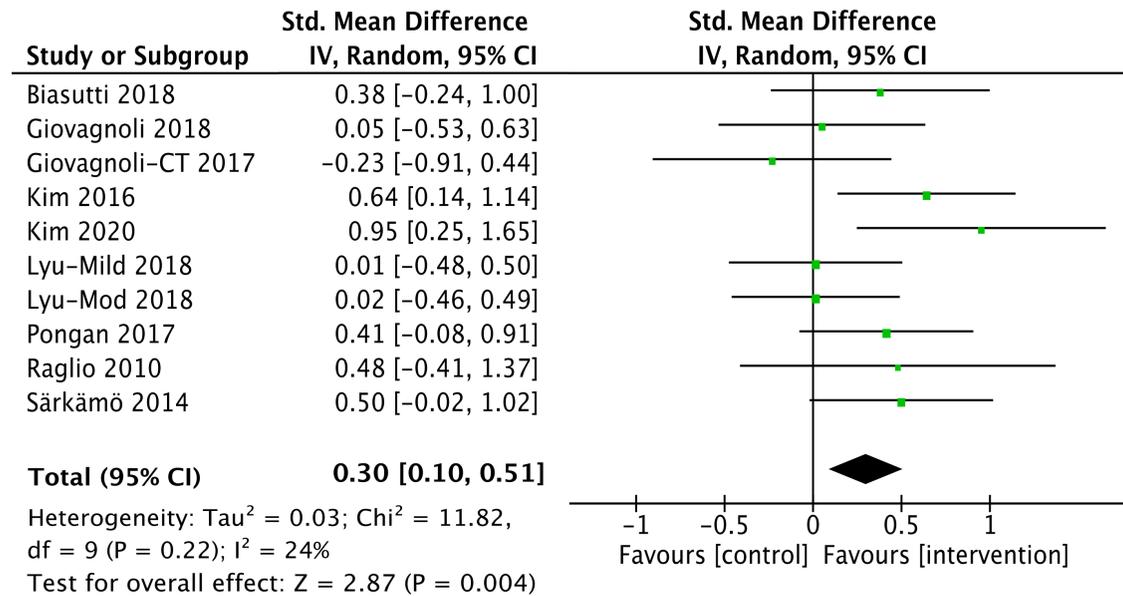
Studies screened (n=351)

Full-text articles assessed (n= 94)

Studies included in qualitative synthesis (n=21)

Studies included in meta-analysis (n=9)

Meta-analysis of active music-making vs. controls for cognitive functioning:



Active music-making has a small but statistically significant effect on cognitive functioning for older adults with probable MCI, mild, or moderate dementia.

TAKE AWAY POINTS

MUSIC'S EFFECT ON COGNITIVE FUNCTIONING:

Active music-making has a small, statistically significant effect on cognitive functioning, SMD = 0.30, *p* = 0.004.

The music activities of Re-Creating Music by Singing/Playing Instruments or Improvisation were used in all studies.

IMPLICATIONS OF RESEARCH:

Active music-making is a safe, enjoyable activity that has the potential to support the lives of millions of older adults facing cognitive decline.



FUTURE DIRECTIONS

Programming looking to support these older adults should consider utilizing active music-making interventions that use the activities of:

- Singing and/or playing precomposed songs
- Creating music in the moment

LIMITATIONS

We were limited by incomplete data for reporting effect sizes on all studies.

REFERENCES

Dorris, JL, Neely, S, Terhorst, L, VonVille, HM, Rodakowski, J. Effects of music participation for mild cognitive impairment and dementia: A systematic review and meta-analysis. *J Am Geriatr Soc.* 2021; 1–9. <https://doi.org/10.1111/jgs.17208>

*Other references available upon request

ACKNOWLEDGEMENTS

Financial support was provided by the National Institute on Aging (R01AG056351).