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Complementary, Holistic, and Integrative Medicine: Mind-Body Medicine

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Objectives
After completing this article, readers should be able to:

1. Define mind–body medicine.
2. Review evidence–based pediatric mind–body therapies and identify medical conditions where these therapies have proven beneficial.
3. Encourage pediatricians to consider integrating mind–body medicine into practice.

What is Mind–Body Medicine?
Mind-body medicine might be defined as the deliberate harnessing of positive thought and emotion and using them for the purpose of enhancing health.

It has been well established that poorly managed pain and stress can activate the inflammatory cascade, depress immune function, and increase the risk of chronic depression, anxiety disorders, and posttraumatic stress disorder. (1)(2)(3)(4)(5) The field of mind-body medicine capitalizes on the inverse association that positive emotions and use of self-regulation skills can trigger beneficial physiologic reactions, including enhanced immunity, decreased inflammation, and improved mental health. (6)

A wide variety of mind-body techniques can be used to achieve a state of calm, positive focus. The modalities that have the best supporting evidence of efficacy in pediatrics currently are biofeedback, hypnosis, guided imagery, mindfulness, music therapy, and yoga. (7)

Challenges in Mind–Body Medicine
New fields of medicine present unique challenges, and mind-body medicine is no exception. This broad, wide-ranging topic rarely is addressed in medical education. Mastery of new skills is required, treatment is highly individualized, insurance reimbursement may vary, colleagues may be skeptical, and pressure to prescribe medication rather than suggest an unfamiliar therapy may deter physicians from recommending it.

Why is Mind–Body Medicine Important?
Mind-body therapies encourage children to become active participants in their care and are low risk and cost-effective. They can be used as evidence–based alternatives to conventional therapies if conventional treatments have undesirable adverse effects, as adjunct supportive therapies, or as primary treatments in cases where they offer superior efficacy. Mind-body therapies can provide powerful, noninvasive techniques to reduce fear, stress, and pain, while building confidence, self-control, and resiliency. Mind-body therapies have been used successfully in the treatment of children experiencing acute or chronic pain, anxiety and stress, dysfunctional voiding, constipation and encopresis, sleep disorders, habit disorders, attention-deficit/hyperactivity disorder (ADHD), asthma, obesity, diabetes, inflammatory bowel disease, irritable bowel syndrome, and cancer. (7)

The Importance of Language in Mind–Body Medicine
Word choice can inadvertently increase fear and anxiety or convey calm, confident encouragement. (8) Thoughtful language use is important in mind-body treatments. In fact, skillful use of language in educating parents about mind-body modalities can influence treatment outcomes. Studies show that parents, children, and clinicians all may have preexisting expectations about which mind-body modalities are most likely to be

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effective. It is important to be able to offer more than one choice of therapy if the first suggestion does not meet expectations. (9)

**Stress Diagnosis in Children**

Ideally, stress diagnosis and management would be included in routine anticipatory guidance, and children would learn self-regulatory skills from a very early age. Nonjudgmental questions about stressors can provide an opening to discuss the impact of stress on children’s health as well as an opportunity to educate families about the power of the mind-body connection.

In reality, however, stress is not discussed routinely in health supervision visits, and even experienced practitioners can find it challenging to diagnose pediatric stress accurately, which often manifests as vague or confusing physical or behavioral symptoms. Familiarity with common stress symptoms by age group and an elevated degree of suspicion can be useful in helping to avoid excessive medical testing. (10) The possibility of stressors is important to consider in any pediatric evaluation when symptoms do not make sense after a thorough history and physical examination are complete.

In some cultures, succumbing to stress implies weakness, making it harder to initiate a discussion on the topic. Reluctance to discuss stressors can also be found in cases of bullying, a prevalent, serious, and often hidden cause of childhood stress. Mind-body therapies have been shown to be helpful in certain patterns of bullying and should be considered in the approach to this complex and challenging problem. (11)(12)(13)(14)(15)

**Selected Mind-Body Modalities: Best Evidence in Children**

**Biofeedback**

Biofeedback can be defined as the systematic process of increasing awareness and control over various physical functions by using instruments that provide immediate feedback to the individual. Biofeedback is painless, and child-friendly tools are available that use games and appealing graphics to help children learn self-regulation skills in an enjoyable process.

A recent survey of 43 accredited academic pediatric anesthesia centers in the United States indicated that biofeedback was the most frequently chosen therapy for pain management in the 38 centers offering complementary or integrative therapies. (16)

The types of biofeedback used most commonly in children are electromyography for reduction of muscle tension, thermal biofeedback to promote vasodilation, heart rate monitoring in regulation of heart rate variability, and neurofeedback using electroencephalography for regulation of slow cortical potentials.

Although biofeedback has the potential for use in a range of conditions, some of the strongest evidence supporting this therapy is in children who have migraine headaches, (17)(18)(19)(20) tension headaches, (21) chronic pain, (22) dysfunctional voiding, (23)(24) constipation, and recurrent abdominal pain. (25) Newer research provides evidence of benefit with impulsivity in ADHD. (26)(27)

**Hypnosis**

Clinical hypnosis is an especially powerful mind-body therapy for children and has been described by Olness and Gardner as “an altered state of consciousness, usually involving relaxation, in which a person develops heightened concentration on a particular idea or image for the purpose of maximizing potential in one or more areas.” (28) An excellent hypnosis resource for the interested practitioner is Olness and Kohen’s definitive text Hypnosis and Hypnotherapy with Children. (29)

A hypnosis session has six classic stages: introduction, induction, deepening, therapeutic suggestions, awakening, and debriefing. Each session is unique to the individual patient. (30) Children as young as 2 to 3 years of age have been successfully taught self-hypnosis, which often involves guided imagery and is facilitated by their openness to storytelling, imagination, and fantasy.

A wealth of research supports the use of hypnosis in pediatrics for a wide variety of conditions, including acute and chronic pain, migraine, habit disorders, anxiety, asthma, nausea and vomiting associated with cancer treatment, insomnia, hypertension, and anxiety as well as in preparation for surgery and other invasive procedures, such as voiding cystourethrography and bone marrow aspiration. (31)(32)(33)(34)(35)(36)(37)(38)

A 2005 survey of 43 pediatric anesthesia fellowship programs in the United States indicated that 44% of the 38 responding institutions offered hypnosis as a treatment therapy for pain. (16) Hypnosis has also been used to reinforce health suggestions and reduce anxiety in the routine pediatric office visit. (39) It is important to work with fully certified hypnosis practitioners and consider consultation with a mental health specialist for any child who has a history of abuse or preexisting mental illness.

**Music Therapy**

Research exploring the science of music therapy is revealing the amazingly complex nature of the positive effect of music on the neurohormonal and immune systems and its links to pain perception and emotional processing.
The American Music Therapy Association defines music therapy as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed a music therapy program degree.

A growing body of research in infants and children demonstrates the efficacy of music therapy for reduction of pain and anxiety in a variety of pediatric settings, including neonatal intensive care units, procedure rooms, emergency department waiting rooms, and in the perioperative setting. Music therapy can be used alone or combined with other mind body therapies.

**Mindfulness**

Mindfulness is the cultivation of awareness in the present moment, regardless of ongoing events, and can be adapted for use in children of a variety of ages who have a wide range of conditions. Mindfulness is often linked to breath work or body scanning exercises. Mindfulness training has been shown to improve coping capacity, aid in chronic pain management, and reduce anxiety and depression. Training in mindfulness was offered by 21% of academic pediatric anesthesia pain management services in the United States surveyed for provision of complementary and alternative medicine programs at their institutions. Innovative research exploring the potential of mindfulness training on brain plasticity and neuronal allocation is ongoing.

**Yoga**

The word “yoga” comes from the Sanskrit root yuj, which means “to join” or “to yoke”, and the practice is based on the concept of bringing together mind, body, and spirit. It is an ancient combination of breathing exercises and postures used to increase mindfulness, improve fitness and flexibility, and reduce stress. Yoga is versatile and can be adapted to many skill levels and age groups in both inpatient and outpatient settings. Studies show yoga’s beneficial effects in children who have chronic pain, asthma, irritability bowel syndrome, and ADHD symptoms.

**Progressive Muscle Relaxation**

Progressive muscle relaxation, a systematic tensing and relaxing of muscle groups, is easy for children to master and is often used with other mind-body therapies. Although few studies have evaluated it as an isolated treatment, progressive muscle relaxation has been used successfully with other therapies in the treatment of chronic pain, asthma, depression, migraine headache, anxiety, and juvenile arthritis.

**Summary**

- Mind-body therapies can add an important dimension to pediatric care and allow practitioners to offer gentle, effective, drug-free, and cost-effective treatment options.
- Children of all ages can derive benefit from mind-body therapies, which are used in both inpatient and outpatient settings.
- Some of the best-studied populations for mind-body interventions are children who have chronic conditions, such as pain, anxiety, arthritis, migraine or tension headache, recurrent abdominal pain, dysfunctional voiding, and cancer.
- Use of mind-body skills to mitigate caregiver stress is an interesting area of emerging research that may have important pediatric implications in the future.
- Many educational and training programs are available in the field of mind-body medicine, some of which are included in the resources section.

*Note: To view the references for this article as well as online resources, visit [http://pedsinreview.aappublications.org](http://pedsinreview.aappublications.org) and click on the article title.*
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The following Suggested Reading lists are included online only for the article “Complementary, Holistic, and Integrative Medicine: Mind-Body Medicine.”

References

**Online Resources**

**Biofeedback**
Association for Applied Psychophysiology and Biofeedback at: www.aapb.org
Biofeedback Certification International Alliance at: www.bcia.org
International Society of Neurofeedback and Research at: www.isnr.org

**Hypnosis**
National Pediatric Hypnosis Training Institute, formed under the auspices of the Society for Developmental and Behavioral Pediatrics at: www.nphti.org
The American Society of Clinical Hypnosis at: www.asch.net
The Society for Clinical and Experimental Hypnosis at: www.sch.us

**Guided Imagery**
Academy for Guided Imagery at: www.academyforguidedimagery.com

**Music Therapy**
The American Music Therapy Association at: www.musictherapy.org
The Certification Board for Music Therapists at: http://www.cbmt.org/

**Mindfulness**
Association for Mindfulness in Education at: www.mindfuleducation.org