
Integrative Approaches to Caring for Children with Autism



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Parents commonly integrate complementary and alternative medical (CAM) treatments for autism spectrum disorder (ASD) with conventional care. The aims of this article are to (1) describe the most commonly used treatments, (2) assess their efficacy and safety, and (3) organize the information in practical format for practitioners. We organized treatment modalities into four categories: recommended, monitored, tolerated, and therapies that should be avoided. These four categories are based on a two by two table weighing a therapy's effectiveness and safety. To meet the threshold for "recommended," its effectiveness needed to be supported by two or more randomized, controlled trials. In addition to promoting an overall healthy lifestyle via nutrition, exercise, sleep, stress management, social support,

and avoiding neurotoxins (healthy habits in a healthy habitat), the most promising therapies recommend are applied behavior analysis, parent-implemented training, melatonin supplements to improve sleep, supplements to correct deficiencies, and music therapy. Medications and restrictive diets may be helpful for some children, but use should be monitored given the risk of side effects. Most complementary therapies are safe, so they can be tolerated, but additional research is needed before they should be recommended. Given their risks, costs, and limited evidence of efficacy, chelation, secretin, and hyperbaric oxygen should be avoided.

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Background

Autism spectrum disorder (ASD) is a dynamic set of metabolic, mitochondrial, immune, inflammatory, and behavioral abnormalities involving many parts of the body.¹ The DSM V characterizes people with ASD as individuals with (1) persistent deficits in social communication and interaction; (2) restricted, repetitive patterns of behavior, interests, or activities with inflexible adherence to routines; (3) hyper- or hypo-reactivity to sensory input (4) that significantly impair functioning; and (5) symptoms that are not better explained by another diagnosis.²

The prevalence of ASD has increased to one in 68 children, with males being four and half times as likely as females to be diagnosed. This growth in prevalence has likely occurred as a result of a complex combination of increased awareness, greater access to services, broader diagnostic criteria, an increase of environmental toxins, poor nutrition, pregnancy stress, maternal obesity, and increased gamete mutations from pregnancies to older parents. Risk factors include both

genetic and environmental factors. For example, gestational diabetes, low maternal folate and essential fatty acid intake, and use of illicit drugs and teratogenic medications are linked with increase in ASD.³ Maternal exposure to toxic environmental compounds such as chlorinated solvents, heavy metals, diesel particles, organophosphate pesticides, and phthalates are also connected with neurodevelopmental disorders and can be contributing factors.⁴ Co-morbid phenotypic characteristics, such as skin and food allergies and variations in the digestive microbiome may be either causative or part of the syndrome.⁵

Because there is no medical cure for ASD, up to 95% of families dealing with ASD turn to complementary therapies to help improve one or more symptoms.⁶⁻⁸ Often, these therapies include dietary changes and dietary supplements, but may include sensory stimulation therapies, music and manual therapies, and unconventional uses of conventional therapies such as hyperbaric oxygen, chelation, and secretin administration.^{7,9}

Conceptual Model for Recommending Therapeutic Interventions

Different treatments address different aspects of social behavior (aggressiveness and mood instability), communication difficulty, sensitivities (touch, auditory, and

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visual), physical disabilities, specific symptoms (constipation or abdominal pain), comorbidities (allergies), or for overall health (general nutrition, exercise, sleep, stress management, and social support).

Different therapies also have varying amounts of evidence regarding safety and effectiveness. To organize the discussion about different modalities, clinicians can use a framework balancing the evidence regarding both effectiveness and safety.¹⁰ This review begins with therapies that are *recommended* for at least some children with ASD based on evidence suggesting both safety and effectiveness from a systematic review or at least two randomized controlled trials (RCTs) for at least one aspect of ASD. This is followed by a discussion of therapies that are effective but have side effects, costs, and/or toxicity, and therefore should be closely *monitored*. Numerous treatments can be medically *tolerated* because they are safe but do not yet have strong supporting evidence of effectiveness from two or more RCTs. Because this category is so large, it is divided further into biochemical, lifestyle, biomechanical, and bioenergetic therapies. Finally, there are therapies that should be *avoided* because evidence from clinical trials suggests that they are neither effective nor safe.

Recommended Therapies

Regardless of diagnosis, clinicians can recommend healthy lifestyle practices: nutrition, activity, sleep, stress management, social support, and avoidance of toxins. Of the many therapies that are used specifically for ASD, few have compelling evidence that demonstrate both effectiveness and safety. Since ASD is expressed in many different ways, even these treatments may not be suitable for everyone, and should be tailored for each patient.

Applied Behavior Analysis (ABA) and Parent-Implemented Training (PIT)

Among the most promising therapies is applied behavior analysis (ABA). To address difficulties in communication and social interaction as well as irregular reaction to sensory input, the goal of ABA is positive reinforcement of desired behavior and breaking down tasks into simple steps with frequent rewards and corrections. Therapy sessions are generally conducted one-on-one and help create a personalized behavior support plan. Earlier, more intense ABA

therapy improves the outcomes of children diagnosed with ASD early in childhood.¹¹

An extension of ABA is parent-implemented training (PIT), in which parents are taught how to embed strategies to support social communication throughout everyday activities; PIT is also associated with improved outcomes.¹²

Healthy Lifestyle and Dietary Supplements

A healthy lifestyle—healthy habits in a healthy habitat, including avoidance of essential nutrient deficiencies can improve mood and behavior in any person. For example, it is important for mothers to have adequate intake of essential vitamins and minerals such as folate, iron, and iodine during pregnancy. Specific strategies have undergone some evaluation for some ASD symptoms.

Exercise

Several studies have demonstrated that exercise positively affects academic engagement and reduces stereotypy during instruction in children with ASD.¹³ Exercise is part of a healthy lifestyle; the American Heart Association recommends at least 60 minutes of moderate to vigorous exercise daily for children. There are insufficient studies to recommend one type of exercise over another for children with ASD.

Melatonin

Sleep difficulties affect 50–80% of children with ASD. Supplemental melatonin has improved sleep and behavior and lowered parent-reported parental stress.¹⁴ Melatonin is well-tolerated and safe.

Music Therapy

In all, 10 studies with a total of 165 participants have shown that music therapy is associated with improvements in social interaction, verbal communication, initiating behavior, and social–emotional reciprocity, and may also increase social adaptation skills and parent–child relationships.¹⁵

Neurofeedback

A review of four small RCTs concluded that neurofeedback promoted sustained attention, communication, sociability, and flexibility for children with ASD.¹⁶ Neurofeedback is safe, but may be expensive for families if not covered by insurance.

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