

**Excerpt from:**

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**Emerging brain-based interventions for children**  
**and adolescents: overview and clinical perspective**

## **Autistic Spectrum Disorder**

Based largely on word of mouth communication among parents of children with autistic spectrum disorder, there is rapidly growing clinical experience with EBF. In one published controlled group study of EBF for autism [33], 24 autistic participants were randomly assigned either to the EBF treatment or to a waitlist control group. Twenty or more sessions (average, 36) of EBF using a standard protocol were given. EBF participants showed significant improvements on measures of sociability, communication, health, and sensory awareness compared with controls.

There is a strong consensus among EBF clinicians who work with the ASD population that EBF offers substantial benefit to a significant percentage of this population. It seems to be helpful to more severe autistic individuals and individuals with high functioning autism and Asperger's disorder. Approximately 70% to 80% of patients with ASD benefit from the treatment. The degree of benefit ranges from mild to profound.

For example, one 4-year-old boy recently was diagnosed with pervasive developmental disorder-not otherwise specified (NOS). He had severe behavioral and emotional self-regulation problems, with episodes of extreme aggression toward his brother and parents and self-injurious behavior, such as biting and head banging many times daily. He spoke in two- to three-word phrases, primarily echolalic, engaged in considerable repetitive behavior, and showed little social engagement, even with his mother. After 3 months of twice weekly EBF sessions, aggressive behavior and tantrums had largely subsided, language had improved markedly, he began to engage in parallel and some joint pretend play with peers, and his relatedness with his parents and brother had improved markedly.

Generally, improvements are seen in attention and other aspects of executive function, in anxiety and emotional self-regulation, and in the degree to which a child is tuned in to or engaged with the world around him rather than being "in his own world." It seems to be the case that EBF treatment in ASD requires many more sessions than for other disorders; therefore, home training under the supervision of the clinician is often used.

The rationale for use of neurofeedback for ASD is similar to that for psychopharmacology for this population. Virtually all children with ASD have

significant attention deficits and often impulsivity. Virtually all children with ASD also suffer from anxiety, obsessive-compulsive symptoms, and mood disturbances. EBF, like psychopharmacology for ASD, is targeted at these additional domains of dysfunction.