

Yoga Therapy in Practice

Yoga in the Schools:

A Systematic Review of the Literature

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Abstract

Objective: The objective of this research was to examine the evidence for delivering yoga-based interventions in schools. **Methods:** An electronic literature search was conducted to identify peer-reviewed, published studies in which yoga and a meditative component (breathing practices or meditation) were taught to youths in a school setting. Pilot studies, single cohort, quasi-experimental, and randomized clinical trials were considered. Research quality was evaluated and summarized. **Results:** Twelve published studies were identified. Samples for which yoga was implemented as an intervention included youths with autism, intellectual disability, learning disability, and emotional disturbance, as well as typically developing youths. **Conclusion:** Although effects of participating in school-based yoga programs appeared to be beneficial for the most part, methodological limitations, including lack of randomization, small samples, limited detail regarding the intervention, and statistical ambiguities curtailed the ability to provide definitive conclusions or recommendations. Findings speak to the need for greater methodological rigor and an increased understanding of the mechanisms of success for school-based yoga interventions.

Key Words: Yoga, education, schools, autism, intellectual disability, learning disability, emotional disturbance, typically developing children, school-based yoga program

Introduction

Schools provide an ideal setting in which to promote children's health and well-being. Given the decreasing state of health among our nation's youth,¹ schools are increasingly looked upon as venues to inculcate a healthy lifestyle.² Unfortunately, recent budget cuts and resultant limited resources, coupled with curricula that focus on intellectual development, have attenuated school systems' ability to adopt health-focused programs.³ The fact remains that "students must be healthy in order to be educated, and they must be educated in order to remain healthy."^{4(p.v)} There is an increasingly urgent need to develop and test cost-effective, evidence-based wellness programs for youths that can be delivered in school settings.

Yoga has been found to be an effective complementary therapy to promote health and reduce many of the factors

related to physiological diseases and psychological disorders.^{5,6,7} Recent school-based interventions that include yoga suggest a link between yoga practice and positive child and adolescent outcomes.^{8,9,10} Implementing yoga as a preventative and complementary practice in schools is consistent with a salutogenic model of public health.¹¹ Interventions that use a salutogenic model should (a) emphasize personal change (e.g., increase activity levels, control body weight, decrease stress and anxiety); (b) promote community change (e.g., create parks and bike paths, adopt no-smoking policies) to increase people's opportunities to lead healthful lifestyles; (c) include mental health as a key factor in improving people's well-being, with an emphasis on changing attitudes, increasing self-knowledge, becoming responsible, and being empowered; and (d) emphasize programs that are fun rather than competitive or difficult.¹¹ This review of yoga research explores the academic, cognitive,

and psychosocial benefits of using yoga in schools to promote health and wellness.

Yoga in Schools

Extant research suggests that yoga benefits emotional, physical, and psychosocial health and enhances self-concept and concentration.^{5,12} Each of these indicators of well-being is key to successful child and adolescent development, and each is essential for personal health and academic success. The primary goal of traditional school programming may be academic education, yet skills such as coping with stress and tools for maintaining physical and emotional health are invaluable in and outside of the classroom.³ “Education and health are linked; academic performance is related to health status.”^{3(p6)} In the dialectic between physical health and academic accomplishment, health promotion plays a key role in school success.

In addition to the intellectual challenges at school, children also face myriad psychosocial and interpersonal demands that can require highly developed self-regulation skills. Acquisition of these skills may or may not be consistent with a particular child’s developmental trajectory.¹³ In the absence of these regulatory skills and stress management tools, youths struggle to cope with the behavioral expectations placed upon them in an academic environment. Yoga instruction affords the opportunity to develop these skills. The following sections detail a number of studies in which yoga programs were implemented in school settings and include a discussion about their impact on youth developmental outcomes.

Methods

A comprehensive review of the extant research literature regarding the effectiveness of yoga programs delivered in schools was conducted. Articles were identified using a combination of databases, including PsychInfo, PsychARTICLES, Psychology and Behavioral Sciences Collection, Education Research Complete, ERIC, Alt HealthWatch, and Medline with Full Text. Keywords used to identify articles consisted of various combinations of search terms, including yoga, meditation, children, adolescents, schools, and wellness. The bibliographies of relevant articles were also examined.

Inclusion Criteria

Only peer-reviewed, published manuscripts were considered. Research designs included pilot studies, single cohort, quasi-experimental, or randomized designs that were conducted in an educational setting. Only yoga inter-

ventions that incorporated a physical component (asana) in combination with a mind component (breathing exercises, meditation, relaxation) were examined,¹⁴ as were those that included other strategies (mind discourse, games, massage, etc.). Research with typically and atypically developing school-age (ages 5–21) children was assessed. Atypically developing children are those categorized using 13 special education classifications identified by the Individuals with Disabilities Education Act (IDEA).¹⁵

Unlike previous reviews of the effects of yoga for pediatric populations,^{7,10} this review exclusively targeted those studies conducted in educational settings. They included programs that were integrated into the class schedule, were delivered after school, and were conducted at residential schools. English language publications were included irrespective of country of origin.

Examination of Methodological Rigor

Three independent reviewers (including both authors and their area content librarian) screened abstracts of identified articles for eligibility. Once a potential article was found, both authors evaluated it for inclusion. In contrast to other reviews that integrated multiple evaluative criteria (e.g., Cochrane and Sackett),⁷ articles in this study were independently scored by each author using the Sackett’s levels of evidence strategy.¹⁶ This method provided a stratified approach to systematically rating published research ranging from the most rigorous types of investigation (randomized controlled trials) to the least rigorous (expert opinion). Agreement was reached for 11 of the 12 studies that were identified and that met all inclusion criteria. Disagreement was resolved by consensus. Consistent with recommendations of the PRISMA Group^{17,18} and Jahad and colleagues, the protocol displayed in Table 1 was used.

Results

Of the 12 studies determined to be eligible, 4 contained samples of children in 1 of 13 special education categories: autism spectrum disorder (1), intellectual disability (1), specific learning disability or emotional disturbance (1), and severe educational problems (1). Eight studies involved yoga interventions with typically developing or at-risk youths. Seven were conducted in public or alternative schools in the United States, and the remaining were conducted in India (3), England (1), and Germany (1). The majority of studies evaluated were of low (7) to moderate quality (5) according to Sackett¹⁶ levels of evidence criteria. These standards were developed for clinical research and may fail to account for the complexity and challenges inherent in school-based research. For a synopsis of each study, see Appendix A.

Table 1. Methodological Quality by Study

Criteria	Berger et al. ²⁸	Clance et al. ⁵	Goldberg ¹³	Hopkins & Hopkins ²⁵	Manjunath & Telles ³⁰	Mendelson et al. ³⁷	Peck et al. ³⁹	Powell et al. ²²	Raghuraj & Telles ³¹	Scime & Cook-Cottone ⁹	Stueck and Gloeckner ¹⁶	Uma et al. ²¹
Was the method of randomization well described and appropriate?	No	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No
Was the outcome assessment described as blinded (B) or unblinded (UB)?	No	No	No	UB	UB	No	No	No	UB	No	No	No
Was the method of blinding of the assessment of outcomes well described and appropriate?	No	No	No	—	—	No	No	No	—	No	No	No
Was the sample size justified?	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No
Was there a complete description of withdrawals and dropouts?	No	No	No	No	NR	Yes	No	Yes	Yes	Yes	No	No
Were withdrawals and dropouts <10%?	NR	Yes	Yes	NR	NR	Yes	Yes	Yes	Yes	Yes	NR	Yes
Was there intention-to-treat analysis?	No	No	No	No	NR	No	No	No	No	Yes	No	No
Was adherence to the yoga intervention (attendance or completion of sessions) >70%?	No	NR	Yes	NR	NR	No	Yes	NR	NR	No	Yes	Yes
Was there a manual or protocol used for yoga instruction?	No	No	No	No	No	No	Yes	NR	NR	No	No	No
Was treatment integrity measured?	No	No	No	No	NR	No	Yes	No	No	No	No	No
If so, was treatment integrity adequate?	—	—	—	—	—	—	Yes	—	—	—	—	—
Were outcome measures described?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
If so, were they of adequate reliability (r > .70)?	No	No	NR	No	NR	Yes	Yes	NR	NR	Yes	No	NR

Note. NR, not reported.

Yoga Programs for Atypically Developing Children in Educational Settings

Clinical samples have been the typical foci of empirical studies of yoga programs. Few studies have been conducted for atypically developing children with special needs. These yoga programs are particularly noteworthy given the high degree of flexibility and therapeutic modification required by the variability within samples. Individuals diagnosed with autism spectrum disorder, as specified by the DSM-IV-TR, typically demonstrate deficits in social interaction, attenuated communication skills, and stereotyped patterns of behavior.¹⁹ This classification is highly variable and encompasses those with very mild symptoms as well as individuals with considerable impairment. With the increasing prevalence of diagnoses of autism, interest has grown in exploring unconventional treatments, including yoga.⁸

Goldberg’s Creative Relaxation yoga program, designed for children with autism, uses the following core principles: “Make a sacred space, engage the student, provide tools for success, and create opportunities for independence.”^{20(p68)} In a pilot study of 6 elementary school students who were diagnosed with autism and were experiencing difficulties under stress, involvement in the Creative Relaxation program was associated with parent and teacher ratings of

decreased levels of stress and significant reductions in pulse rate following completion of the program.¹³ Anecdotal reports by caregivers and teachers suggested that the skills learned in the school-based treatment program generalized to stressful situations in the home and in public. Results suggest that yoga is a potential adjunctive skill-building modality for children with autism.

Intellectual disability (ID) is defined in the DSM-IV-TR as having an IQ of approximately 70 or below, age of onset before 18 years of age, and co-occurring deficits or impairments in adaptive functioning.¹⁹ Adaptive functioning is characterized by the ability to interact within society and care for one’s self. Uma and colleagues implemented a matched-controlled study (*N* = 45 pairs) of children with ID to study the effect of yoga therapy on intelligence and measures of social adaptation. Participants in the yoga group attended yoga classes for 1 hour per day, 5 days per week for an entire academic year. Improvements in IQ and social adaptation were detected for the yoga group but not for controls, who evidenced declines over time.²¹ The methodological quality of this study was higher than most because of the larger sample size and the use of a matched-control group. Although the authors provided detailed information regarding the yoga intervention, little information regarding treatment integrity, feasibility, and adherence to the intervention

was provided. This study highlights the importance of studying the potential differential effects of dose response, because the cost of implementing a program this time and labor intensively may not be feasible in all contexts.

The Self-Discovery Programme integrates yoga, massage, and relaxation for children identified with special needs on the basis of emotional, behavioral, or learning problems. A quasi-experimental study of 107 children (yoga group $n = 53$) ranging in age from 8 to 11 years was conducted by Powell, Gilchrist, and Stapley. Intervention group children received one 45-minute intervention consisting of gentle poses, massage, and relaxation techniques per week for 12 weeks. Improvements in self-confidence, social confidence, communication, and contributions in class were detected for the intervention group, and improvements in self-control and attention/concentration skills were found in the control group.²² The authors note that children in the control group may have been receiving services outside of school, which may have confounded the results. This is an important consideration in conducting research with special-needs populations. Studies of higher methodological quality are needed to determine the impact of a yoga intervention above and beyond treatment as usual.

The earliest article included in this review outlined a study by Hopkins and Hopkins in which yoga was used as an adjunct treatment for elementary school children with severe “educational problems” who were attending an alternative learning setting. Children in the intervention group engaged in yoga poses and in breathing and guided imagery exercises, and controls participated in structured physical play. The authors reported improvements in attention and concentration after both the yoga and physical activity components of the program; however, the outcome measure used was highly susceptible to practice effects, rendering the results unreliable.²³

This compendium of research suggests that yoga instruction may prove beneficial for a wide range of behavioral, learning, and social problems commonly found in atypically developing children. Greater methodological rigor will enable researchers to more clearly identify which facets of yoga are most beneficial, and for whom.

Yoga Programs for Typically Developing Children in Educational Settings

Research has demonstrated that yoga programs may improve concentration,²⁴ stress management,¹³ and social and intellectual functioning²¹ for atypically developing youth. The salutogenic model of wellness encourages promoting healthy behaviors that increase well-being in the general population.¹¹ The following review illustrates what is currently known from the extant literature regarding the

delivery of yoga programs in schools.

Although it has already been demonstrated that yoga can modulate psychosocial symptoms, such as stress and anxiety in adults,²⁵ fewer studies have examined the impact of yoga participation on the psychosocial adjustment of children. Scime and Cook-Cottone developed a primary prevention program for fifth grade girls that targeted eating-disordered behaviors.⁹ Seventy-five of 144 fifth grade girls were assigned to attend 90-minute classes that included yoga, relaxation, information about media influences, and interactive discussion about a variety of topics for 10 consecutive weeks. Participant self-reports suggested longitudinal decreases in body dissatisfaction and dysfunctional eating behaviors and increases in perceived self-concept. Between-group differences in drive for thinness, perceived stress, and competence were not detected.⁹ The direct emotional benefits of yoga cannot be teased apart from those of other strategies, including a media education component and interactive discourse. Findings raise an important consideration when conducting research with typical children. Measures may lack the sensitivity to detect effects in samples with reduced variability because of a lack of cognitive, behavioral, or mood problems.

Interventions for at-risk, subclinical samples may help identify the mechanisms responsible for increasing the likelihood that children will develop disordered behaviors. Clance, Mitchell, and Engelman investigated the use of yoga and awareness training for a group of 12 third grade African American youths who demonstrated low body dissatisfaction and physical coordination.⁵ Children were randomly assigned to an experimental condition ($n = 6$) in which they participated in body awareness exercises, guided imagery, and yoga postures. Control group students attended physical education classes as usual. Children in the experimental group reported decreases in dissatisfaction with the bodily parts and processes that they had disliked. Between-group differences were not reported, preventing interpretation of the effectiveness of the intervention relative to traditional physical education.

In an examination of the benefits of a yoga program on a number of physical and psycho-emotional dimensions, Stueck and Gloeckner randomly assigned fifth graders who scored high on an anxiety questionnaire to the Training of Relaxation with Elements of Yoga for Children program or a no-treatment condition. Participants in the intervention condition participated in fifteen 60-minute sessions that entailed relaxation exercises, 23 yoga postures, and social interaction. Training emphasized self-regulation strategies to reduce stress in response to daily events and psychologically demanding experiences. Longitudinal results provided evidence of increases in emotional balance and decreases in anxiety and several other factors. Statistical analyses were

vaguely defined and incomplete, making between-group differences difficult to interpret.²⁶

Urban youths are known to be at risk for myriad emotional and behavioral difficulties. Mendelson and colleagues randomly assigned 55 fourth graders and 42 fifth graders (59 = female) to attend a 45-minute mindfulness program 4 days per week for 12 weeks. The intervention consisted of guided mindfulness practices, breathing techniques, and yoga-based physical activity. Preliminary outcomes revealed that intervention youths demonstrated lower levels of problematic involuntary engagement (rumination, intrusive thoughts, emotional arousal, impulsive action, and physiologic arousal) following the program. Significant between-group differences for peer and teacher relationships and negative affect or depressive symptoms were not found. Perhaps more important, authors reported encouraging findings regarding the feasibility and acceptability of teaching yoga programs in public elementary schools.²⁷

Berger and colleagues evaluated an after-school yoga program delivered to inner-city children in New York City. Children were randomized to 12 weeks of 1 hour per week yoga instruction or a no-intervention control group. Subjective measures yielded reductions in negative behavior scores and increases in balance control for the yoga group, compared with controls. Improvements in global self-worth and perceptions of physical well-being were not detected.²⁸ Collectively, these studies provide preliminary evidence for the protective effects of yoga practices for children residing in high-risk environments and suggest fertile ground for additional prevention and intervention research.

Participation in yoga programs has also been associated with changes in academic performance and cognitive development. Peck and colleagues²⁹ used a multiple baseline design to evaluate Yoga Fitness for Kids, a videotaped program designed for use with students in the classroom. The intervention provided 30 minutes of instruction in physical yoga postures, deep breathing, and relaxation. Children participated in the intervention 2 times per week for a total of 3 weeks. Ten children between first and third grades who exhibited attention problems in the classroom were included.²⁹ Results indicated large effect sizes for each grade level group on pre- and postscores of time on task (ranging from 1.51 to 2.72). Although these effect sizes decreased at follow-up, they still remained moderate to large. Furthermore, peer comparison data did not show any change in time-on-task behavior throughout the assessment.²⁹ Although these results indicate an improvement in concentration as a function of yoga treatment, studies with larger sample sizes are required to further evaluate the benefits of this program.

Last, the impact of school-based yoga interventions on planning³⁰ and depth perception³¹ are worth noting. Manjunath and Telles evaluated the impact of a 75-minute,

7-day-per-week yoga intervention delivered to a sample of 20 residential schoolgirls ranging in age from 10 to 13 years, for a period of 1 month. The intervention included yoga postures, relaxation, breathing and cleansing exercises, and song. A comparison group engaged in physical activity for the same duration. Planning and execution efficiency were evaluated using the Tower of London task. Students in the yoga group demonstrated statistically significant postintervention improvement in planning and execution times, compared with a randomized control group.³⁰ Following a similar yoga intervention, Raghuraj and Telles also reported significant improvement in depth perception among participants, compared with matched controls.³¹ Combined, these studies suggest yoga may have positive effects on executive functioning and depth perception in school-age girls.

Literature reviewed suggests that participation in a yoga program in typical classroom settings can enhance children's body satisfaction, emotional balance, attentional control, and cognitive efficiency and decrease anxiety, negative thought patterns, emotional and physical arousal, and reactivity and negative behavior. As such, participation in yoga programs may serve as a protective factor for typically developing or at-risk youths. Longitudinal randomized controlled trials with strong methodological strategies are required to understand the health benefits of yoga programs delivered in the classroom.

Discussion

Twelve peer-reviewed, published studies in which yoga and a meditative component (breathing practices or meditation) were taught to youths in a school setting were identified. Study formats included pilot studies, single cohort, quasi-experimental, and randomized clinical trials. Samples for whom yoga was implemented as an intervention included youths with autism, intellectual disability, learning disability, and emotional disturbance, as well as typically developing youths. Although effects of participating in school-based yoga programs appeared to be beneficial for the most part, methodological limitations, including lack of randomization, small samples, limited detail regarding the intervention, and statistical ambiguities, precluded our ability to provide definitive conclusions or recommendations.

This review categorized children on the basis of atypical and typical developmental trajectories. The atypical development category was represented by children diagnosed with autism and other learning, emotional, and behavioral disorders. Though a great deal of variability occurred relative to the types of programs delivered and their frequency, positive results appeared to be associated with participation in a yoga program. In particular, children diagnosed with autism evidenced reduced stress and low-

ered pulse rate, and those with intellectual disabilities demonstrated elevations in IQ ratings and social adaptation scores. Children with emotional, behavioral, and learning problems were rated as exhibiting greater self- and social confidence and improved communication and contribution in the classroom. Those with severe educational problems illustrated improvements in attention and concentration following a yoga intervention.

Positive effects were also detected for typically developing children in a variety of dimensions. Participation in a yoga program was associated with decreased body dissatisfaction, anxiety, and negative behavior and increased perceived self-concept and emotional balance. Inner city children evidenced reductions in cognitive disturbances, such as rumination and intrusive thoughts, and decreased emotional and physical arousal and impulsivity following a mindfulness intervention.

Although generally supportive, the empirical evidence for the utility of using yoga instruction in educational settings is inconclusive. A lack of methodological and statistical rigor, small sample sizes, absence of systematic randomization, and a high degree of variability between intervention methods undermine our ability to evaluate the effects of yoga for a particular population. Future research must assess both the concurrent and longitudinal effects of receiving yoga instruction in the classroom by using randomized controlled trials that include a multitrait, multimethod assessment strategy. These interventions require greater standardization and explanation and must account for factors such as adherence, attrition, and treatment fidelity. Dosage—length of classes, frequency of sessions, and duration require examination. The unique contributions of the various components of yoga programs (i.e., breath work, postures, relaxation techniques, and medication) and differences between methods of yoga instruction (e.g., Hatha, Ashtanga, Anusara, Iyengar, Bikram) also require consideration. And last, future studies must address the question of which types of school-based programs are developmentally appropriate, for whom, and under what conditions.

Yoga in school settings must involve the support of stakeholders such as parents, teachers, administrators, and, most important, children. This can be accomplished only in the presence of sound empirical research that proves yoga instruction to be a cost-effective, pragmatic, and beneficial tool in the academic setting and beyond. Through concerted effort we can impart the wisdom of yoga practices to the young and afford them the tools to lead successful, healthy, and happy lives.

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Appendix A

Description of Studies, Interventions and Outcomes for Reviewed School-Based Yoga Intervention Literature

Study	IDEA Classification	Location/ Setting	Method	Participants	Yoga Intervention (treatment components, duration, and number of sessions)	Dependent Variables	Summary	Sackett Level
Berger et al. ²⁸	None	United States/ after-school program	Pilot quasi-experimental design	71 fourth and fifth grade students (47 females, 24 males); control group (n = 32); experimental group (n = 39); majority were Hispanic	Poses, breathing, meditation, relaxation; 60-minute sessions, 1 time per week, 12 weeks	Self-perception of global self-worth (measured by self-report on SPPC) and physical well-being (measured by the Perceptions of Physical Health scale and flexibility and balance assessment); independent t-tests (p < .05) used for statistical analyses	No significant differences found in global self-worth and perceptions of physical well-being. Intervention group reported significantly fewer negative behaviors in response to stress, better balance	3B
Clance et al. ⁵	None (all exhibited low body satisfaction and physical coordination)	United States/ public elementary school	Random assignment; experimental design	12 African American third grade students (10 females, 2 males); random assignment to control group (n = 6) or experimental group (n = 6)	Poses, relaxation, reflection, massage; 30-minute sessions, 3 times per week, 3 weeks.	Body dissatisfaction measured by Child's Body Satisfaction test and Human Figure Drawings. Independent t-tests (< .01) used for statistical analyses	Significant decrease in body dissatisfaction from pre- to posttest observed only in experimental group (based on number of subjective response pre- and posttest). Significant decrease in emotional indicators of body dissatisfaction for yoga group, indicating increase in body satisfaction	2B
Goldberg ¹³	Autism	United States/ public elementary school	Single-cohort design	6 upper elementary school children; all diagnosed with autism, identified as experiencing anxiety under stress; no information about gender	<i>Creative Relaxation</i> program: yoga exercises, breathing, role-playing, guided imagery, discussion, music, visual aides; sessions were 30 minutes, 3 times per week, 8 weeks	Teacher and parent ratings (measures unidified); measurements of pulse rates before and after sessions; observations of breathing and muscle tone (before, during, after session); teachers' observations of overt signs of stress vs. relax-	Results suggest lower stress levels after completion of treatment evidenced by improvement in rating scales and statistically significant decrease in pulse rate. Anecdotal reports suggest skills children learn in school-based treatment program	4

Study	IDEA Classification	Location/ Setting	Method	Participants	Yoga Intervention (treatment components, duration, and number of sessions)	Dependent Variables	Summary	Sackett Level
						ation in target situations; qualitative reports from parents and teachers; 2-sample <i>t</i> -tests ($p < .01$) used for statistical analyses	generalize to stressful situations in home and in public.	
Hopkins & Hopkins ²³	Not stated (Exhibited severe “educational problems”)	United States/ Impact Center (alternative learning center for children with severe educational difficulties)	Within-groups, counter-balanced design	34 children placed in an educational Impact Center; no information about gender; ages 6–11	Poses, breathing, imagery; comparison activity involved gross motor activities, such as games; children received either psychomotor activity or yoga for 15 minutes (no information provided about length or duration of program)	IQ, achievement, age controlled for; attention and concentration as measured by alphabetic coding task; 3-way ANOVA for statistical analyses	No significant differences found between groups in attention and concentration. Children demonstrated significant improvement following psychomotor and yoga interventions. Results are difficult to interpret because alphabetic coding task used to assess attention and concentration was subject to practice effects	4
Manjunath & Telles ³⁰	None	India/ residential school	Random assignment, experimental 2-group design	0 female children; no information about final number of students in each group; ages 10–13	Yoga included poses, relaxation, breathing, internal cleansing, songs; comparison group included physical activity; sessions lasted 75 minutes, 7 days per week, 1 month	Planning time, execution time, number of moves as assessed on the Tower of London task; Wilcoxon paired signed ranks test used for statistical analyses	Yoga group showed significant decrease in planning and execution time and number of moves. Physical activity group showed no change	2B
Mendelson et al. ²⁷	None	United States/ public elementary schools	Pilot random assignment by school experimental control design	97 fourth and fifth graders (60% female); random assignment to control group ($n = 46$) or intervention group ($n = 51$); urban communities	Poses, breathing, guided mindfulness practices; sessions were 45 minutes, 4 days per week, 12 weeks	Overall adjustment as defined by affective, cognitive, social-emotional, and behavioral components; all measured by self-report (RSQ; SMFQ-C; PIML); ANOVA and Turkey adjusted pairwise comparisons used for statistical analyses	Significant reductions in involuntary stress reactions for intervention group, no differences in changes for mood or relationships with teachers or peers	2B
Peck et al. ²⁹	None (all had attention problems)	United States/ public elementary school	Within-groups, multiple-baseline design with comparison group	10 elementary school children (7 females, 3 males) in yoga group (no information about comparison group); Grades 1 to 3; all evidenced subclinical attention problems (<80% of time on task)	<i>Yoga Fitness for Kids</i> video program: deep breathing, physical postures, relaxation exercises; Sessions were 30 minutes, twice a week, 3 weeks	Time on task (defined as orienting toward teacher and working on assignments) measured by structured classroom observations (Behavioral Observation Form; Rhode et al.); outcome analyses according to Cohen’s guidelines for effect sizes	Large effect sizes for each grade level group on pre- and postscores of time on task (from 1.51 to 2.72). Although these effect sizes decreased at follow-up, they remained moderate to large. Peer comparison data indicated classmates’ time on task unchanged	4

Study	IDEA Classification	Location/ Setting	Method	Participants	Yoga Intervention (treatment components, duration, and number of sessions)	Dependent Variables	Summary	Sackett Level
Powell et al. ²²	Learning Disability or Emotional Disturbance	England/ public primary schools	Quasi-experimental control study	107 children (59 males, 48 females); control group ($n = 54$); treatment group ($n = 53$); ages 8–11; 3 children on medication	Massage, poses, relaxation; sessions lasted 45 minutes, 1 time per week, 12 weeks	Self- and social confidence, communication and interaction abilities, ability to control self in school/classroom, attention span, emotional symptoms, conduct problems, hyperactivity and peer relationship problems; assessed by behavioral profiles and questionnaire (SDQ); Analyses included independent sample t -tests ($p < .05$) and chi-square tests	Intervention group had significant improvements in mean scores on self-confidence, confidence with teachers, communication with peers and teacher, contributions in classroom, compared with the control group	4
Raghuraj & Telles ³¹	None	India/ residential school	Matched pairs with random assignment	32 females from a residential school; control group ($n = 16$), experimental group ($n = 16$); ages 10–11; all had normal vision	Poses, breathing, internal cleansing exercises, Intervention included AM and PM sessions (75 minutes per day), 7 days per week, for a period of 1 month; Control group participated in physical training exercises.	Depth perception assessed by 5 separate trials using a standard electronic apparatus (Model DP 129); analyses using Wilcoxon signed-rank test, Kruskal-Wallis test for tied ranks, and non-parametric Turkey test	Error of depth perception significantly reduced in yoga group in 3 of 5 trials. No significant change or difference between groups in remaining 2 trials	2B
Scime & Cook-Cottone ⁹	None (primary prevention group)	United States/ after-school program	Quasi-experimental design	141 fifth grade females; control group, $n = 69$; experimental group, $n = 72$	Yoga, media literacy, relaxation, and interactive discourse; Sessions were 90 minutes long, 1 time per week, for 10 weeks.	Self-competence, social self-concept, physical self-concept, current and future intentions of eating-disordered behavior, perceived stress scale assessed by self-report (MSCS; EDI-2; current and Future Intentions Scale; PSS); statistical analyses using ANOVAs	Significant decrease on scales measuring body dissatisfaction and bulimia (attitudes toward, not behavior), increase on social self-concept scale. Perceived stress, drive for thinness, and competence not affected	3B
Stueck & Gloeckner ²⁶	None (All exhibited elevated signs of anxiety)	Germany/ public school	Quasi-experimental control study	48 fifth grade students; participation in control group, $n = 27$; experimental group, $n = 21$; no information about gender	<i>Training of Relaxation with Elements of Yoga for Children</i> : breathing, imagination journeys, and yoga poses; 60-minute sessions, for 15 total sessions.	Psychological and physiological variables (e.g., relaxation states, concentration, general well-being, electrodermal activity; measures not specified); pre-posttests of analysis	Results support use of yoga in emotional regulation, show significant decreases for experimental group in aggression, helplessness in school, physical complaints, and increases in stress-coping ability	3B
Uma et al. ²¹	Intellectually Disabled	India/ special education schools	Matched pairs with random assignment	45 matched pairs (29 male pairs, 16 female); children identified as ID; ages 6–15	Breathing, exercises, and meditations; Sessions were 60 minutes, 5 times per week, for 1 academic year.	Intelligence and social behavior measured by standardized assessments (Binet Kamath; Seguin Form Board) and parent/teacher reports (Vineland social maturity scale); statistical analyses using paired t -tests and chi-square test	Significant improvements on IQ and social adaptation measures in treatment group compared with control group. Control group measures suggested deterioration over time	2B