



Black, D. S., Milam, J., & Sussman, S. (2009). Sitting-meditation interventions among youth: A review of treatment efficacy. *Pediatrics*. 124(3), e532-e541.

Summary by Lisa Flook, Ph.D.; Scientist

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This article reviewed empirical studies on the effects of sitting- meditative practices in school, clinic, and community settings for youth ages 6 to 18 years. The review was motivated by a growing body of research that documents positive health and cognitive outcomes among adults. The purpose of the present review was to determine the state of empirical research related to sitting-meditation interventions for youth. Only those studies that prominently featured sitting meditation were included. Other criteria for inclusion in the review were: 1) study participants were younger than 18 years of age, 2) there was a quantitative health-related or psychosocial outcome, 3) interventions were delivered in schools community, or clinic settings, and 4) study results were published in a peer-reviewed, English-language journal. Studies that primarily focused on movement-based practices such as yoga or tai chi were not included as the effects of meditation could not be easily separated from those associated with physical exertion. In addition, case studies with a single participant were excluded.

The review comprised 16 studies, published between 1982 to 2008, that met these criteria. A variety of meditation styles were represented including mindfulness meditation, transcendental meditation, mindfulness-based stress reduction, and mindfulness-based cognitive therapy. When possible effect sizes were calculated for studies that compared a treatment and control group. The results of studies were clustered and presented according to physiological outcomes and psychosocial/behavioral outcomes. Studies that examined physiological outcomes ($n=5$) provided meditation sessions for 10-15 minutes, twice daily, for 2-4 months. Those that examined psychosocial/behavioral outcomes ($n=11$) provided sessions from 5 minutes to 2.5 hours, 1-2 times per day, from 4 weeks to 4 months.

Physiological outcomes included blood pressure, heart rate, and cardiac output. Studies that assessed physiology were primarily conducted among African American adolescents. Studies showed some support for the efficacy of meditation on physiological outcomes, with median effect sizes ranging from 0.16 to 0.29. Primary psychosocial/behavioral outcomes included anxiety, depressive symptoms, behavior problems, and inattention. Studies showed the most support for reductions in anxiety and behavior problems as a function of meditation training. Median effect sizes across psychosocial/behavioral studies ranged from .27 to .70. Average participant compliance (attendance to treatment) and retention (completing survey measures) across all studies was moderately high at 77% and 84%, respectively. This review found meditation to have beneficial effects across physiologic, psychosocial, and behavior outcomes. However, more randomized control trials with larger and diverse samples in a variety of treatment settings are needed to clarify the treatment efficacy of sitting- meditation among youth.