



Yoga Therapy Pilot Study for Children with Autism: Rationale and Study Design

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Background

Autism Spectrum Disorder (ASD) is associated with behavioral deficits and anxiety. Increasing tolerance in reacting to and managing the input of new stimuli encountered daily are essential components to improve function in everyday life. Abnormal sensory processing deficits may contribute to the lack of socialization and connection with others and is proposed to have correlated with low vagal tone [1]. Yoga interventions have been found to help with vagal tone [3, 4], anxiety [5] in ASD and to have benefits in self-regulation [2] for psychological health. However, no studies have addressed yoga's effects on tolerance, resilience, regulation of sensory processing, socialization and connection in those with ASD.

Research Objectives

This poster describes the rationale and development of a yoga therapy intervention for children with ASD. This study will evaluate how vagal tone and anxiety change over time in children with ASD who receive individualized yoga therapy over four months.

Table 1

Treatment Room Considerations [6]
Pick a room that has the least amount of doors and remove sharp objects
Take down or turn around loud art and remove any objects that resemble toys
Schedule appointments during off peak times so that the child can make loud noises without disrupting others care
Change challenges autists have the room set-up the same for each session
Calm and serene is not the same for all individuals and autists are sensory sensitive. Is your space really sensory neutral? (e.g. strong odors, fans, bright lights, and so on)
Use Yoga mat to define personal space
Autists like predictability, structure and consistency. Teach them to take their shoes and socks off, greet with Namaste, find the mat and sit quietly.
To lower autists anxiety consider answering these questions each time that you see them with a visual board: What am I supposed to do? What is next after the task is finished? How will I know when the task is complete?

Methods

An evidence-informed protocol designed to study the population of ten children with High Functioning Autism (HFA), (HFA is defined as those with IQ of 70 or greater) with medical or educational diagnoses of ASD between the ages of 11 and 14. A pilot study was developed to look at the feasibility which will be considered through recruitment rates and retention rates and potential benefit of offering yoga therapy to address anxiety, tolerance to stimuli, socialization, and connection in ASD. Ten students will be enrolled and recruited from a community center that serves children with ASD. All students will receive a customized session that follows the same timeline listed in Figure 1. The same yoga therapist will see the individual for yoga therapy in an in an ASD-Friendly treatment room (see table 1) two times weekly for sixteen weeks (see Figure 2 for a protocol timeline) with a three times weekly home practice. Each student will be treated individually and the research collected will be grouped together to determine outcomes. The home-based training will mirror the individual session and tracked on a journal that will be provided by the yoga therapist to the guardian of the child. Outcome measurement tools will include the use of the ABC-C, Neuro-QOL Item Bank 2.1 Pediatric Fatigue Short Form, The Journey to Wild Divine Biofeedback Software (see Table 2). These measures will be given pre, mid, and post intervention to assess self-regulation for tolerance to change, sleep disturbances, anxiety, and vagal tone.

Figure 2
Protocol Timeline

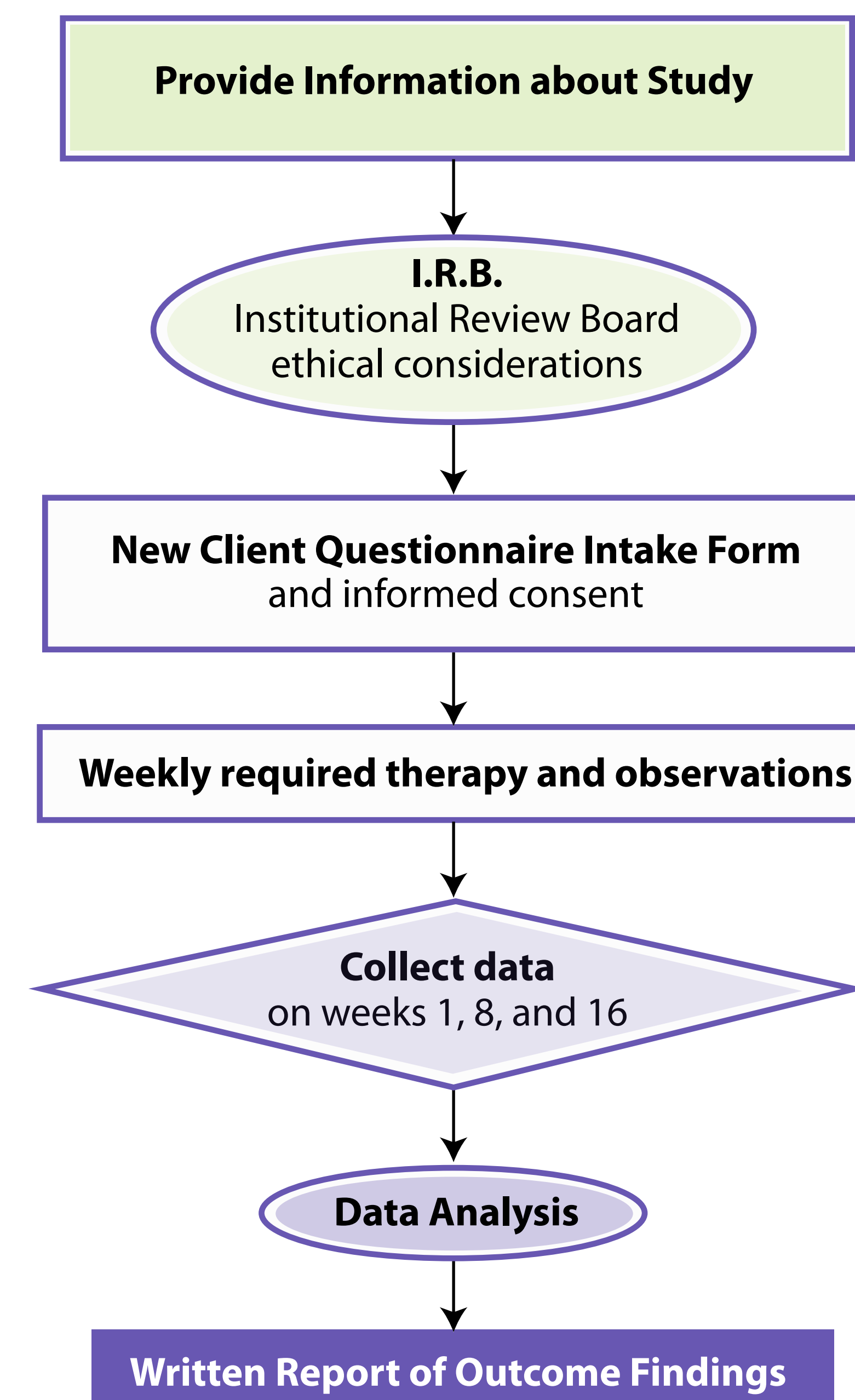


Table 2
Outcome Measurements Defined

Name of Outcome Measurement	What it measures	When it will be given
Aberrant Behavior Checklist Community (ABC-C) Currently the gold standard in autism research.	It is a symptom checklist (58 items) for standardized problem behavior assessing problem behaviors of children and adults with intellectual disabilities and is completed by a parent, educator or care-giver. The community version chosen here is specifically for individuals living at home. It assesses self-regulation to change, anxiety and these five sub-scales which are: 1. Irritability 2. Lethargy 3. Stereotypic behavior 4. Hyperactivity/ Noncompliance 5. Inappropriate Speech	During the initial Intake session, Session 16 in the treatment center, Session 32 in the treatment center
Neuro-QOL Item Bank 2.1-Pediatric Fatigue-Short Form	Neuro-QOL is a set of self-report measures that assesses the health related quality of life (HRQL) of children with neurological disorders. It looks at sleep disturbance such as Perceptions of sleep quality, sleep depth, and restoration associated with sleep; perceived difficulties with getting to sleep or staying asleep; and perceptions of the adequacy of and satisfaction with sleep.	During the initial Intake session, Session 16 in the treatment center, Session 32 in the treatment center
The Journey to Wild Divine Bio-feedback Software	The Wild Divine IOMblue (wireless and better for children who have a hard time sitting still) instrument that functions as an alternative input device for your computer software program. It acts as a connection between your physical and mental states and the wild divine software. Their biofeedback sensor measures the body's physiology, reading, vagal tone and responding to changes in mood and stress levels. Primary biofeedback measurement of Heart Rate Variability or Heart Coherence. Heart Rate Variability (HRV) is the variation of the intervals between heartbeats, the benefits of which are currently a leading area in medical research. It has been shown that high HRV correlates with a healthy heart, as well as increased happiness and positive emotions. Increased HRV activates the baroreceptors which regulate and optimize blood pressure, heart rate, temperature, brain function and the immune system.	During the initial Intake session, Session 16 in the treatment center, Session 32 in the treatment center

Discussion

This study will help to determine the feasibility and benefit of a yoga program for children with high functioning autism to help with anxiety, tolerance to stimuli, and tolerance to change, sleep disturbance, connection, socialization and the relationship to vagal tone. This poster describes the development of the study design to discuss critical components such as creating an ASD friendly environment, protocol development and the timeline and the identification of outcome measurement tools. If this study is promising, additional studies can be done to look at the impact of yoga for high functioning ASD and may include the use of control groups.

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Figure 1
Intervention

