

Effect of Sound Therapy and Yoga on Autism Spectrum Disorder

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ABSTRACT

In the recent past research there is an increasing rate of awareness on care for special needs people in India. Among all of these problems Autism Spectrum Disorder is also gaining a lot of attention and also most commonly found in the early age of children? This article is created to inform people in urban and rural families about autism and its diagnosis, prevention for children with autism. One most important natural and side effect free intervention is yoga therapy and also sound therapy. Autism Spectrum Disorder refers to a group of neurodevelopmental disorders which is characterized by behaviour and difficulties with speech and social interaction. The symptoms arise in early childhood and affect day to day activities. Evidence based treatment for autism in yoga is limited but sound therapy is a very effective way to improve symptoms of autistic children. This essential literature overview examines a few latest research on yoga as an intervention, in particular, this review focuses on yoga patterns wherein the practice of yoga poses, referred to as asana, is the middle issue. Even though the full-size high-quality findings are promising, the research had methodological obstacles; the identity of those limitations can tell destiny research.

Keywords: Autism spectrum disorder, Childhood, CAM remedies

INTRODUCTION

Autism Spectrum Disorder

Autism spectrum disorders (ASD) are a group of neurodevelopmental disorders characterized by impairments in social functioning, conversation deficits, rituals, and stereotypes, and repetitive or constrained the symptoms might also vary throughout individuals. According to DSM-5, autism spectrum disorder involves deficits in two major categories: 1) social communication and social interactions and 2) restricted or repetitive behaviours, interests and activities [1]. The ASD occurrence has been increasing since the last two decades, while the quantity of evidence-based clinical interventions that deal with both core co-morbid and ASD symptoms are confined in number and availability and crushed through demand. numerous interventions such as pharmacological intervention, parental and caregivers training education are suggested to develop attention, social skills, language/communication and physical behaviour in ASD persons in addition, educational/behavioural therapies, complementary and alternative medicine (CAM remedies), removal diets, mega doses of decided on vitamins, and early intensive behavioural intervention (EIBI) are counselled [2]. Nowadays, only 28% of patients with ASD receive treatment using complementary and opportunity remedies (CAM), a charge twice that of the non-ASD people. There may be strong literature now on the achievement of figure

interventions [3]. Families of humans with autism pronounced that their participation in everyday hobbies is removed by way of restriction in sensory integration. Odd sensory responses display poor SI in the significant nervous device (CNS) and might reveal impairment in cognitive and psychological functions consisting of interest and arousal. So, the most ten requested services are on interventions which address these issues. SI theory was first developed by Ayers to focus on neurological processing of sensory information. According to SI theory, the inferences in integration and neurological processing of sensory information damage the construction of purposeful behaviour. The goals of SI are to improve sensory modulation associated with attention and behaviour and increase skills for educational abilities, independence, and also to social interactions [4]. SI interventions assist the CNS to modulate, arrange and integrate statistics from the surroundings, ensuing in destiny adaptive responses. Interventions in keeping with SI theory use deliberate, controlled sensory input with the wishes of the player and are characterized through an emphasis on sensory stimulation and lively engagement of the character and involve character-directed activities. A professional therapist designs the traits of the surroundings to create the "simply-proper venture". There is a wide variety of claims in the lay media, which record that mother and father and caregivers of children with autism propose that yoga makes a substantial impact on the trajectory of sufferers with ASD, and there is little evidence to support this idea. In

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numerous studies, the authors assessed the impact of yoga training program (YTP) on humans with ASD [5]. Human beings with ASD ought to benefit from yoga in ways: (1) directly, via impacting on centre ASD signs (social verbal exchange and social interplay, constrained or repetitive interest, and behaviours and sensory abnormalities). (2) Indirectly, by affecting comorbid conditions with ASD (ADHD, anxiety, insomnia, and depressive symptoms). In a study, Radha-Krishna measured the effects of Integrated Approach to Yoga Therapy (IAYT) on children with ASD and determined development inside the kid's imitation talents, especially pointing to frame oral-facial and postural actions. Also, the kid's mother and father said trade in the play samples of those kids with toys, friends, and items at home. These results showed that the IAYT had a positive effect on their basic imitation, cognitive skills and social-communicative behaviours. In another study, Rosenblatt & Gorantla assessed the effect of 8-week multimodal yoga, dance, and music therapy programs based on the relaxation response (RR), on ASD children. They used The Behavioural Assessment System for Children, Second Edition (BASC-2) and the Aberrant Behaviour Checklist (ABC) to assess their intervention effect. They reported large changes on the BASC-2 for 5–12years old children. In addition, they located that the change of post-treatment ratings at the bizarre scale of BASC-2 become significant. The modern-day examination has received mixed interpretation, dividing experts as to the price of sensory integration remedy on kids with ASD using yoga education software. Previous studies on kids with ASD furnished initial help for the effectiveness of SI interventions in regions such as lowering self-stimulating behaviours and growing purposeful behaviours along with social interaction and play. Complementary and alternative medicine is more and more being considered within the medical care of human beings with ASD. There are a number of reasons why yoga could potentially benefit humans with ASD; those consist of the direct and oblique remedy approaches; there are few posted reviews in this location. Each of the research reviewed here had enormous methodological limitations [6]. Before yoga may be chosen as an evidence-primarily based remedy, extra rigorous trials are wished. For instance, a better range of subjects, randomization, management corporations, manualized interventions, and outcome measures gauging core ASD symptoms and comorbid psychiatric symptoms that could improve the evidence base. Accomplishing extra research with carefully designed training protocol together with a control group and employing standard evaluation may additionally offer additional data in this regard. The purpose of this study was to examine the effect of YTP on severity of autism spectrum disorder in children using a standard assessment (ATEC) to and including a control group in a pre/post-test study design.

Yoga for ASD

Yoga influences us in greater direct and extra important methods than some other motive. We do not know why. We will simplest start to apprehend how. One of the distinctions among training yoga and the fullness of our relationship with yoga as an art shape form pieces of a complicated sensory state [7].

With yoga, children have been able to learn to recognize tension in their bodies and to exercise breathing has helped them to see when they are experiencing stress. By reducing breathing rate, dysfunction can be reduced. The language of yoga is very simple and, in fact, can be practiced without words. Although these methods were frequently used and visual aids were encouraging, there was no literature on the effectiveness of yoga in ASD.

The behaviour of children with ASD and adolescents has a devastating effect on their families, schools and communities. Common medicines include medication, behavioural management, psychological and family programs in a variety of organizations. These therapies have some success, but there is a need for improvement in response and review of treatment adherence rates. Yoga encourages participants to participate independently and independently in their treatment and behaviour by breathing and deception, posture and cognitive control [8].

Best Practices and Principles

Working with children with ASD is challenging. It requires a strong understanding of the children's needs, as well as a connection with the children's community and families. Each consultation demands big time and thoughtfulness put together, and once the exercise begins, it requires mental, emotional, and physical power to preserve and adapt [9]. Before one is ready to jump in and begin working with students, there are important steps that need to be taken to ensure success for the students and Yoga practitioner. These steps are fully described below.

Connect with a Child's Support Group

In order for students to fully integrate Yoga into their lives and to make the greatest impact in the shortest amount of time, it is the key that all the child's social supports are on the same page [10]. Connect with the child's therapists and classroom teachers to learn what they are working on with the child, and share with them what you do. If families are comfortable doing so, they can share evaluation data or the child's individualized education program from school with you so that you can create a well-rounded, intentional practice. When working with a child with autism [11], it is important for you to remember that you are not just working with that child. You are working with the family. Many of these families work day and night to provide the best for their children, often to the detriment of their own physical health and the health of their marriages. Encourage families to develop their own personal Yoga practice. As their practice grows, they will better understand the work you are doing with their child, and also benefit from the healing found in Yoga. At the end of the day, it is the families who will be your greatest champions and supporters. Autism communities nationwide are very tightly knit groups of people. Practitioners will find that word-of-mouth is often the best way to connect with other members of the autism community in your area [12].

Mindfully Set Up a Yoga Practice

The success of a Yoga session with an autistic child can be decided before the student even walks in the door. It takes a lot of time and thought to set up a safe and comfortable environment, but in the end it will be worth the effort. Children on the autism spectrum are often very routine- and rule-oriented. They will learn something one way the first time, and it'll be very hard and traumatic to change that routine if you make a decision that you want to do it differently the subsequent time [13]. It is vital to consider your shape, methods, and techniques earlier than you begin teaching a Yoga session.

Structure the Environment

The first step is choosing an environment for the Yoga practice. This can be at a student's house, in a therapy space, a Yoga studio, or classroom setting. The following are things to consider when looking for this setting [14].

Safety: Are there lots of safety concerns in the room, such as sharp corners on furniture, cement floors, or multiple doors for the student to run from?

Distractions: Are the walls in the room covered in loud posters, or is the room filled with objects the children would see as toys? If it is not possible to find another space, you may use sheets or blankets to cover objects that will be mainly distracting for the students. Appropriate Noise stages levels [15]. Children in general, and especially students with ASD, tend to be noisy. Ask yourself if this is an environment where it is OK for a student to make a lot of noise, or will he or she constantly need to be reminded to be quiet?

Predictability: Changes in the environment can be stressful for a child with ASD. When looking at spaces, think about how much of the environment is within your control. Sensory Input, Is this sensory-neutral environment, or is your senses overwhelmed as you walk in the door? Is there a restaurant or cafeteria nearby that produces strong odour? Fans or heaters that make lots of noise? Bright lights you can't control? Train yourself to be acutely aware of information from your senses that you might otherwise not notice. Once you have decided on a space, it is important to give some thought to the actual set-up of your Yoga environment before you begin a Yoga session. Think about creating a calm, serene, and sacred environment so the children can really focus on their bodies and the Yoga they are doing some things to think about when setting up your environment [16].

Boundaries: Provide Yoga mats for the children to give clear visual boundaries of where their bodies are to be. When working in a group setting, it is helpful to place the students Yoga mats in a circle. This creates a feeling of community and equality amongst the students.

Routines: Routines are important, and it is helpful for the children if you establish your routines the very first time they come to Yoga. As an example, train students in the routine of getting into the Yoga room, taking off shoes and socks and placing them by the door [17], finding a Yoga mat, and sitting quietly. Kids with ASD do properly with predictability, structure, and consistency. When you realize your plans should change, it is essential to stay effective, remain calm, and adhere to the routine and schedule as much as possible. In case you realize that there is a change coming up, warn the children before the new assignment is introduced.

Set Clear Expectations

When working with children on the autism spectrum, there are three questions that are important to answer for the children so they understand the expectations of an activity. By answering these three questions for a student, you can help to lower their anxiety level significantly: What am I supposed to do? How will I know when the task is complete? What is next after the task is finished? [18] As you move through the Yoga practice with a child, pay attention to the child or children you are working with. Observe what helps them relax and be successful. When you determine what this is, do more of it! Yoga should be an enjoyable experience, not a place where they feel additional stress. Some students may also benefit from a visual schedule showing what the plan is for the Yoga session. Generally two types of visual schedules will be used. A specific visual schedule, for students who are lower functioning or very anxious, outlines (with words and/or pictures) the specific Yoga postures and practices they will be doing in a specific order. It is important that after a posture or practice has been completed, it is taken off the schedule and put somewhere (in an envelope, etc.)

to show that it is finished. A general visual schedule is often used for higher functioning children or children who have graduated from a specific schedule. This schedule simply outlines the areas of Yoga you will be doing that day, for example: singing, breathing, Yoga stretches and strengthening, and relaxation. The same principle applies as above; when the task is completed, it is taken off the schedule. By providing visual and/or verbal cueing for what the agenda looks like, you are creating a predictable sequence for the children to follow, which allows them to relax.

Yoga teaches both mental and physical flexibility. For this reason, it is good to change up some of the Yoga postures, the order the postures are presented, or teach new movements. Watch the students; you will know when the time is right to try a new strategy. As the student's Yoga practice grows, you may be able to fade away the pictures schedule, and try a checklist or no visuals at all. Ultimately, the goal would be that the child could complete a Yoga session without any additional props or visuals. My vision is to set them up for a lifelong Yoga practice. Ideally, they could walk into a class at a community centre at age 30, 40, or 60, and adapt to a setting in which visual schedules are not provided.

Obtain Background Information

Before one begins working directly with a child, it is important to acquire some background information about the child and to meet the child for an informal observation. Send home a questionnaire to the families, gathering medical history and behavioural and social information. Ask any questions that will help you understand the child better before the child walks through your doors to do Yoga [19]. In particular, there are three important risk factors to note before you begin a Yoga practice with a child:

Seizures: Some children with autism experience seizures. If this is the case, do not do any inversions before you check with the child's doctor. It is also important to be very conscious of the child's breathing. When completing breath exercises do not have the child hold between breaths or do any technique that could lead the child to hyperventilate, Heart conditions, Similar to seizures, check with the child's doctor before introducing any inversions.

Behavioural triggers: Ask the parents if there are any objects, words, smells, and so on that could trigger particular behaviours in their child. These behaviours could exhibit themselves as outbursts, withdrawal, or perseveration on a topic. For example, I worked with a student who loved princesses [20]. If princesses came up in the conversation, she would persevere and become so stuck on talking about princesses that it was nearly impossible to get her back on the topic at hand, Yoga. I quickly learned to not bring princesses up during our Yoga practice. When meeting students for the first time, observe their bodies, watch how they move, and introduce some simple Yoga postures and breathing. Based on this initial meeting, you will be able to better design a program to meet each child's individual needs. Once this observation has been completed, you are ready to begin a session. If working in a classroom setting, talk with the teacher beforehand. Ask if he or she has any tips for success or can inform you of things you need to know before you walk in to teach the class.

Organizing a Yoga Session

Regardless of whether you're coaching a one-to-one session or a group consultation, the overall format will likely be the identical. (See Appendix A for sample session outlines.) A typical Yoga session consists of 4 components: Yoga mantras (music and chanting),

pranayama (breathing exercises), asana (physical postures and physical activities), and deep relaxation [21]. Below, I describe preferred recommendations for each component. For specific examples, see Appendix B.

Yoga Mantra Chanting

Many children on the autism spectrum respond well to music, and for this reason, they really enjoy the chanting of mantras. Yoga author and expert Shakta Kaur Khalsha notes that singing Yoga mantras encourages the development of language, establishes eye contact, and helps create a private connection. The use of vibration and vocalization is calming and also helps to focus the attention. One study, conducted by Luciano Bernarda, found that Yoga mantras slowed respiration to six breaths per minute, had marked effects of stabilizing the respiratory system, slowed the heart rate, and had generally favourable psychological and physiological effects. 7 for younger or nonverbal children, the mantras can be sung to them. Higher-functioning children can participate in the mantras in a call-and-response format with hand movements such as clapping and patting. Keep the chanting fun and light-hearted [22]. This is a wonderful opportunity to begin building a strong relationship with the child.

Pranayama

A number of breathing exercises can be completed in one Yoga session. When completing pranayama work, the ultimate goal is to create awareness of the breath and teach children how they can use the breath to calm their bodies. Practicing breathing also encourages the development of breath support for speech and postural stability. Many students who come to Yoga therapy sessions breathe in opposition to how we naturally breathe at birth; over time, they have learned to suck in their belly as they inhale and to let their belly relax on the exhale [23]. By re-teaching proper relaxed breathing technique, students can significantly decrease the levels of anxiety that they feel throughout the day.

Asana

Practice Asana practice is what most people think of when they think of Yoga: moving through poses connected by breath. Many students with autism, in particular, have low muscle tone in their bodies and minimal core strength. Additionally, they struggle with proprioception (internal body awareness) and the sense of their bodies in space. Some of these children may be somewhat “noodle-like,” and will struggle if the instructor begins with a standing practice. When beginning a Yoga practice with children who have low muscle tone and minimal core strength, it has proved to be useful to have them attempt postures while seated or laying on the mat. As they build strength, standing postures can more successfully be introduced. It is important when designing your lesson to include all ranges of motion for the spine: forward folding, lateral movements, back bending, and twisting. Inversions can be introduced to students from the beginning, barring any medical contraindications. Start off with simple inversions such as legs-up-wall pose or shoulder stand before you move to more complicated postures. Handstands, as well as more moderate inversions including Ardha chandrasana (half-moon pose) and Trikonasana (triangle pose) seem to have a specific positive therapeutic impact [24]. They also have the added benefit of toning the core and curbing hyperactivity. Throughout the Yoga practice, verbal cues are used to help children begin associating with their bodies. Practitioners can talk to particular parts of the body, instructing them as to what to do. For example, say, “OK

knee, it is time to bend,” and then the child will bend his or her knee. Ask students where they feel the postures in their bodies, and help them begin to make those connections. As students’ progress to a standing practice, include some static postures and some flow, cued by the breath. This combination trains focus and stability, while also allowing the students to practice motor planning and moving their bodies through space. Another term practitioners will hear when working with children on the autism spectrum is heavy work. Heavy work activities (e.g., proprioceptive input) are used for kids with sensory processing problems to assist increase attention, lower defensiveness, and modulate arousal. Proprioceptive input is provided by the performance of tasks that involve heavy resistance and input to the muscles and joints [25]. This process is essential in helping the children’s bodies assimilate and process both movement (vestibular) and touch (tactile) information.⁸ Part of the reason that Yoga is so successful with ASD children is that most of the postures use the child’s body weight to provide input to the joints and muscles. In this way, the practice of Yoga can itself serve as a form of self-directed heavy work.

Deep Relaxation

This is often the most challenging portion of the Yoga practice, but also the most beneficial, especially for children who rarely stop moving. During Savasana (relaxation pose), students are allowed to use lavender eye pillows, listen to smooth calming music, and experience massage for their feet, shoulders, and head to facilitate deeper relaxation. Ultimately, the goal is that they will learn to find a calm and relaxed state without relying on the instructor or outside props as a guide. However, in the beginning, having the instructor guide the students through the relaxation or the use of props can help train this skill [26]. Instructors may find that some students with sensory sensitivities find music, smells, or touch too overwhelming or stimulating. Watch students’ bodies and listen to their words to assess whether these tools are helpful or hinder their relaxation. As the students’ progress in their practice, it is important to build in longer durations of time for deep relaxation. The practice can be closed with a simple “Namaste” with intentional eye contact.

Language

One last thing to take into consideration is the language and vocabulary you use while working with your students. One of the characteristics of children with ASD is difficulty understanding and expressing language. There are some simple things a practitioner can do to support students with language deficits: Minimize the number of words being used. Be specific and direct about what you’re asking the kid to do. Use literal language. For example, instead of “Eyes on me,” where the students may possibly run up and put their eyes on you, say “Look at me.” Use “first, then...” statements [27]. For example, “First we do chanting, and then we do breathing.” Provide processing time (possibly 5-15 seconds) for the child to think after a directive is given or question asked.

Sound Therapy for Autistic

Sound as Therapy

The above instance of Sound therapy in its early levels of improvement is representative of the reaction from kids with severe learning difficulties (SLD), which includes the ones on the autistic spectrum. There are moments of inner pleasure proven possibly via a wiggle of the shoulders, a smile, and a light in the eyes. The importance of this ‘inner’ joy or ‘Flow experiences’ – what I refer

to as 'aesthetic resonation' - cannot be overestimated, Izard has recognized 3 aspects that enhance this importance, describing it as:

- A motivational force facilitating personal growth or self-actualization:
- interacting with belief, cognition, and movement:
- creating openness and receptivity related to intuition and creativity:

These aspects underpin the nature of Sound therapy, its non-interventionist, non-invasive nature in the exercise, and its use of sound as the medium for experience and interchange. The technique has been evolved over some years through working with some kids with special academic needs. The therapy is grounded in a non-invasive philosophy of education wherein the kid is placed at the centre of learning activity. A carefully controlled acoustic surrounding is created within which kids with severe learning difficulties (SLD), and profound and multiple learning difficulties (PMLD) have been able to take control in their world, sometimes for the only time in their lives, and progressively examine and develop a variety of skills - physical, cognitive, expressive and communicative [28]. That is made possible partially via the usage of the cautiously chosen technology, via the creation of a special and highly controlled sonic surrounding, and through a focus on aesthetic resonation the inner world of the kid. There does no need for the 'therapist' to be musically skilled in any formal manner and indeed conventional musical schooling can be a hindrance to this approach. All sound has the musical (expressive) capability, and everybody has a sound as a fundamental experience of existence. From the instant of birth to the time of death we are surrounded by sound. Even if we're deaf, we still experience sound as vibration. A prerequisite for Sound therapy is a (small) room that is quiet and now not too acoustically resonant. A vital part of this therapy is silence. In contrast to different approaches, the kid is permitted to be silent, to be within silence itself. No 'statement' is imposed via the therapist, no 'interpretation' in sound or 'tune' of the therapist's view of the kid's mental state is obtainable. If a child wishes to take a seat nonetheless and revel in quiet this is reputable. There have been several activities where I've sat immobile in the Sound therapy room for several minutes whilst a child also sits very still. During this period I depend on peripheral imagination and prescient to observe, as making direct eye contact might be another shape of intrusion. Best after the sort of duration of stillness can some kids become prepared to communicate from inside - and this communication may also quality stay 'private' at this stage. Any reaction from me should effortlessly stop or even ruin the process. Being present at these sessions can be considered a privilege and the individual must be reputable always, without intrusive intervention on the part of an outsider.

Auditory integration therapy (AIT)

It has evolved as a technique for enhancing unusual sound sensitivity in individuals with behavioral disorders along with autism. AIT aims to address the sensory problems such as hearing distortions and over sensitive hearing, which are said to cause discomfort and confusion in people with learning disabilities, including autism spectrum disorder. This therapy includes a 30 mins. session per day. The child will listen via headphones to a program of specially filtered and modulated music with a wide frequency range. This filtering device also varies the intensity of sound to create a modulated effect. The volume is set as loud as possible until it causes any problem to the autistic child.

CONCLUSION

It is inevitable that as you pursue this work with children with ASD, there will be challenging days. There will be sessions in which the children do well with Yoga and soak everything in and others that are simply not Yoga days. There will be days when the practice you design works perfectly, and other days when you do the same thing, and it fails miserably. It is important to stay positive, persistent, and adaptable. Know that, in some cases, it will take time to build a student's practice. In the beginning, the student may prefer to watch. I had studied students who wandered across the room for the first few weeks until they were capable of settling their bodies enough to finish an abbreviated Yoga exercise.

Also music therapy has been shown to improve social interactions in children with autism, and neuroimaging studies in healthy controls have shown that circuits important for emotion and memory processing are engaged during music listening. Classical music is helpful for kids with autism who are becoming anxious or agitated. The exchange in brain chemistry taking place within the brain because the music is played is incompatible with stress and the child will feel calmer and happier, and so will the entire family.

Be patient and supportive. Do not let Yoga become a power struggle over what the child needs to accomplish. Walk in with no expectations except to be present with that child (or group of children), and you will be successful. As you build relationships with the students and their families, you will have more success in studying their bodies and modifying their Yoga exercise to fulfil their needs in each and every session. As you work with groups of students or individuals, solicit feedback from parents, students, teachers, specialists, and administrators. Commit to increasing your capacity to teach by growing from what they say. Ask to use their words as testimonials for the work you are doing. Listen to the remarks and let them remind you that the work you're doing with these students is important, necessary, and making a huge difference in their lives. Autism is on the rise. These children are in our communities and schools, and there has never been a more important time to figure out ways to reach and connect with these unique children. As instructors of Yoga, we have an amazing opportunity to change individual lives, not just for this particular moment, but also for years to come.

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