Systematic Review of Yoga Interventions for Anxiety Reduction Among Children and Adolescents

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OBJECTIVE. Anxiety disorders are the most prevalent psychological disorders among children and youths. There is growing interest in intervention options for anxiety. Yoga is widely used in clinical, school, and community settings, but consolidated sources outlining its effectiveness in reducing anxiety are limited.

METHOD. This systematic review examined the evidence base (1990–2014) for yoga interventions addressing anxiety among children and adolescents (ages 3–18 yr).

RESULTS. We identified 2,147 references and found 80 articles that were eligible for full-text review. The final analysis included 16: 6 randomized controlled trials, 2 nonrandomized preintervention–postintervention control-group designs, 7 uncontrolled preintervention–postintervention studies, and 1 case study.

CONCLUSION. Nearly all studies indicated reduced anxiety after a yoga intervention. However, because of the wide variety of study populations, limitations in some study designs, and variable outcome measures, further research is needed to enhance the ability to generalize and apply yoga to reduce anxiety.

An estimated 21% of children and adolescents in the United States have a diagnosable psychiatric disorder resulting in at least minimal impairment, and upward of 4 million youths have a serious psychiatric disorder that causes significant functional impairments across social, familial, and community domains (Merikangas et al., 2010; U.S. Department of Health and Human Services, 1999). Anxiety disorders are the most prevalent of these disorders in children (Alyahri & Goodman, 2008; Cartwright-Hatton, McNicol, & Doubleday, 2006), with 10%–17% of community samples and ≤45% of children in mental health clinics affected (Last, Perrin, Hersen, & Kazdin, 1992; Weiss & Last, 2001). Prevalence data of a representative U.S. sample demonstrated that among adolescents affected by anxiety disorders, 50% had their onset by age 6 (Merikangas et al., 2010). These statistics demonstrate that anxiety disorders occur early and often in children. In addition, anxiety disorders in children are associated with mood and anxiety disorders in adolescence and adulthood, suicide attempts, and psychiatric hospitalization (Storch, 2005). Given the high prevalence and functional impairment associated with childhood anxiety disorders, the need for effective ways to nurture these children’s mental health and well-being is imperative.

Yoga has increasingly been used with a variety of child populations. In 2007, upward of 1.5 million children were participating in yoga programs across the United States (Barnes, Bloom, & Nahin, 2009), and this number continues to increase as these programs are implemented in a growing number of community studios, clinical settings, and schools. Yoga, a subset of mindful and contemplative practice, includes structured activities that “require individuals to exercise volitional control” over their physical and mental activity (Davidson et al., 2012, p. 147) through focus on improving attention, enhancing emotional...
regulation skills for stress management, and increasing self-knowledge (Greenberg & Harris, 2012). Yoga designed for children often incorporates modified versions of body postures and exercises geared toward strength and flexibility, breathing techniques, mental and emotional awareness, and self-regulation skills. These practices are hypothesized to elicit adaptive neural and mental responses that can result in improved behavior and emotion regulation (Greenberg & Harris, 2012). In colloquial terms, yoga is considered a recreational and rehabilitative activity that develops a healthy mind and body and improved responses to stress.

Growing interest in the application of yoga with children stems from its use among the adult population. Studies with adults have shown positive effects of training for attention; inhibiting deleterious cognitive and emotional processes; and reducing mood and anxiety disorders, stress, and blood pressure (Arias, Steinberg, Banga, & Trestman, 2006; Brefczynski-Lewis, Lutz, Schaeffer, Levinson, & Davidson, 2007; Kirkwood, Rampes, Tuffrey, Richardson, & Pilkington, 2005; Opsina et al., 2007; Pilkington, Kirkwood, Rampes, & Richardson, 2005; Shapiro, Brown, & Biegel, 2007). Research regarding the effectiveness of yoga in the child and adolescent population has also examined a broad range of psychosocial outcomes. Many studies of yoga in children and adolescents have shown that yoga programs are feasible and acceptable and can result in improved stress coping, affect, and internalizing and externalizing behaviors (Beets & Mitchell, 2010; Noggle & Khalsa, 2010; Stueck & Gloeckner, 2005; Telles, Narendran, Raghuraj, Nagarathna, & Nagendra, 1997). For example, a pilot study of a preventive yoga-based stress reduction program called Mind Magic reported stress reduction in the intervention group and not in the control group (Jellesma & Cornelis, 2012), with the most benefit seen in children with high behavioral inhibition systems (e.g., those who were sensitive to aversive stimuli and had increased arousal, avoidance, and negative affect). In addition, a 12-wk yoga intervention among 97 fourth- and fifth-grade students from four Baltimore City schools found reduced involuntary stress reactions, which were interpreted as improvement in self-regulatory capacities (Mendelson et al., 2010).

Although the positive effects of yoga on anxiety among adults and in preliminary studies of yoga with children appear promising, there is a lack of consolidated evidence on the effectiveness of yoga in reducing anxiety among children and adolescents. The need for systematic examination and appraisal of yoga interventions for anxiety reduction in children and adolescents is clear. As such, this systematic review examined the following research question: What is the evidence for the effectiveness of yoga interventions, as defined by controlled breathing, postures, and meditation, in reducing anxiety among children and youths?

Method

Literature Search

The first author (Weaver) and an experienced medical librarian at the university’s Health Sciences Library developed search terms. Databases and sites searched included PubMed, CINAHL, ERIC, PsycINFO, AltWatch, Clinical Key, Cochrane Database of Systematic Reviews, Natural Medicines Comprehensive Database, Natural Standard, Mindfulness Research Guide, and Traditional Chinese Medicine Information Database. In addition, reference lists from articles were hand searched to ensure that all applicable articles were considered. A variety of key words and search term combinations were used to identify relevant articles. They included children, youth, adolescents, anxiety, anxious, anxiety disorders, obsessive compulsive disorder, posttraumatic stress disorder, separation anxiety, performance anxiety, stress, yoga, yoga interventions, mind–body, mindfulness, and meditation.

Inclusion criteria were as follows: (1) peer-reviewed studies published in English; (2) use of yoga or mind–body interventions that included physical postures, controlled breathing, and meditation; (3) participants were youths ages 3–18 yr; and (4) inclusion of an anxiety outcome measure. The review excluded data from presentations, conference proceedings, non–peer-reviewed research literature, dissertations, and theses.

Data Analysis

We reviewed the articles according to their quality and level of evidence. The studies that met the inclusion criteria were analyzed, and these data were extracted: (1) study objectives, (2) research design, (3) participant characteristics, (4) intervention type, (5) outcome measures, and (6) results. Studies included in the final review were published in the medical, education, and psychology literature. Thus, we used a method applied by the first author in a previous systematic review (Case-Smith, Weaver, & Fristad, 2015). This method uses criteria developed for both rehabilitation and psychology research to appraise each study’s methodology, rigor, and levels of evidence.

First, the psychology guidelines for evidence-based treatments (Chambless & Hollon, 1998; Nathan & Gorman, 2007) were used to rate rigor of each study (Types 1–6). In addition, the overall rigor of each study’s methodology was rated according to the Physiotherapy

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Evidence Database (PEDro) scale (de Morton, 2009), a tool commonly used in occupational and physical therapy to determine the rigor of clinical trials (http://www.pedro.org.au). The PEDro scale has 10 criteria that are scored 1 if the item is present or 0 if it is not; all 10 criteria are then summed as $x/10$. Last, the Centre for Evidence-Based Medicine (CEBM; http://www.cebm.net) Levels of Evidence guidelines were used to categorize the strength and level of the study design according to a hierarchy of Levels I–V. Both authors rated the studies independently, compared and discussed scores, and agreed on consensus scores. The criteria used to analyze the studies are presented in Case-Smith et al. (2015, Table 1).

Results

The literature search yielded 2,147 references. The first author eliminated 1,864 references on the basis of study titles and abstracts that did not meet the first or second criterion, resulting in 283 remaining references. The methods and participant sections of these studies were reviewed, and 203 were excluded for not meeting the third or fourth criterion. Full-text versions of the remaining 80 articles were retrieved, and final inclusion was determined by both authors. During full-text review, an additional 64 references were eliminated for not meeting Criteria 2–4. The final review included 16 articles. See Figure 1 for a PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) flow diagram outlining the identification, screening, eligibility, and inclusion of studies (Moher, Liberati, Tetzlaff, & Altman, 2009).

The 16 included studies were appraised according to the psychology guidelines for evidence-based treatments, the PEDro scale, and the CEBM guidelines. These ratings, along with each study’s objectives, design, participants, measures, and results, are summarized in full in Supplemental Table 1 (available online at http://otjournal.net; navigate to this article, and click on “Supplemental”). Six studies were randomized controlled trials (RCTs), 2 were nonrandomized preintervention–postintervention control-group designs, 7 were uncontrolled preintervention–postintervention studies, and 1 was a case study.

Randomized Controlled Trials

Six RCTs examined anxiety in a wide range of populations. The RCT conducted by Carei, Fyfe-Johnson,
Breuner, and Brown (2010) included 54 youths (50 female, 4 male) who were randomly assigned to either an 8-wk trial of standard care or yoga plus standard care. The yoga intervention consisted of a manual-based application of Viniyoga specifically tailored to eating disorders. Study results indicated that, compared with the nonyoga group, the yoga group had significant decreases in eating disorder symptoms, suggesting potential benefits for their physical health. Decreases in anxiety and depression occurred across both groups, with no main effects for group or interactions, thus indicating no superiority of yoga as an adjunct to standard care.

Adolescents with irritable bowel syndrome who completed a 1-hr instructional yoga session (poses targeting abdominal and bowel relaxation, deep breathing, and mental and body awareness), followed by 4 wk of home-based daily practice guided by a standardized video (Kuttner et al., 2006), reported significantly decreased anxiety ($p = .09$) compared with a no-yoga control group. Participants reported an average yoga practice rating of 6.81 (on a Likert scale ranging from 0 = never to 10 = every day), indicating that the group practiced fairly frequently at home. In addition, 12 participants spontaneously reported increased feelings of relaxation and calm from the yoga practice.

In 2 RCTs (Khalsa, Hickey-Schultz, Cohen, Steiner, & Cope, 2012; Noggle, Steiner, Minami, & Khalsa, 2012) examining mental health among 11th and 12th graders, yoga was integrated into the high school curriculum, and mental health outcomes were compared between the yoga group and a physical education control group. Both Khalsa et al. (2012) and Noggle et al. (2012) implemented Yoga-Ed, a manualized yoga program for schools that includes simple yoga postures, breathing exercises, visualization, and games. Khalsa et al. showed no significant decrease in anxiety on the Behavior Assessment System for Children, Second Edition (BASC–2). However, improvements in anger ($p = .03$), resilience ($p = .01$), and fatigue ($p = .02$) were statistically significant, indicating that yoga may have protective mental health benefits in other critical areas related to anxiety. The yoga group in the Noggle et al. study showed significant decreases in overall total mood disturbance ($p = .015$, $d = 0.689$) and tension and anxiety ($p = .002$, $d = 0.870$) on the Profile of Mood States–Short Form.

Two RCTs used physiological measures to assess indicators of fear and anxiety (Telles et al., 1997; Telles & Srinivas, 1998). Physiological variables examined included rate of respiration, heart rate, and skin resistance, which are controlled by the autonomic nervous system and have been correlated with psychological states such as anxiety or fear (Rauhala, Alho, Hänninen, & Helin, 1990). Telles et al. (1997) randomly assigned 28 girls (ages 12–16) to either a yoga or a games group. The yoga group performed Yin Yoga–type postures that are held in a relaxed state for an extended period of time and supine relaxation. Both the yoga and the games were offered 5 days/wk for 50 min and 40 min, respectively. At 6-mo follow-up, only the girls in the yoga group demonstrated decreased rate of respiration ($p < .001$). Heart rate and skin resistance did not differ between the groups.

Similarly, in a study of youths with visual impairments (Telles & Srinivas, 1998), 24 children (ages 12–17) were randomly assigned to a yoga or a physical activity (gardening and stretching) group. The yoga sessions included simple yoga postures, breathing exercises, and guided relaxation. After 3 wk of participation (60 min/day, 5 days/wk), children in the yoga group had decreased rates of respiration ($p < .05$). These two studies are unique in their use of physiological measures and show that yoga participation may result in more regular breathing patterns, a potential indicator of reduced anxiety.

**Nonrandomized Pre–Post Control-Group Studies**

The review included 2 nonrandomized pre–post control-group studies (Khalsa, Butzer, Shorter, Reinhardt, & Cope, 2013; Maheshananda et al., 2012). Khalsa et al. (2013) assessed the effect of yoga on music performance anxiety in young musicians. The 135 musicians (76 girls, 59 boys) were divided into a yoga group ($n = 84$) or a control group ($n = 51$). The yoga group participated in 60-min yoga classes 3×/wk for 6 wk. Yoga sessions were taught using Kripalu yoga, which includes classic yoga postures, breathing techniques, and meditation, with a particular focus on coordinating breathing with movement. Compared with the control group, those who participated in yoga reported decreased anxiety scores on the Performance Anxiety Questionnaire ($p < .01$) and Music Performance Anxiety Inventory for Adolescents and no changes on the State–Trait Anxiety Inventory (STAI).

Maheshananda et al. (2012) examined a yoga program for adolescents in India with identified suicidal tendencies. The 90 youths (39 boys, 51 girls), ages 17–23 yr, were matched into two groups. The control group ($n = 52$) returned to their home life, and the experimental group ($n = 38$) attended a residential yoga institute for 1 mo. Yoga sessions were 2 hr/day, 6×/wk, and included physical postures, breathing exercises, and om recitations. In addition to yoga, the residency also included nutrition, counseling, and education sessions. The adolescents reported significantly decreased tension and
anxiety ($p < .001$) on the Personality Factor Questionnaire. However, the inclusion of other interventions to support mental health and well-being, as well as being removed from the typical home or community environment, makes it difficult to attribute these results to the yoga alone.

**Uncontrolled Preintervention–Postintervention Studies**

Seven studies examined outcomes before and after a yoga intervention in a variety of populations and settings. Benavides and Caballero (2009) sought to determine the effects of yoga on weight management, self-concept, and psychiatric symptoms among youths at risk for developing Type 2 diabetes. After 12 wk of a modified Ashtanga yoga program (less strenuous Ashtanga sequence, breathing, and meditation in 75-min sessions 3 days/wk), anxiety was measured using the Beck Anxiety Inventory for Youth (BAI–Y). At baseline, 12 of 14 participants demonstrated average anxiety levels, and no changes were noted at postintervention measurement. Two participants showed elevated anxiety at baseline, and these individuals did show decreased anxiety scores on the BAI–Y after the 12-wk intervention, suggesting that when anxiety is present, yoga may decrease its intensity.

Thygeson, Hooke, Clapsaddle, Robbins, and Moquist (2010) examined anxiety among youths with cancer or blood disorders, along with their parents. Youths and their parents participated in a 45-min yoga session in the oncology–hematology inpatient unit playroom. The session was led by a registered yoga teacher and consisted of seated meditation, physical postures, and a final resting pose. Five adolescents (13–18 yr), 11 children (6–12 yr), and 33 parents participated. Pre- and postclass measures were taken using the Spielbergs STAI for adolescents and State–Trait Anxiety Inventory for Children (STAI–C). No changes in anxiety were noted for the children, although significant reductions in anxiety were reported for both adolescents ($p = .04$) and parents ($p \leq .01$). These results may reflect differences in age-related cognitive understanding of anxiety or ability to consciously appraise it.

A multimodal program, including yoga, was provided to 24 children (ages 3–16) with autism spectrum disorder (ASD) receiving tertiary care at a teaching hospital (Rosenblatt et al., 2011). The program is based on the relaxation response theory and included yoga, dance, and music therapy. Sessions occurred 1x/wk (45 min) for 8 wk and included breathing for relaxation response, yoga postures, music and dance, and yoga relaxation. The BASC–2 and Aberrant Behavior Checklist (ABC) were used pre- and postintervention. Both of these scales include measures of anxiety, often categorized under internalization or internalized symptoms. Results showed significant changes only among the children ages 5–12 yr ($n = 16$), with decreased mean scores on the BASC–2 behavioral symptom index ($p = .013$) and internalization ($p = .04$). No significant changes were noted on the ABC for any participant. Although these results indicate lower anxiety-related symptoms among younger children with ASD, the results are weak in support of yoga as a primary contributor to these decreases. The program included a variety of relaxation-based interventions, any of which could have contributed to anxiety reduction. In addition, no older participants (ages 13–16 yr) demonstrated changes, making it questionable how effective the program would be for a range of children with ASD.

Moemeni, Iranshahi, Ramezani, Amirabadi, and Ghahri (2012); Steiner, Sidhu, Pop, Frenette, and Perrin (2012); and Frank, Bose, and Schrobenhauser-Clonan (2014) examined anxiety among school-age children. Moemeni et al. enrolled 135 kindergarten students in Tehran in 30-min yoga sessions (3x/wk for 12 wk). Significant decreases ($p = .0001$) in average anxiety scores on the Revised Children’s Manifest Anxiety Scale were reported postintervention.

Steiner et al. (2012) implemented Yoga-Ed at an urban elementary school for children with emotional and behavioral disorders. The study included 37 students (16 girls, 21 boys; ages 8–11 yr), who participated in Yoga-Ed 2x/wk for 3.5 mo. The primary measures assessing anxiety were the BASC–2 and STAI–C. The children showed improvement in internalizing symptoms ($p = .04$).

Frank et al. (2014) assessed the effect of a yoga-based wellness program on the mental health of 49 high school students (22 boys, 27 girls) attending a school for at-risk youths in California. Researchers administered a manualized program for youth called Transformative Life Skills (TLS), which includes yoga postures, breathing, and meditation. TLS sessions were integrated into the classroom curriculum 3–4 days/wk, 30 min each, for one semester. Anxiety reduction ($p = .01$), with a small effect size of $d = 0.23$, was reported on the Brief Symptom Inventory–18.

Last, Stueck and Gloeckner (2005) investigated the effects of the Training of Relaxation With Elements of Yoga for Children (TorweY–C) technique among fifth-grade children with abnormal examination anxiety ($N = 48$; ages 11–12 yr). The TorweY–C technique was developed and performed over a 4-yr period (1994–1998) at the Institute of Applied Psychology at Leipzig University. TorweY–C consists of 15 meetings (60 min each) that include relaxation, breathing, yoga postures, and
other activities such as guided imagery, massage techniques, and sensory exercises. Outcomes were determined by unspecified measures of feelings of relaxation, concentration, well-being, physical complaints, emotional regulation, control convictions, working motivation, psychophysiological stress-coping abilities, examination anxiety, social abilities, self-effectiveness, and electrodermal activity. Postintervention, significant ($p \leq 0.05$) decreases in aggression and physical complaints and notable increases in stress-coping abilities were noted. At the 3-mo follow-up, significant ($p \leq 0.05$) increases in emotional balance and decreases in anxiety were maintained.

**Case Study**

One descriptive case study (Williams-Orlando, 2013) followed a 17-yr-old girl with anxiety disorder and recurrent panic attacks participating in 4 wk of individual yoga sessions (60-min session 1×/wk) and 6 wk of group yoga sessions (90-min session 1×/wk), each focused on different aspects of yogic breathing, physical postures, and deep relaxation. She also participated in a daily home practice in which she used an audio CD that provided guided instruction on techniques taught in sessions. Each week, the participant verbally reported to her psychotherapist the frequency and duration of panic attacks and other anxiety-related symptoms, as well as her use of yoga techniques and their impact on her anxiety. Summaries of these verbal reports indicated that the participant was verbalizing steady decreases in anxiety to her therapist. Over the course of the yoga therapy, the participant reported decreased anxiety, increased confidence and ability to manage anxiety and panic attacks through breathing, and reductions in frequency and duration of panic attacks.

**Discussion**

The purpose of this review was to examine the evidence for the effectiveness of yoga interventions, as defined by controlled breathing, postures, and meditation, in reducing anxiety among children and youths. Children with anxiety often experience both physiological and psychological symptoms; interventions that reduce these symptoms and integrate cognitive, behavioral, and physical modalities are needed. In addition, interventions that can be applied in a variety of settings, such as home, school, clinic, and community, will allow children to have greater access to these interventions in the places they most frequent. Yoga is an intervention that intuitively embodies all of these modalities and is widely used to promote mental health and self-regulation skill development among children and adolescents. Its effect on decreasing anxiety has been examined across many studies and spans a wide variety of physical, emotional, and behavioral conditions. Overall, the results from these studies were positive and illustrate that yoga (postures, controlled breathing, and meditation) may be effective in reducing anxiety and anxiety-related symptoms or behaviors (e.g., nervousness, worry, fatigue, sleep disturbance). However, additional research is needed to address a variety of limitations in this body of evidence and to provide a deeper understanding of how to apply yoga with anxious youths and under what conditions it may be most effective. This review provides insight and direction for future investigation into those areas.

To begin, studies that demonstrated significant decreases in anxiety were either targeted at a very specific population or provided intervention at a high frequency. Carei et al. (2010) implemented yoga with youths with eating disorders and found large effects in decreasing both state ($\eta^2 = 0.20$) and trait ($\eta^2 = 0.38$) anxiety on the STAI. Similarly, Khalsa et al. (2013) addressed music performance anxiety in young musicians and found significantly decreased anxiety on the Performance Anxiety Questionnaire ($p \leq 0.01$). For specific populations, a tailored yoga program may be helpful in managing specific anxieties, but additional studies are needed to further support this finding.

Similarly, high-frequency interventions demonstrated some of the more impressive outcomes. Stueck and Gloeckner (2005) showed short- and long-term effects (pre- and postintervention and at 3-mo follow-up) of reduced anxiety ($p \leq 0.05$) with an intervention of 15 sessions lasting 60 min each. Noggle et al. (2012) provided yoga 2–3×/wk for 10 wk, resulting in decreased tension and anxiety ($p = 0.002$) with a large effect size (Cohen’s $d = 0.689$). Khalsa et al. (2012) produced significant improvements in anxiety-related outcomes such as resilience ($p = 0.01$) and fatigue ($p = 0.02$) with their curriculum-embedded yoga offered 2–3×/wk for 11 wk. Last, Maheshananda et al. (2012) had the most intensive model of intervention, providing residential-based yoga 2 hr/day, 6 days/wk, for 1 mo; results showed significantly decreased anxiety ($p < 0.001$).

**Limitations**

This review had strict inclusion and exclusion criteria, which may have affected the number and types of studies included; the evidence for yoga for anxiety may differ if a broader search, less restrictive criteria, or alternative definitions of yoga and yoga-based interventions are used.
Although the review contained some strong studies, several studies lacked methodological rigor, and the overall body of evidence was small. Last, a meta-analysis was not completed for this review because not all studies reported effect sizes. A risk-of-bias analysis was completed for each of the included studies and can be found in Supplemental Table 2 (available online at http://otjournal.net; navigate to this article, and click on “Supplemental”).

This review revealed several limitations in the current body of research, indicating other areas that need to be addressed in future research. First, only 5 of the studies applied a manualized intervention (3 Yoga-Ed, 1 TLS, and 1 Viniyoga), indicating a need for more systematic, manualized applications of yoga interventions to determine effectiveness. In conjunction, measurements of intervention fidelity are scarce in yoga research, yet they will be critical in determining the extent to which yoga reduces anxiety and in preserving the credibility of results across repeated implementation (Faulkner, 2012). Second, analysis of dose–response relationships is necessary because vast heterogeneity exists in the frequency and duration of the interventions. This review suggests that higher frequency interventions may produce more pronounced effects, but further study is needed to establish specific recommendations for intervention length and intensity.

In addition, studies that measure overall physical and mental health as well as occupational participation and performance are needed to demonstrate whether reductions (or lack of reductions) in anxiety have an impact on daily life and well-being. Last, greater understanding is needed of the physiological and psychological mechanisms that may underlie change after yoga interventions (Greenberg & Harris, 2012; Larun, Nordheim, Ekeland, Hagen, & Heian, 2006). This information will provide the opportunity to triangulate results across multiple levels of data, such as biomarkers, measures of physical and psychological health, and participant perspectives. It will also provide a deeper understanding of how yoga affects the physiological and psychological processes in an anxious child.

On the basis of the limitations of existing yoga research for youths, future trials should include control groups, randomization, physiological and psychological measures of anxiety, multiple informants, large sample sizes, and long-term follow-up. Future trials of yoga should also include control groups that involve well-established psychological intervention such as cognitive–behavioral therapy to examine the effects of yoga as an adjunct to these types of traditional interventions. When possible, a manualized treatment protocol should be used and intervention fidelity should be assessed. Many studies have been unclear in outlining the training and expertise of the people implementing the yoga interventions; studies should be explicit in this area so that implications of outcomes, transferability, and replication are apparent. Also, the environment should support the child’s ability to understand, practice, and apply yoga to his or her specific needs (Foster & Mash, 1999). Few studies corroborated or compared standardized assessments with qualitative data. Future trials would benefit from collecting and analyzing qualitative data to expand knowledge of child-specific perceptions, needs, and outcomes.

Implications for Occupational Therapy Practice

The results of this study have the following implications for occupational therapy practice:

- Yoga, as defined by postures, controlled breathing, and meditation, may be effective in reducing anxiety and anxiety-related symptoms or behaviors in children and adolescents.
- Because of limitations (e.g., heterogeneity in populations, measures, frequencies, durations), additional well-controlled, randomized trials are needed that include physiological and psychological measures and long-term follow-up.
- Yoga programs seeking to decrease anxiety should consider tailoring yoga activities to meet the specific psychosocial needs of their target population.
- Significant decreases in anxiety may be observed only in yoga programs that are provided at higher frequencies (e.g., 2–3/ wk).
- When possible, a manualized yoga intervention and fidelity measures should be used.
- Studies are needed that examine yoga’s impact on occupational participation and performance.

Conclusion

Anxiety disorders are prevalent among children and adolescents, and associated problems can persist into adulthood and affect functioning in daily life. Yoga interventions have shown positive effects in reducing anxiety across a variety of populations, yet large-scale, randomized trials with physiological and psychological measures and long-term follow-up are still needed to enhance this body of evidence (Birdree et al., 2009; Galantino, Galbavy, & Quinn, 2008; Greenberg & Harris, 2012) and further determine yoga’s effectiveness. ▲

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*Indicates studies that were systematically reviewed for this article.
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