

# Medicine by the Numbers

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## Music Therapy for Autistic People

Breanna L. Gawrys, DO, and Diana T. Trang, DO

### Details for This Review

**Study Population:** People two to 21 years of age with autism spectrum disorder (ASD) defined in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (DSM-5) or the International Classification of Diseases, 11th ed. (ICD-11). More than one-half of the studies were conducted in North America or Asia. Most participants were males between two and 12 years of age. The studies included people with a range of mild to severe autism.<sup>1</sup>

**Efficacy End Points:** Global autism improvement, social interactions, nonverbal communication, verbal communication, quality of life, total autism symptom severity

**Harm End Points:** Hospitalization, other institutional stays, and adverse events reported by parents

**Narrative:** According to the Centers for Disease Control and Prevention's Autism and Developmental Disabilities Monitoring Network, it is estimated that 1 in 44 children had ASD in 2018.<sup>2</sup> Autistic people may be more vulnerable to adverse life experiences.<sup>3</sup> Music therapy can directly affect these experiences because autistic people often have difficulties with social communication and expression, which are key elements addressed by music therapy.<sup>2</sup> Music therapy can improve the communication and expressive skills of autistic people, which decreases their social anxiety and improves quality of life.<sup>1</sup>

The Cochrane review identified 26 studies (randomized controlled trials [RCTs], quasi-randomized trials, and controlled clinical trials), including 1,165 participants with ASD who were treated with music therapy vs. placebo or standard care. Music therapies included, but were not limited to, actively making music, recreating songs or improvisation, and listening to the therapist play music. Placebo was defined as a similar intervention without music therapy elements (i.e., play therapy without music). Primary outcomes included global improvement (binary measurement of improved or not improved) and social interactions, nonverbal communication, verbal communication, quality of life, total autism

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#### Benefits

1 in 11 autistic people at low risk and 1 in 6 at high risk demonstrated global autism improvement after receiving music therapy

#### Harms

No adverse events were reported for the study intervention

symptom severity, and adverse events (all measured as continuous variables), with measurements completed by care team members. Pooled data across the 26 studies showed moderate-certainty evidence that music therapy is associated with global autism improvement.

Compared with placebo or standard care, music therapy led to global autism improvement when measured immediately postintervention (risk ratio = 1.22; 95% CI, 1.06 to 1.40; eight studies; 583 participants; moderate-certainty evidence); the number needed to treat was 11 (95% CI, 6 to 39) for populations at low risk and 6 (95% CI, 3 to 21) for populations at high risk. Music therapy also led to a small increase in quality of life (standardized mean difference = 0.28; 95% CI, 0.06 to 0.49; three RCTs; 340 participants; moderate-certainty evidence) and significantly reduced total autism symptom severity (standardized mean difference = -0.83; 95% CI, -1.41 to -0.24; nine studies; 575 participants; moderate-certainty evidence).

Low- or very low-certainty evidence showed no clear difference between music therapy and comparison groups for social interaction, nonverbal communication, or verbal communication measured immediately postintervention. There was no difference in reported adverse events between the control and treatment groups.<sup>4</sup>

This new evidence provides updated guidance for families, clinicians, and policymakers to determine resource allocation for interventions for autistic people.

**Caveats:** The study and the calculated numbers needed to treat used high-risk and low-risk populations

### The NNT Group Rating System

Green	Benefits greater than harms
Yellow	Unclear benefits
Red	No benefits
Black	Harms greater than benefits

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based on two articles that did not clearly define the differences between these populations.

The mean duration of studies was two and a half months, with a mean follow-up interval of three months; however, the long-term benefits of music therapy for autistic people are unclear. Most studies included males two to 12 years of age without specified ethnicity, limiting generalizability to other populations.

**Conclusion:** We have assigned a color recommendation of yellow (unclear benefits) for the effects of music therapy on global improvement, total autism severity, and quality of life in autistic people. More research is needed to determine whether music affects other autism outcome measures over a longer follow-up period and whether initiating it in early to mid-adulthood would yield similar results to the younger population. The other outcomes studied (social interaction, nonverbal communication) had very low- to moderate-certainty evidence. Additional studies are needed for these outcomes, with a focus on how they relate to quality of life for autistic people.

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This series is coordinated by Christopher W. Bunt, MD, *AFP* assistant medical editor, and the NNT Group.

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**Editor's Note:** This article uses identity-first language when discussing autism and autistic individuals because this is preferred by the autistic community and supported by the referenced Cochrane Review.

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### References

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