

# Neurofeedback for Autism

Moshe Perl, PhD, BCN, QEEGD, MAPS

Melbourne, Australia

BCIA CIC

3 November 2018

[moshe.neurotherapy@gmail.com](mailto:moshe.neurotherapy@gmail.com)

# Neurofeedback for Autistic Spectrum Disorders

The research literature on neurofeedback for ASD is weak  
Betty Jarusiewicz did a right sided theta-alpha reward project in 2001 which was successful

Rob Coben has done a variety of studies using various forms of coherence training and reports success

I have found that amplitude training, mostly on the right has been very successful in my practice and in the practices of at least four other experienced Australian clinicians

Here are the findings

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Classic ASD symptoms include:

Lack of appropriate social awareness/responsiveness,  
lack of empathy, stilted formalism in conversation

Obsessive overfocus

Sensory integration difficulties - sensory overload,  
sensory sensitivities, food allergies, sensory seeking

For some, speech and language expression difficulties

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Other symptoms may include:

Severe anxiety

Tantrums, meltdowns

Aggressive behaviour

Learning disabilities

Impulsivity and/or poor focus and attention

Unusual walk, including tiptoe walking

Restrictive diet - texture and taste dominate preferences

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Other Comorbidities may include:

ADHD

Tourette's and tic disorders

Epilepsy

Lower intellectual functioning. Note: The “classic” autistic hand flapping, sniffing or licking things, head banging as well as very little speech are likely more indicative of lower intellectual functioning

Dyspraxias - low muscle tone

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EEG patterns:

Generally excessive slow wave (delta, theta) more pronounced posteriorly

Unstable EEG, with paroxysmal and epileptiform activity not uncommon

Fast wave not uncommon, may be compensatory and likely indicates higher intellectual functioning, but usually leads to agitation, anxiety and aggression

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I differentiate two types -

Want affection but get overwhelmed and anxious

Don't care about affection, can get aggressive and will manipulate to get what they want

I will call these types anxious or unaffectionate (I think the old term Aspergers suited this type)

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ASD - Failure of maternal bonding

I see a parallel with people who have suffered severe developmental trauma

In developmental trauma, the mother was not available for bonding.

In ASD the child is not available for bonding



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For both, there is a profound deficit in ability to emotionally self regulate

Both have difficulty seeing outside of themselves and their immediate needs

For both the low frequency EEG in the right hemisphere is not intact and needs training

We tend to think of these frequencies as limbic and even brain stem (periaqueductal grey)

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For most ASD sufferers, calming is the first order of business.

Mild calming: Train Cz-A2, reward 12-15Hz or slightly lower, inhibit 2-9Hz (2-5Hz, 6-9Hz) and monitor 22-36Hz, unless there is fast wave (not EMG), in which case inhibit the beta/high beta excess.

This training suits higher functioning ASD who have fairly good control of tantrums and aggression.

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Stronger calming.

Train T4-P4, reward 10-13Hz or lower, inhibit 2-9Hz (2-5Hz, 6-9Hz) and monitor 22-36Hz, unless there is fast wave (not EMG), in which case inhibit the beta/high beta excess.

This training is good for calming aggression and anxiety and helping improve behavioural compliance and sleep onset.

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Very strong calming.

Train T4-F4, reward 5-8Hz or thereabouts, inhibit 2-9Hz (2-5Hz, 6-9Hz) and monitor 22-36Hz, unless there is fast wave (not EMG), in which case inhibit the beta/high beta excess.

This training is very good for calming aggression, agitation and tantrums. It improves behavioural compliance and sleep onset.

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Notes about training low.

You can reward and inhibit the same band. You are simply telling the brain, “Produce (let’s say) at least 10uv of 6-9Hz, but not more than (let’s say) 15uv in that band”

Inhibiting 5Hz stabilizes the brain. Sterman found his epileptics all produced too much of that frequency, so he always inhibited it.

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Notes about sensor placement

T4-F4 definitely calms the behavior patterns. In some cases I have found the issue is more sensory than executive, and training T4-P4 worked better.

With both sites, you want to see positive change within a couple of sessions

If you train too low, old immature habits reemerge. If you train too high, they don't calm down

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Left sided training? Yes, absolutely.

Once you see calming and compliance have occurred, train the first 10% of the next session on the left.

Some practitioners train Cz-A1, some train F3-A1.

Both report success. Most start the activation at 13-16Hz to see if the client will tolerate activation.

If they tolerate it, do it again.

If they get too activated, train calming until they calm, then activate again.

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Left sided training.

The goal is for the client to tolerate activation, then respond positively, with better focus and a more outgoing and affiliative attitude. This may also help speech amount to increase and become more relevant

Over time increase time spent training on the left, and increase the reward frequency incrementally to 15-18Hz, if possible



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High functioning ASD will need some activation almost from the start

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## Other training sites

An ancient pair of protocols used for oppositional children has relevance here:

Train C4-Pz, reward 12-15Hz or lower for calming

Train C3-Fz, reward 15-18Hz or thereabouts for activation.

For the unempathic ASD client, I have found training at Cz-T6 rewarding 12-15Hz or lower to be very helpful in creating true empathy and emotional responsivity in several cases

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## Other thoughts

If you have access to a full cap EEG, you will be able to see temporal lobe disturbances, if present. Address them either in conjunction with central issues, or if they are not severe, after central issues.

If you do minimap assessments, you will have a good handle on central arousal and regulation issues. If you suspect temporal lobe issues, do minimaps on the temporal lobes.

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Questions?

Thank you